



FACTORS INFLUENCING TIME TO DEATH AFTER RETIREMENT IN KENYA

Biancah Zawadi Komora

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.....*BIANCAH ZAWADI KOMORA*..... [Name of Candidate]
.....*[Signature]*..... [Signature]
.....*7/12/2015*..... [Date]

This Research Project has been submitted for examination with my approval as the Supervisor.

.....*Dr. John Oluken*..... [Name of Supervisor]
.....*[Signature]*..... [Signature]
.....*7/12/2015*..... [Date]

School of Finance and Applied Economics
Strathmore University

ABSTRACT

The study on the time to death after retirement has been done previously, specifically in developed countries. Studies on the average age of survival post-retirement and determinants of time to death have however not been done in Kenya. Of the studies that have already been conducted, mortality of retirees has been associated with age at retirement, gender, the retirees' socio-economic status and early retirement. The consensus on the survival or mortality of people who retire early and those who retire later has not been grounded till date. Mortality in retirement years and interventions put in place to address the issues should be determined. This study will incorporate the life table method, which is widely used in determining life expectancy, to determine the life expectancy of a Kenyan retiree. The end of the guarantee period is calculated with life expectancy inherent, therefore, once the life expectancy is determined, it will aid in determining the cessation of life annuities. Over the years, retirement has been seen to lead to death, however, this can be aided if employers get a hold of information like this and accordingly advise their employees. This study attempts to determine the time to death and the factors that lead to mortality after retirement in Kenya. The factors taken into consideration are, the age at retirement, socio-economic status (derived from the monthly pension paid to the retiree) and gender. The study concluded that chances of early death are increased by early retirement. It also seeks that other factors such as the health status of the retiree be incorporated to ensure that the retiree's death was not hastened by the fact that they were not healthy on retirement.

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LIST OF ABBREVIATIONS AND KEY WORDS

OECD: Organization for Economic Co-operation and Development.

Retirement: is the point where a person stops employment completely.

Pension: is a contract for a fixed sum to be paid regularly, in regular installments, to a person, typically following retirement from service.

Pension schemes: A tax-privileged individual investment vehicle, with the primary purpose of building a capital sum to provide retirement benefits, although it will usually also provide death benefits.

Life Annuity: is a financial contract in the form of an insurance product according to which a seller (issuer) — typically a financial institution such as a life insurance company — makes a series of future payments to a buyer (annuitant) in exchange for the immediate payment of a lump sum (single-payment annuity) or a series of regular payments (regular-payment annuity), prior to the onset of the annuity.

Insurance: is the equitable transfer of the risk of a loss, from one entity to another in exchange for payment. It is a form of risk management primarily used to hedge against the risk of a contingent, uncertain loss.

Life expectancy: is the expected (in the statistical sense) number of years of life remaining at a given age. It is denoted by e_x which means the average number of subsequent years of life for someone now aged, X, in our case, average of 55, according to a particular mortality experience.

Life tables: is a table which shows, for each age, what the probability is that a person of that age will die before his or her next birthday.

1. INTRODUCTION

1.1 BACKGROUND INFORMATION

As part of the development process, it is critical that the world's population be able to enjoy a long and healthy life. There has been increased survival of the world's population over the last 60 years. According to estimates presented in the (United Nations' World Population Prospects: The 2010 Revision), life expectancy has increased from 48 years to 68 years in the years 2005 to 2010. This reflects reductions in mortality rates. A decline in fertility rates has also been observed therefore marking a progress in the demographic transition. Due to this, people are expected to be living longer after retirement. This study therefore seeks to look at what factors influence the survival or mortality of retirees in Kenya.

For a long time in Kenya, the retirement age was at 55 years. There also was a provision for early retirement which was set at 50 years. In 2009, the retirement age was increased to 60 years. However, this had no impact on the early retirement age which was left at 50 years. Other reasons for retirement that include retirement on medical grounds, public interest, abolition of office and that in public interest were also not affected.

The decision to retire, the attitudes towards retirement and policies in place for retirement are just a few of the factors present in the road to retirement. Currently, the trend is early retirement. This is mainly because of lifestyle changes that have been seen over the years, which have led to lifestyle diseases – poor health. The transition to retirement is therefore highly dependent on how the individual arrives at this phase. The individual can either retire voluntarily or be forced into retirement by policies. Those who retire voluntarily are seen to embrace the transition into retirement, while those forced into it by mandatory policies take a while to adjust to this new life (Mwakala, 2013).

As life expectancy continues to increase (Aging Trends Kenya), people find themselves spending more time in retirement than originally planned. While a longer life is generally viewed positively, pre-retirees and retirees are expressing concerns about unexpected life events due to a lengthier retirement. Studies have shown that inactivity in retirement increases the death rates of retirees. However, the older one gets, the more the career path and financial matters should be

planned to ensure a comfortable retirement at age 60 or earlier, into the golden ages of 80 and beyond.

A smaller number of employees will lead to worldwide pressure on population ageing. This is because the smaller the number of employees, considering unfunded pay-as-you-go pension schemes, the lesser the number of people to sustain the already retired population. In many OECD countries, there have been reforms to stop early retirement due to this factor (Bonoli, 2007). Many discussions on the financial implications of these new old-age policies have been done. Their health implications, however, have received much less attention.

Moreover, studies which have evaluated the general impact of early retirement on survival show mixed outcomes. Several analyses demonstrate that men and women who retire early face higher mortality (Tsai S.P., 2005). Experts perceive either the retirement phase as a risk factor, or illness and frailty as the real reason for a negative selection into early retirement.

On the other hand, other studies have detected no survival differences between those who take early retirement and normal pensioners, nor any beneficial effects on health (Litwin, 2007). According to these arguments, protection may result from less day-to-day stress and a healthier lifestyle during retirement.

This study will seek to address the issue of mortality after retirement by assessing the factors that affect mortality of individuals after retirement in Kenya. The factors to be considered will be majorly age at retirement, gender and socio-economic status (as determined by the monthly pension received).

1.2 Motivation of the study

Retirement is the point at which someone stops employment completely. In Kenya, the retirement age was 55 years for a long time until in 2009 when it was changed to 60 years. In a statement to the press, the then Public Service Minister, Dalmas Otieno, also announced a new contributory public service scheme and said that the age raise would give the government time to program for resources to fund the new pension scheme and allow room for introduction and operation of the (public service) scheme. This change did not have any effect on the early

retirement age, which remained at 50 years. Other areas like retirement in public interest, retirement on medical grounds, retirement from the disciplined services and retirement due to abolition of office, were also not affected.

The new contributory public service scheme, which kicked off in July 2013, required civil servants to make a monthly contribution of 7.5 percent of their salaries, while the government made a contribution of 15 percent. Public service employees are able to access their contributions upon leaving employment and wait for the government's contributions on attainment of age 65.

Previous work on time to death after retirement has been done in other countries, specifically, developed countries. Most studies associated early retirement; by extension, age at retirement, gender and socio-economic status of the retirees with mortality.

To date, no consensus has been reached on the survival or mortality of people who retire early compared to those who retire later. Some researchers concluded that early retirement harms health, attributing this to illness before retirement or the change of life events associated with retirement. On the other hand, there is a widespread perception that early retirement is associated with longer life expectancy and that retiring later leads to early death. The possible health benefits of retirement, such as reduced role demand and a more relaxed lifestyle, have been postulated to improve longevity among people who retire early.

With these questions and myths in mind, Kenya needs to find out the state of its retirees and assess if enough is being done by employers and the government itself, to prepare employees for retirement.

1.3 Problem statement

Many countries have studied the life of retirees with special attention being given to the quality of life of these individuals. In Kenya, no work has been done on the factors that influence time to death after retirement. The average age of survival after retirement in Kenya is also not known. It is necessary to determine the main factors that influence mortality in the retirement years and necessary interventions that have been put in place to address them. The life expectancy of a retiree in Kenya is also a key matter, especially in life annuity programs in the insurance companies in Kenya, with mortality and longevity risks being of great interest to actuaries and financial professionals.

In this study, we attempt to determine the life expectancy of a retiree by using the life table method, which is widely used to determine life expectancy. This information can be very useful in determining the life expectancy which will be useful in determining the cessation of life annuities usually used to determine the end of the guarantee period which is calculated with life expectancy in mind.

1.4 Justification of the study

Studies have been done on the impact of early retirement, with results showing that self-perceived health, employment grade and job satisfaction are all independent predictors of early retirement. Early retirement was hugely embraced, but the impact of the same has not been assessed. The impact of the retirement age being changed to 60 years, adding 5 years to the previous retirement age, has also not been assessed. The average time of survival after retirement is therefore not known. The quality of life of retirees is also a hugely ignored matter.

This study will attempt to determine the key factors that affect time to death, if any, in the retirement years, and the necessary interventions put in place to ensure that these factors are addressed. Since studies have been done in other countries, it is interesting to check the validity of the models used elsewhere to determine time to death and its determinants in the Kenyan set-up.

1.5 Objectives of the study

1.5.1 General objectives of the study

To determine how the selected factors influence time to death after retirement.

1.5.2 Specific objectives of the study

- i. To determine the key factors that contribute to mortality in retirement years
- ii. To determine the life expectancy of retirees in Kenya

1.6 Research questions

- i. Do gender, socio-economic status and age at retirement significantly determine time to death in retired Kenyans?
- ii. To establish if there is a significant difference in time to death in the strata in the study population
- iii. What is the average time to death after retirement in Kenya?

2. LITERATURE REVIEW

2.1 INTRODUCTION

Factors that are seen to be correlated to life expectancy include gender, socio-economic status, and level of education, health conditions and marital status to some extent. Early retirement has for long been affiliated to a longer life expectancy as later retirement is associated to early death.

2.2 PILOT STUDIES

2.2.1 On Early Retirement

In a long-term prospective cohort study on the effects of early retirement on long-term survival by (Brockmann Hilke, 2009) selective and protective impacts of early retirement on life expectancy were assessed. The results were based on the members of a compulsory German health insurance fund. They analyzed 88,399 men and 41,276 women who retired between the ages of 50 and 65 from January 1990 to December 2004. Main outcome measured were hazard ratios for death adjusted for age, sex, marital and socioeconomic status, year of observation, age at retirement, hospitalization, and form of retirement scheme.

They found a significantly higher mortality risk among pensioners with reduced earning capacities than among old-age pensioners who either left the labor market between the ages of 56 and 60 or between 61 and 65. The youngest male and female pensioners who left the labor market between the ages of 51 and 55 because of their reduced earning capacity faced the highest mortality risk. They also found out that healthy people who retire early do not experience shorter long-term survival as compared to those who retire late.

(Waldron, 2001), found that men taking benefits at age 62 and 3 months to 62 and 11 months, age 63, and age 64 have higher mortality risk than men taking benefits at age 65 or older. Estimates of mortality risk for 'early' retirees are lowered when higher-risk age 62 retirees are combined with age 63 and age 64 retirees and when age 62 retirees are compared with a reference variable of age 63 and older retirees.

According to a study by (Waldron, 2001) on the link between early retirement and Mortality he suggested that men retiring early are likely to die sooner than men retiring later. This study also found a significant difference in mortality risk for men retiring exactly at age 62 relative to men retiring at age 62 and 3 months to age 62 and 11 months, at age 63, and at age 64. In a heterogeneous population of early retirees, combining age 62 retirees with age 63 and age 64 retirees mutes the higher mortality risk of age 62 retirees.

2.2.2 On retirement and health

In one of the most well-done (statistically speaking) studies of retirement and health, researchers found that retiring had a negative impact on health. This study looked at 16,827 men in Greece who had not been diagnosed with a health condition, such as diabetes, stroke, cancer or heart disease. It compared men who retired to men who were still working (remember, none of them had a major health condition at the beginning of the study). The study discovered that the retirees had a 51% increase in their risk of death as compared to those still working.(after controlling for variables, such as wealth, education, marital status, etc.).

Most of the increase in death risk was linked to heart disease and cardiovascular health. It would be important to assess the quality of life of the retirees. For example, with the wealth of information gathered as at 50 years, is it wise to let go this individual or should there be alumni programs where the experience gained over decades is transferred to the younger generation? Programs like this would benefit both the youth and the older folk, improving their quality of life greatly.

An exception to research finding a link between poor health and early retirement is a study by (Burkhauser R. V., 1996); using the first two waves of the Health and Retirement Study (HRS). A preliminary finding of that study is that men who take Social Security benefits at age 62 are as likely to be in poor health as men who do not (16 percent vs. 16 percent in Wave 1 and 20 percent vs. 21 percent in Wave 2) . However, only 27.9 percent of all males age 62 in their sample take benefits at age 62 in 1993 or 1994 as opposed to roughly 50 percent of fully insured age 62 male workers who are not disability recipients who take benefits at age 62 according to internal Social Security administrative data for 1993 and 1994.

In addition, comparing age 62 beneficiaries to a reference variable of ‘postponers’ may mute differences in health if relatively less healthy age 63 and age 64 retirees pull down the average health of relatively more healthy age 65 and older beneficiaries.

2.2.3 On socio-economic status and mortality

According to (Syme, 1976) there is an inverse relationship of social-economic status and mortality. Persons of lower socio-economic status have higher rates of mortality. The literature also suggests that persons of lower socio-economic status are generally more susceptible to illness and injury. (Kitagawa, 1973), in their analysis of socio-economic status and mortality, found evidence that higher income and greater educational attainment were associated with lower mortality and longer life expectancy among persons under age 65.

2.2.4 On survival Probabilities

(Hurd M., 1995), find that subjective survival probabilities reported by sample respondents qualitatively follow the same pattern as known mortality differentials like sex, socio-economic status and smoking. Such findings are interesting because they may imply that men could be in part optimizing age of retirement benefit receipt to correspond to their estimates of their returns for delaying retirement versus their estimates of their own life expectancy.

2.3 The Use of Kaplan Meier Curves

(Brockmann Hilke, 2009) , used Kaplan Meier curves to determine if there was a difference in the survival rates of different retirement ages, socio-economic status (those who retired due to reduced earning capacity) and used the cox proportional models to determine the determinants to death after retirement. Results stated that early retirement impacts long-term survival significantly. Lower survival chances were observed for persons with poor health at early retirement compared with pensioners who retire later. However, employees who leave the labor market early and healthy may have better survival chances than people retiring between the ages of 61 and 65. Comparisons of deaths (cases) within 5 years of retirement with survivors (controls) showed that pre-retirement health status was the only significant predictor of survival after early retirement. Among normal retirees, lower status workers were more likely to die

within 3 years of retirement than higher status workers, who were more prominent among deaths 4 to 5 years after retirement.

In their study on Kaplan–Meier survival curves, highly significant differences in life expectancy between employees who retire because of reduced earning capacity (4978 deaths) and those who retire because of old age (7664 deaths; $P < 0.001$, log rank test) are seen (Brockmann Hilke, 2009). These differences remain significant when the data are further broken down by sex and age groups. After 7.2 years, 2 out of 10 male pensioners with reduced earning capacities who had retired between the ages of 56 and 60 had died. In contrast, men of the same age group receiving an old-age pension lived an average of 5.8 years longer before 20% of them died. The difference is 4 years for pensioners who left the labor market between the ages of 61 and 65. Likewise, mortality varies significantly between women with different retirement schemes, regardless of their higher life expectancy. A total of 8 out of 10 female pensioners with a reduced earning capacity survived 11.6 years after retiring between the ages of 61 and 65, 3 years less than women of the same age receiving an old-age pension. The survival gap between women who retired an average of 5 years earlier is even larger: 86% of old-age pensioners survived until the end of the observation period of 15 years, while only 80% of those with reduced earning capacity survived 15 years after retirement.

2.4 Other findings

A study conducted by Sanlam Employees Benefit (in South Africa) shows that people are not saving enough for retirement. Mr. Dawie De Villiers of Sanlam's Structured Solution in his presentation mentioned that of the surveyed pensioners only 40% believed that they have saved enough capital to last for the rest of their lives. Pensioners also highlighted that if there was anything they would have done differently is that they would have planned better and saved more before retiring. This supports the findings of the study, 'people are not saving enough for retirement'. Most will have to work after they reach their retirement age, not because they want to, but because they need funds, or live with their children or rely on the social old age pension.

In another study, Kingston E. (1982) uses the National Longitudinal Survey to compare the mortality of men who withdrew from the labor force before age 62 and received Social Security

disability benefits with that of two other groups: men who withdrew from the labor force before age 62 and reported a work-limiting health condition before withdrawal but did not receive Social Security disability benefits and men who withdrew before age 62, did not receive a disability benefit, and did not report a health limitation.

Among white males in these three groups, he finds that 33 percent of the disability recipients are dead by 1975, 42 percent of the non-disability recipients who reported a health limitation are dead by 1975 and 15 percent of the non-disability recipients who reported no health limitations are dead by 1975. Evidence of a group of unhealthy workers waiting until age 62 to claim retirement benefits could be one factor contributing to the apparent link between early retirement and mortality in the updated 1973 Exact Match.

In the 1990s, using administrative data from the Canadian Pension Plan (CPP), (Zielinski J.M., 1993) finds lower survival probabilities for early retirees (those whose last year of earnings was at age 61 or younger) than later retirees at almost all earning levels. They also find higher earnings are associated with later retirement. In addition, separate multivariate weibull regressions run for each age of retirement exhibit a pattern following a 'generally positive association' between survival probability and age of retirement.

In a cohort study on Age at retirement and long term survival of an industrial population by (Tsai S.P., 2005) after analyzing data from past employees of Shell, using the Kaplan Meier curves and cox proportional model (used Wald X2 test to test significance of the hazard ratios), on comparison of survival curves on different retirement ages, found that age at retirement is not associated with increased or decreased survival. However, results showed that gender and socio-economic status of the employee was a determinant of survival after retirement.

3. RESEARCH METHODOLOGY

3.1 INTRODUCTION

Survival analysis is essentially the study of elapsed time between an initiating event and a terminal event. The initiating events include birth, start of treatment, diagnosis or start of operations. The terminal events include death, relapse, cure or machine failure. Survival analysis could therefore be seen as the study of the distribution of life times. Data values used comprise of both complete and censored observations. Complete observations are those where the terminal event has occurred while censored observations are those where the terminal event has not occurred yet. After analysis, statements are made about the survival distribution of the failure times from the data values. The survival distributions allow for issues such as expected life time, expected time to failure and survivorship to be addressed. When trying to analyze the data, some aspects of survival analysis data may generate great difficulty when trying to analyze the data using some traditional statistical models like multiple linear regressions.

This study will involve the use of Kaplan Meier curves to explain the shape of the survival curves and trace any proportionality that could exist between the survival functions. Tests of equality across stata are considered in order to explore the possibility of using the predictors being included in the final model. A non-parametric model, the log rank test, is used to test equality for categorical variables.

3.2 METHODOLOGY

Data will be sourced from a pension scheme in Kenya. The sample of choice is of 101 retirees. Variables to be used in creating survival data are in the data. The variables to be considered are:

1. Age of the retiree at retirement (by considering the variables: Date at retirement and Date of birth)
2. Date of death of the retiree
3. Status (censored or died)
4. Gender of retiree
5. Monthly pension being received

The values of monthly pension being received are expected to have great disparities; therefore, they will be categorized into:

- Less than 5000 coded as 1
- Between 5000 and 10000 coded as 2
- Between 10000 and 20000 coded as 3
- Between 20000 and 40000 coded as 4
- Between 40000 and 100000 coded as 5
- Greater than 100000 coded as 6

The variable of interest here is the time to death after retirement or the censoring time. This variable of interest is mostly referred to as the response variable. The event of interest should also be clearly defined and in this case, it is death after retirement. All lives from the sample failing to have obtained the event of interest by the end of the observation period will be considered censored. The censoring variable will be “status”. This indicates whether a retiree will have been censored or died.

Let:

Y_j - Be the time to death after retirement or censoring time for the j^{th} retiree.

δ_j -Be the censoring variable, *Status*, which indicates whether the j^{th} retiree was censored or died

C_j - Be the censoring time for the j^{th} retiree

T_j -Be the time to death for the j^{th} retiree

In the dataset, there are r happenings of the event of interest (death after retirement).

Thus, define t_i be the time of death, for the i^{th} death. Where $i=1, 2, 3, \dots, r$

3.2.1 The Kaplan Meier Estimator

Respective survival functions of males and females will be estimated using the Kaplan Meier estimator in order to be able to compare the survival distribution of males and females.

$S(t)=Pr(T>t)$ - the probability of survival beyond time t , i.e. the time(T) to the event occurring after time t .

Let:

n_i , be the number of retirees at risk of death at time t_i , representing all retirees who have not died, including those who may be censored after time t_i .

d_i , is the number of deaths observed at time t_i .

The conditional probability of surviving past time t_i given survival to that time is estimated by:

$$\frac{(n_i - d_i)}{n_i} \quad (3.1)$$

This is the Kaplan Meier estimator.

The unconditional probability of surviving past any time t is estimated by:

$$S(t) = \prod_{t_i < t} \left(\frac{n_i - d_i}{n_i} \right) \quad (3.2)$$

The mean and the median will be obtained from the event time in years. This will be done for all variables: age, monthly pension and gender.

$$S(T) = \exp\left(-\int_0^T h(x)dx\right) \quad (3.3)$$

$$S(T) = \exp(-H(t)) \quad (3.4)$$

3.2.2 The Hazard Rate Function

The unconditional probability that an individual at time T will experience the event in the next instant is the hazard rate, $h(T)$. This is very crucial in survival analysis and is referred to as the conditional failure rate in reliability, the force of mortality in demography, the intensity function in stochastic processes, the age-specific failure rate in epidemiology, and the inverse of Mill's ratio in economics (Mwakala, 2013).

To identify the appropriate probability distribution of a particular mechanism, the empirical hazard rate is used since each distribution has a different hazard rate function. Hazard rates could either increase or decrease with time, or even remain constant, depending on the distribution. Some hazard rates could also exhibit all the three behavior at different points in time.

$$h(t) = \frac{f(t)}{s(t)} \quad (3.5)$$

Cumulative hazard function, $H(T)$ is the integral of $h(T)$ over the range 0 to T .

$$H(T) = \int_0^T h(x) dx \quad (3.6)$$

$$H(t) = -[\ln s(t)] \quad (3.7)$$

By Greenwood's formula, the variance of $S(T)$ is estimated by:

$$V[S(t)] = \{s(t)\}^2 \sum_j \frac{d_i}{r_i(r_i - d_i)} \quad (3.8)$$

3.2.3 The Log Rank Test

The log-rank test calculates the chi-squared for each event time for each group and sums the results. The summed up results for each group are added to derive the ultimate chi-squared. To compare the full curves of each group the null hypothesis will be tested at 95% confidence interval. It is non-parametric and is used to compare the statistical differences between survival distribution functions. The hypothesis for this test is:

$$H_0: S_1(a) = S_1(b) \text{ Versus } H_1: S_1(a) \neq S_1(b)$$

Where: $S_1(a)$ is the survival function for male retirees

$S_1(b)$ is the survival function for the female retirees. This will be done for the three of our variables.

Now let;

n_{mi} be the number of retirees at risk of dying at time t_i , for the m^{th} group.

d_{mi} be the number of dead retirees, whose death observed at time t_i , for the m^{th} group.

X be the random variable that takes the values, d_{mi} .

Recall $m=1, 2$; there are two groups, strata, male and female retirees

The log-rank test statistic follows a hyper-geometric distribution hence the probability of the random variable X taking the value d_{mi} , would be given by

$$\text{Prob}(x = d_{mi}) = \frac{\binom{n_{1i}}{d_{1i}} \binom{n_{2i}}{d_{2i}}}{\binom{n_i}{d_i}} \quad (3.9)$$

The expectation and variance of the random variable X are given as:

$$E(x = d_{1i}) = \frac{d_i n_{1i}}{n_i} \quad (4.0)$$

$$\text{Var}(x = d_{1i}) = \frac{n_{1i} n_{2i} d_i (n_i - d_i)}{n_i (n_i - 1)} \quad (4.1)$$

Then:

$$E(Y) = \sum_{ti} E(d_{1i}) \quad (4.2)$$

$$\text{Var}(Y) = \sum_{ti} \text{Var}(d_{1i}) \quad (4.3)$$

After standardization of the variable Y , Z will be defined as:

$$Z = \frac{Y - E(Y)}{\sqrt{\text{Var}(Y)}} \quad (4.4)$$

$E(Y) = 0$ and $\text{Var}(Y) = 1$ consequently $Z \sim N(0, 1)$.

The values of Y , $E(Y)$ and $\text{Var}(Y)$ are substituted, this defining Z as:

$$Z = \frac{\sum_{ti} d_{1i} - \sum_{ti} E(d_{1i})}{\sqrt{\sum_{ti} \text{Var} d_{1i}}} \quad (4.5)$$

From probability distribution, if consequently $Z \sim (0,1)$ then $Z^2 \sim \chi^2(1)$

Z^2 is the log-rank test statistic and it follows a chi-square distribution with one degree of freedom. It therefore follows that:

$$Z^2 = \left\{ \frac{\left(\sum_{1i} \left(d_{1i} - \frac{d_i n_{1i}}{n_i} \right) \right)^2}{\sum_{ti} \frac{n_{1i} n_{2i} d_i (n_i - d_i)}{n_i (n_i - 1)}} \right\} \quad (4.6)$$

The hypotheses $H_0: S_i(a) = S_i(b)$ Versus $H_1: S_i(a) \neq S_i(b)$ is then tested.

A critical level from the chi-square distribution table is obtained at a level of significance. The critical region will be at the 0.05 level of significance.

If the test statistic Z^2 is greater than the critical value, the null hypothesis, $S_i(a) = S_i(b)$ is rejected.

4. DATA ANALYSIS, RESULTS AND DISCUSSION

4.0 INTRODUCTION

This chapter is presented in five sections. Section 4.1 gives the explanatory analyses, 4.2 gives Life Table by gender and pension category, 4.3 gives the Kaplan Meier Survivor Curves, 4.4 gives the inferences by Log-rank test and section 4.5 gives the discussion of the analysis.

4.1 EXPLORATORY ANALYSIS – RESULTS

The analysis software, stata was used to analyze the data.

The number of overall retirees was 101. Of these, 84 were males and 17 were females. The gender frequency therefore showed that 83.17% were male as shown in *Table 1* below.

Table 1: Distribution based on gender

SEX	DISTRIBUTION	PERCENTAGE
MALE	84	83.17%
FEMALE	17	16.83%
TOTAL	101	100.00%

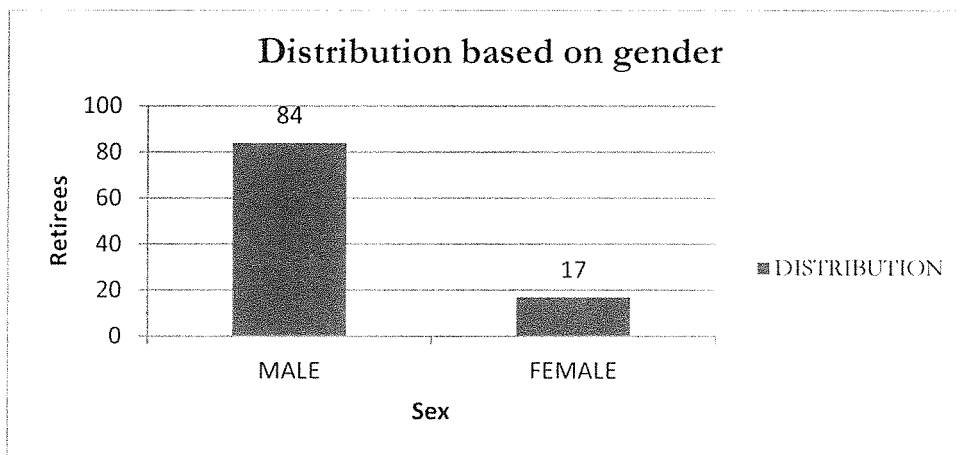


Figure 1: Distribution based on gender, pictorial representation

The monthly pension received by the 101 retirees ranges from Ksh.7322.00 to Ksh.912514.06 per month. The amounts were placed in categories 1 through 6, for simpler analysis. The frequency based on this was as follows:

Table 2: Distribution based on monthly pension received

AMOUNT	PENSION		
	CATEGORY	DISTRIBUTION	PERCENTAGE
<5000	1	0	0.00%
5000-10000	2	6	5.94%
10000-20000	3	16	15.84%
20000-40000	4	28	27.72%
40000-100000	5	26	25.74%
>100000	6	25	24.75%
TOTAL		101	100.00%

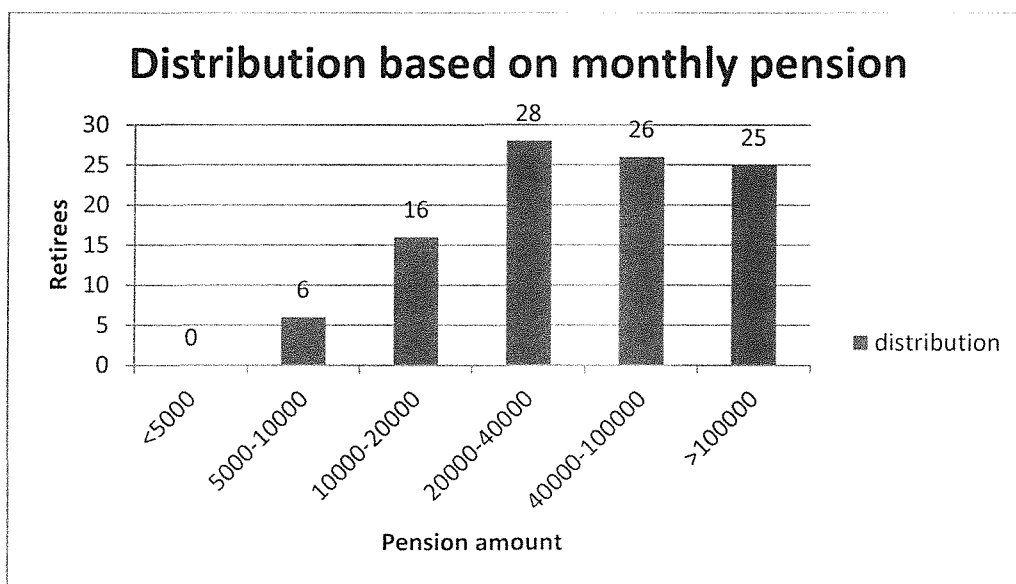


Figure 2: distribution based on monthly pension received, pictorial representation

Majority of the retirees from this sample are seen to earn between Ksh.20, 000 to Ksh.40, 000 per month (pension category 4). No retiree earns less than Ksh.5, 000 per month. The minimum amount earned by a retiree is Ksh.7, 322.00 while the maximum amount is Ksh.912, 514.06. The average monthly pension overall is Ksh.89, 584.40 with a standard deviation of Ksh.128, 792.40.

The age at retirement was also a factor considered in this study. The frequency based on this was as follows:

Table 3: Distribution based on age at retirement

AGE	AGE CATEGORY	DISTRIBUTION	PERCENTAGE
<55	1	56	55.45%
55-59	2	34	33.66%
60-65	3	11	10.89%
TOTAL		101	100.00%

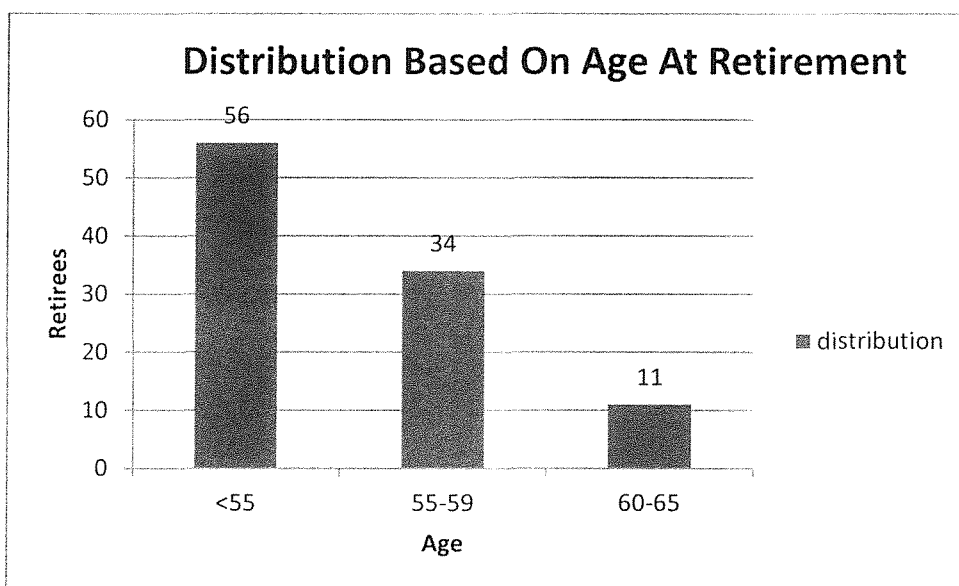


Figure 3: distribution based on age at retirement, pictorial representation

The ages at retirement from the data range from a minimum of 37 years to a maximum of 65 years. The average age of retirement is 53 years with a standard deviation of 5 years. Most of the retirees are seen to have retired at the age bracket of less than 55. This can be assumed to be because most of the retirees used in this dataset retired before July 2009 when the minimum age of compulsory retirement was changed from 55 to 60 years. According to the data, only 17 of the retirees used in this study retired after July 2009.

Variable	Obs	Mean	Std. Dev.	Min	Max
pensionersex	0				
ageatretir~t	101	53.65347	4.936468	37	65
averagemon~n	101	89584.4	128792.4	7322	912514.1

Figure 4: summary statistics of pension payments and age at retirement

4.2 LIFE TABLE

The life table method is widely used in determining life expectancy. Therefore, in order to find the life expectancy of a Kenyan retiree, it will be essential to come up with life tables specifically tailored for this study. The life tables will be categorized according to the gender of the retirees.

Table 4: Male Life Tables

Time Interval	Total	Deaths	Censored*	Survival	Std. Error	[95% Conf. Int.]
0 1	84	3	0	0.9643	0.0202	0.8934 0.9883
1 2	81	0	2	0.9643	0.0202	0.8934 0.9883
2 3	79	2	1	0.9397	0.0261	0.8612 0.9745
3 4	76	2	0	0.9150	0.0308	0.8299 0.9586
4 5	74	2	1	0.8901	0.0346	0.7993 0.9413
5 6	71	2	0	0.8650	0.0379	0.7694 0.9229
6 7	69	1	2	0.8523	0.0394	0.7544 0.9133

7	8	66	1	1	0.8393	0.0409	0.7392	0.9034
8	9	64	2	0	0.8131	0.0436	0.7089	0.8829
9	10	62	3	0	0.7737	0.0471	0.6648	0.8511
10	11	59	1	1	0.7605	0.0481	0.6502	0.8402
11	12	57	2	1	0.7336	0.0500	0.6207	0.8177
12	13	54	2	0	0.7064	0.0517	0.5915	0.7945
13	14	52	2	1	0.6790	0.0532	0.5623	0.7708
14	15	49	1	1	0.6650	0.0539	0.5475	0.7585
15	16	47	1	2	0.6505	0.0547	0.5322	0.7459
16	17	44	2	0	0.6209	0.0560	0.5013	0.7198
17	18	42	1	1	0.6060	0.0566	0.4857	0.7065
18	19	40	1	2	0.5904	0.0573	0.4696	0.6926
19	20	37	1	1	0.5743	0.0580	0.4528	0.6782
20	21	35	1	2	0.5574	0.0587	0.4352	0.6632
21	22	32	2	0	0.5225	0.0599	0.3994	0.6319
22	23	30	1	2	0.5045	0.0605	0.3811	0.6156
23	24	27	2	0	0.4671	0.0615	0.3435	0.5815
24	25	25	3	0	0.4111	0.0621	0.2893	0.5288
25	26	22	1	1	0.3920	0.0621	0.2713	0.5105
26	27	20	1	1	0.3719	0.0621	0.2524	0.4913
27	28	18	2	1	0.3294	0.0618	0.2130	0.4505
28	29	15	1	1	0.3067	0.0616	0.1922	0.4286
29	30	13	2	1	0.2576	0.0607	0.1485	0.3810
30	31	10	1	1	0.2305	0.0601	0.1251	0.3548
31	32	8	2	1	0.1690	0.0577	0.0750	0.2951
32	33	5	2	0	0.1014	0.0507	0.0299	0.2250
33	34	3	1	1	0.0608	0.0437	0.0098	0.1840
34	35	1	1	0	0.0000	.	.	.

The * symbolizes that the retirees were censored by 31st March 2014. It can be seen that after 10 years of retirement, 54.76% of the males are dead and 45.24% survive.

Table 5: Female life tables

Interval	Total	Deaths	Censored*	Survival	Std. Error	[95% Int.]	Conf.
0 1	17	0	1	1.0000	0.0000	. .	
1 2	16	0	1	1.0000	0.0000	. .	
2 3	15	1	0	0.9333	0.0644	0.6126	0.9903
3 4	14	0	1	0.9333	0.0644	0.6126	0.9903
4 5	13	1	0	0.8615	0.0911	0.5497	0.9636
5 6	12	1	0	0.7897	0.1081	0.4791	0.9271
6 7	11	1	0	0.7179	0.1198	0.4111	0.8838
7 8	10	1	0	0.6462	0.1275	0.3468	0.8352
8 9	9	1	0	0.5744	0.1320	0.2866	0.7819
9 10	8	0	1	0.5744	0.1320	0.2866	0.7819
10 11	7	1	0	0.4923	0.1363	0.2178	0.7193
11 12	6	1	0	0.4103	0.1361	0.1576	0.6508
12 13	5	1	0	0.3282	0.1313	0.1052	0.5762
13 14	4	1	0	0.2462	0.1214	0.0612	0.4949
14 15	3	1	0	0.1641	0.1051	0.0268	0.4056
15 16	2	1	0	0.0821	0.0783	0.0051	0.3061
17 18	1	0	1	0.0821	0.0783	0.0051	0.3061

The * symbolizes that the retirees were censored by 31st March 2014. It is seen that after 10 years of retirement, 47.06% of the female retirees are dead while 52.94% survive.

The estimated life expectancy for males and females who retired at 55 years is 8 years for males and 3 years for females.

4.3 KAPLAN-MEIER SURVIVAL CURVES

The Kaplan Meier curves will be used to show the shape of the survival functions and show whether the groups are proportional or not.

4.3.1 Without stratification

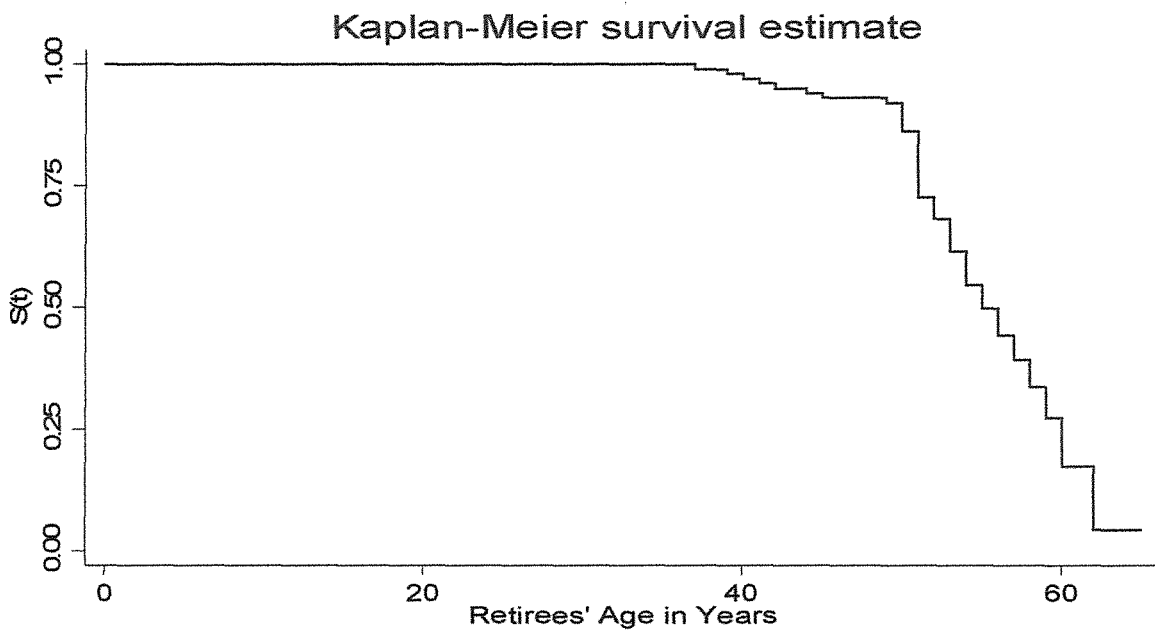


Figure 5: survival curves for the retirees (both male and female)

The origin of the data is specified as the date of birth. The survival curve remains flat until the occurrence of an event. The event being observed here is retirement and death after retirement. At age 37 when the first event of retirement occurs, the survival curve ceases to be flat and breaks downwards. The curve will break at each point at which another life retires, otherwise, it remains flat.

4.3.2 Comparing by gender

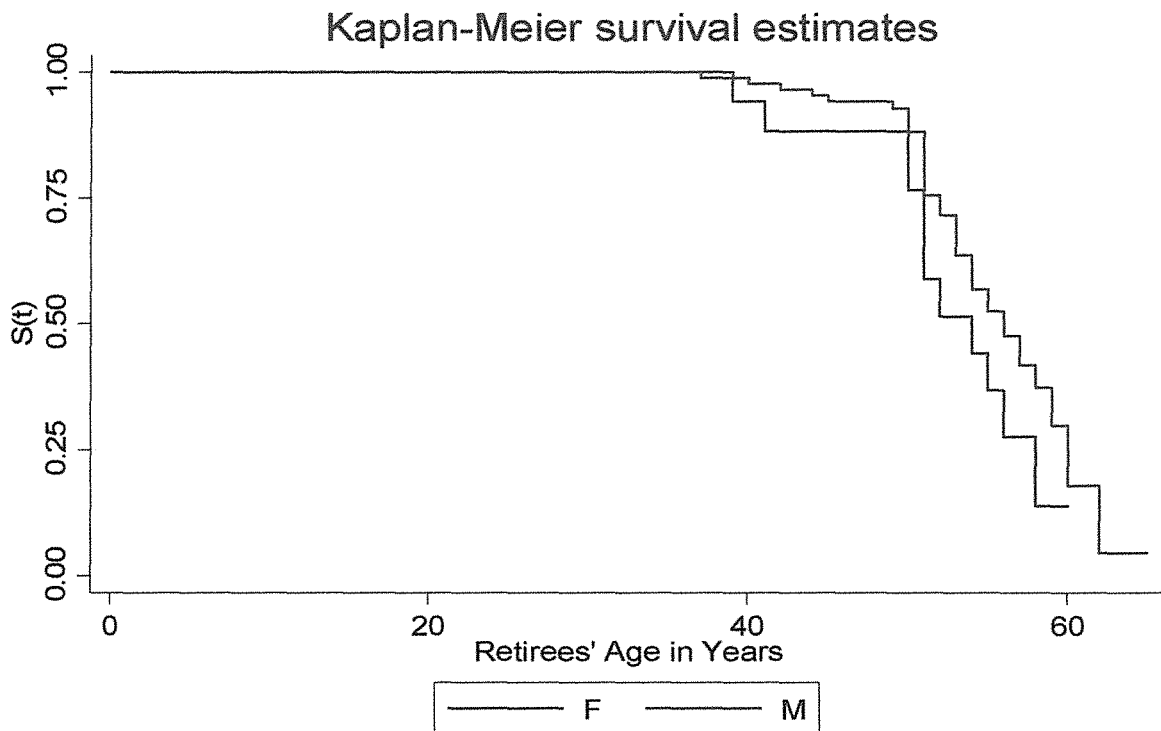


Figure 6: survival curves comparing gender

There is a significant difference between the survival of males and that of females. After retirement, the females are seen to survive longer than the males do.

4.3.3 Comparing by monthly pension received

The monthly pensions received by retirees have been categorized and coded as follows:

<5000 coded as 1

>5000 and <=10000 coded as 2

>10000 and <=20000 coded as 3

>20000 and <=40000 coded as 4

>40000 and <=100000 coded as 5

>100000 coded as 6

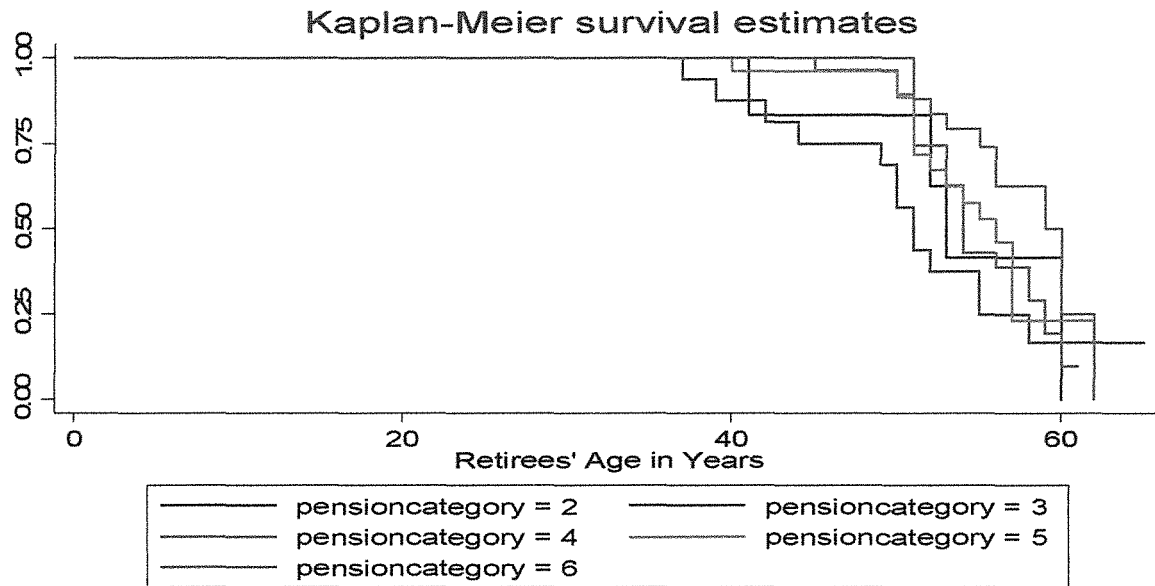


Figure 7: survival curves comparing monthly pension categories

There is a significant difference spotted along the different pension categories. Those in pension category 6 (those than earn more than Ksh.100, 000 are seen to have higher survival rates as compared to those in other pension categories. Those in pension category 3, (those who earn more than Ksh.10, 000 but less than Ksh.20, 000 are seen to have the lowest survival rates.

4.4 INFERENCE – LOG RANK TEST

The log-rank test is a statistical hypothesis that is used to compare the survival curves. It is used since it requires no assumptions on the distribution of the survival function which is often skewed due to many early events and a few late ones.

4.4.1 Log-rank test for equality of survivor functions – variable gender

Log-rank test for equality of survivor functions

pensionersex	Events observed	Events expected
F	12	8.28
M	55	58.72
Total	67	67.00

chi2(1) = 2.13
 Pr>chi2 = 0.1443

Figure 8: Equality of survivor function by gender

At 95% confidence interval, $\alpha=0.05$, since the p-value is 0.1443, much greater than 0.05. The test is not significant. The test statistic is;

$$\text{Log - rank statistic for two groups} = \frac{\{\sum_{t_j} [d_{ij} - \frac{d_j n_{ij}}{n_j}]\}^2}{\sum_{t_j} \frac{n_{1j} n_{2j} d_j (n_j - d_j)}{n_j^2 (n_j - 1)}} = 2.13$$

From the tests done, Hypothesis:

$H_0: S(a) = S(b)$

Versus

$H_1: S(a) \neq S(b)$

$S_a(t)$ is the survival function for males and $S_b(t)$ is that of females. The degree of freedom is 1 and the groups being considered are 2. The chi-square therefore is $X^2, 1 = 3.84$. The survival functions of the respective genders are then compared to this value.

Rejection criteria:

If the calculated value is greater than $X^2_{1, \alpha}$, the null is rejected and conclude $S_a(t) \neq S_b(t)$. This means that the males and females bear different survival times. However, the value calculates is 2.13, which is less than 3.84. There is therefore not sufficient evidence to reject the null hypothesis; we therefore conclude that the males and females have similar survival times.

4.4.2 Log-rank test for equality of survivor functions – variable pension category

Log-rank test for equality of survivor functions

pensioncat~y	Events observed	Events expected
2	4	3.48
3	13	8.52
4	22	19.20
5	17	16.43
6	11	19.37
Total	67	67.00
	chi2(4) =	7.49
	Pr>chi2 =	0.1120

Figure 9: Equality of survivor function by pension category

At 95% confidence interval, $\alpha=0.05$, since the p-value is greater than 0.05, we conclude that the test is insignificant. The test statistic is:

$$\text{Log-rank statistic for two groups} = \frac{\{\sum_{t_j} [d_{i_j} - \frac{d_j n_{i_j}}{n_j}]\}^2}{\sum_{t_j} \frac{n_{1_j} n_{2_j} d_j (n_j - d_j)}{n_j^2 (n_j - 1)}} = 7.49$$

From the tests done, Hypothesis:

$H_0: S(a) = S(b)$

Versus

$H_1: S(a) \neq S(b)$

$S_a(t)$ is the survival function for males and $S_b(t)$ is that of females. The degree of freedom is 1 and the groups being considered are 2. The chi-square therefore is $X^2, 1 = 3.84$. The survival functions of the respective genders are then compared to this value.

Rejection criteria:

If the calculated value is greater than $X^2, 1$, the null is rejected and conclude $S_a(t) \neq S_b(t)$. The six categories therefore are concluded to have different survival times and are significantly different.

4.5 DISCUSSION

In the study, life tables for both males and females were created. The life tables were to aid in the calculation of life expectancy after retirement. From the life tables, the life expectancies were respectively found as 8 years for the male retirees and 3 years for the female retirees.

Based on the amount of monthly pension being received, the retirees in pension category 2 (between Ksh.5000 and Ksh.10000 are seen to have a higher rate of mortality than the other pension categories who earn more than those at pension category 2. Retirees of lower status are more likely to die compared to those earning more as pension. (Haynes S. G., 1978). This therefore goes to show that the amount of money paid out as a pension monthly has a direct impact on the time to death of a retiree. This could be assumed to be because the amount an individual earns has a direct impact on their living standards.

For the age at retirement, the test was not significant. Early retirement is attributed to the health status of the retiree. Most retirees who retire early do this because of ill health, not necessarily due to personal volition (Brockmanna Hilke, 2009). This therefore leads to the conclusion that the longer one delays their retirement, the more one leaves longer. This therefore goes to show that the health status of a retiree should be incorporated when looking at the time to retirement for a retiree.

5. CONCLUSIONS AND RECOMMENDATIONS

From the study we concluded that early retirement increases the chances of early death. However, this can be attributed to the health status of the retiree since most individuals who take early retirement do this because they usually have ailments that lead them to taking early retirement.

Those who earned the least amounts, that is, pension category 2, those who earn between Ksh.5000 and Ksh.10000, are seen to have lower survival rates than those who earn more. Employees should therefore be well advised by their employers to plan for their retirement. Planning for retirement includes strategies such as a savings plan for retirement which would lead to a better life post-retirement as opposed to that of an individual who only relies on a meagre pension:

From preliminary test, females seemed to have a higher survival rate as compared to the males. However, after a follow up test was done, it was seen that males and females have the same rates of survival. Taking the preliminary test into consideration, that is, if females had a higher chance of survival than males, including another factor such as marital status would be advised in order to find out whether the marital status of an individual has an impact on the time to death of a retiree. The marital status could also be accompanied by the number of dependents (spouse and children) the retiree has as this could also have an impact on the time to death of an individual regardless of whether the individual is retired or not.

Before enrolling individuals in pension schemes, sponsors should collect comprehensive data on the individuals to make it easier to follow up on the payment of pensions and also enhance the process of testing (U.N, 2010) the pension services and ensure that studies can be done to enable improvement in the pension sector and in turn life annuity programs by other insurers.

Pension receivable by retirees should be those that have been adjusted for their health status after retirement and also cater for the effects of other external factors like inflation. The health status of an individual (U.N, 2010) especially should be taken into account since we see that most individuals who take up early retirement do this as a result of ill health. This could be why retiring early is termed as dying early by authors such as (Brockmanna Hilke, 2009). To do away

with this misconception pension firms should incorporate an adjustment for ill health in the monthly pension.

This study can further be built upon by looking at more factors such as, the level of education of the retiree, the health status at retirement, the lifestyle of the retiree (eating habits and exercise frequency), hobbies of the individual, smoking status and the marital status. The study could also be built upon by taking a larger sample for the study and in a wider scale other than just in the Kenyan set-up.

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APPENDICES

PAYROLL OF PENSIONERS

PRINCIPAL PENSIONERS	SEX	DATE OF BIRTH	DATE OF SERVICE	PENSION COMMENT	ANNUAL PENSION AS AT 1ST APRIL 2014	AVERAGE MONTHLY PENSION	AGE AT RETIREMENT	STATUS AS AT 31ST MARCH 2014
1	M	31-Jan-20	1-Mar-55	31-Jan-80	280118.65	23343.22083	60	Dead
2	F	1-Oct-20	1-Sep-55	1-Jan-76	191227.3	15935.60833	56	Alive
3	M	17-Mar-24	1-Sep-58	31-Jul-86	1111851.65	92654.30417	62	Dead
4	M	3-Dec-24	1-Sep-56	1-Apr-83	381906.6	31825.55	59	Dead
5	M	12-May-27	1-Jul-65	12-May-87	424904.25	35408.6875	60	Alive
6	M	9-Jul-27	19-Jun-49	1-Aug-82	748063.9	62338.65833	55	Alive
7	M	1-Jan-29	1-Jun-83	1-Jan-87	203075.45	16922.95417	58	Dead

8	M	12- Feb- 29	1-Jan- 75	1-Mar-86	1040745.5	86728.791 67	57	Dead
9	M	2- Mar- 29	1- Sep- 60	2-Mar-94	213472.35	17789.362 5	65	Alive
10	M	11- Jul- 29	1- May- 68	1-Apr-91	1453182.1	121098.50 83	62	Dead
11	M	11- Jan- 30	1- Sep- 54	11-Jan-90	375139.9	31261.658 33	60	Dead
12	M	23- Jan- 33	1- May- 56	23-Jan-93	3271417.8	272618.15	60	Dead
13	M	18- Feb- 36	1- Feb- 77	1-May-91	848829.45	70735.787 5	55	Alive
14	M	27- Apr- 36	1- May- 76	1-Jun-95	2680333.2 5	223361.10 42	59	dead
15	M	23- Dec- 37	13- Feb- 61	1-Apr-99	536341.75	44695.145 83	62	Dead
16	M	30- Jun- 38	1-Jun- 59	30-Jun-98	99082.55	8256.8791 67	60	Dead
17	M	29- Dec- 39	1- Nov- 70	1-Oct-95	1247737.0 5	103978.08 75	56	Alive
18	M	12-	1-Jun-	1-Aug-98	1676336.5	139694.70	56	alive

		Feb-42	71			83		
19	M	1-Apr-43	1-Jun-83	1-Jan-00	631726.85	52643.904 17	57	dead
20	M	11-Jun-45	1-May-76	1-Jan-01	5807430.1 5	483952.51 25	56	alive
21	M	23-Jan-46	1-Oct-73	1-Jan-02	5059509.2 5	421625.77 08	56	dead
22	M	2-Feb-46	1-Jun-83	1-Jan-00	821528.9	68460.741 67	54	dead
23	M	1-Jan-47	1-Jan-74	1-May-98	1758192.6 5	146516.05 42	51	dead
24	M	15-Jan-48	1-Jun-83	1-Jun-02	347611.9	28967.658 33	54	dead
25	M	2-Mar-48	1-Dec-87	30-Jun-01	375586.1	31298.841 67	53	dead
26	M	5-Dec-48	1-Jul-74	1-Aug-03	5368604.9	447383.74 17	55	dead
27	M	2-Feb-49	1-Jun-83	1-Jan-00	581680.95	48473.412 5	51	dead
28	M	24-May	1-Jun-83	11-Mar-00	381274.05	31772.837 5	51	alive

		-49						
29	M	27-Jul-49	4-Oct-78	25-Jan-00	523447.4	43620.61667	51	alive
30	M	1-Jan-50	1-Jun-83	1-Mar-00	721460.85	60121.7375	50	dead
31	M	1-Jan-50	1-Oct-87	1-Oct-01	283699.1	23641.59167	51	dead
32	M	1-Jan-50	3-Jul-79	30-Apr-04	454526.75	37877.22917	54	dead
33	M	4-Feb-50	1-Jun-83	1-Mar-00	391226.95	32602.24583	50	dead
34	M	18-Jul-50	1-Jan-91	10-Oct-00	576566.95	48047.24583	50	alive
35	M	22-Aug-50	1-Jun-83	15-May-01	226812.85	18901.07083	51	dead
36	M	29-Sep-50	29-Jul-74	1-Jan-03	420019.85	35001.65417	53	dead
37	M	16-Oct-50	1-Apr-78	1-Jul-06	1827790.85	152315.9042	56	alive
38	M	7-Jul-51	1-Feb-79	8-Jul-01	582549.5	48545.79167	50	dead

39	M	31- Dec- 51	30- Jun- 12	1-Jul-12	272225.25	22685.437 5	61	alive
40	M	7- Mar- 52	1- Dec- 88	1-Apr-02	269957.85	22496.487 5	50	alive
41	M	30- Mar- 52	1- Dec- 93	1-Apr-07	168571.8	14047.65	55	dead
42	M	6- Jun- 52	1- Nov- 81	1-Nov-03	731480.85	60956.737 5	51	dead
43	F	1- Sep- 52	1- Oct- 79	1-Sep-07	850728.7	70894.058 33	55	alive
44	M	12- Dec- 52	1- Feb- 93	31-May-10	351851.7	29320.975	58	dead
45	M	18- Apr- 56	1-Jan- 86	14-Jan-11	1902300.8	158525.06 67	55	alive
46	M	1- Jul- 56	1- Apr- 89	31-Dec-05	158745.4	13228.783 33	49	dead
47	M	11- Sep- 57	1-Jul- 12	1-Jan-14	103457.3	8621.4416 67	57	alive
48	F	16- Sep- 57	1-Jan- 91	1-Oct-07	382563.6	31880.3	50	dead
49	M	11-	1-	31-Dec-11	117185.4	9765.45	53	dead

		Mar-58	Oct-89					
50	M	10-Apr-58	1-Jun-83	10-Apr-12	447776.05	37314.67083	54	alive
51	M	14-Mar-59	17-Sep-84	31-Dec-11	695629.6	57969.13333	52	alive
52	M	3-May-61		1-Apr-13	88208.95	7350.745833	52	dead
53	F	22-Jan-62	1-Jan-99	1-Nov-13	1946933.75	162244.4792	51	alive
54	F	12-Jan-64	1-Jan-00	1-Nov-13	1946933.75	162244.4792	51	dead
55	M	16-Sep-63	1-Oct-88	1-Jan-14	803333.4	66944.45	51	alive
56	M	17-Aug-64	31-May-10	17-Aug-14	87864	7322	50	alive
57	M	16-May-68	1-Aug-95	1-Jul-13	242645.4	20220.45	45	dead
58	M	9-Apr-69	1-Aug-95	1-Jul-13	231504.05	19292.00417	44	dead
59	F	26-Jun-91	1-Jan-91	1-Jul-08	215603.4	17966.95	39	dead

		69						
60	M	10- Oct- 71	1- Nov- 97	1-Jul-13	203756.4	16979.7	42	alive
61	F	7- Nov -72	1- Dec- 02	1-Jul-13	118019.7	9834.975	41	dead
62	M	20- Sep- 76	1- Feb- 00	1-Mar-13	159740.7	13311.725	37	dead
63	M	1- Apr- 41	1-Jul- 79	1-Mar-94	2590408.6 5	215867.38 75	53	alive
64	F	1- Aug -40	1- May- 88	1-Dec-94	275141.15	22928.429 17	54	dead
65	M	1- Jan- 36	1- Apr- 67	1-Sep-93	2064998.8 5	172083.23 75	57	alive
66	M	1- Jan- 38	1-Jun- 87	1-Jul-91	353397.35	29449.779 17	53	dead
67	M	1- Jan- 38	1-Jan- 79	1-Mar-94	2198059.7 5	183171.64 58	56	dead
68	M	1- Jan- 38	1-Jun- 83	1-Mar-94	564307.25	47025.604 17	56	dead
69	M	1- Jan- 43	1-Jun- 83	1-Mar-94	434179.15	36181.595 83	51	dead

70	M	1-Jul-41	1-Dec-88	1-Jun-95	414056.8	34504.733 33	54	dead
71	M	1-Jun-44	1-Jun-84	1-Jun-95	485882.1	40490.175	51	dead
72	M	6-Apr-36	1-Aug-80	1-Jan-95	1764935.5	147077.95 83	59	alive
73	M	7-Jun-36	1-Sep-57	7-Jun-91	127232.15	10602.679 17	55	dead
74	M	10-Jan-40	30-May-83	1-Mar-94	3527254.3 5	293937.86 25	54	alive
75	M	10-Mar-40	1-Mar-74	1-Mar-94	2444693.8 5	203724.48 75	54	alive
76	F	10-Mar-40	1-Nov-77	1-Jan-95	1031429.4	85952.45	55	dead
77	M	10-May-41	1-Jul-90	1-Oct-94	735739.25	61311.604 17	53	dead
78	M	10-Nov-43	1-Mar-93	1-Jun-95	201684.85	16807.070 83	52	dead
79	M	12-Dec-36	1-Jan-64	1-Jul-88	5570220.4	464185.03 33	52	dead
80	M	12-	30-	1-Mar-94	474109.75	39509.145	56	alive

		Dec-38	May-66			83		
81	F	12-Dec-46	5-May-71	1-Jan-97	3017977.1	251498.09 17	51	alive
82	M	14-Jun-36	1-Feb-78	1-Mar-94	1306702.6 5	108891.88 75	58	alive
83	F	14-May-43	1-Jul-80	1-Jan-95	636457.45	53038.120 83	52	dead
84	F	14-Oct-44	1-Feb-83	1-Jan-95	395777.75	32981.479 17	51	dead
85	M	15-Feb-43	30-Aug-71	1-Mar-94	1751913.3 5	145992.77 92	51	dead
86	M	17-Mar-47	1-Feb-80	1-Jun-97	760321.45	63360.120 83	50	dead
87	M	18-Sep-38	1-Jul-81	1-Mar-94	848060.5	70671.708 33	56	alive
88	M	19-Jan-40	1-Jun-83	1-Mar-94	418120.25	34843.354 17	54	dead
89	M	1-Oct-47	1-Feb-80	1-Oct-87	808697.35	67391.445 83	40	dead
90	F	20-Oct-	1-Oct-	1-Dec-94	309825.65	25818.804 17	58	dead

		36	83					
91	F	20-Sep-35	1-Jan-91	1-Jul-91	372529.85	31044.154 17	56	dead
92	M	21-May-31	1-Feb-78	3-Jan-89	1193731.6	99477.633 33	58	alive
93	F	22-Apr-46	1-Oct-86	1-May-96	199659.6	16638.3	50	dead
94	M	23-Dec-33	1-Jun-83	1-Jan-92	420312.3	35026.025	59	dead
95	M	23-Jun-44	1-Nov-77	1-Jun-95	344952.05	28746.004 17	51	dead
96	M	24-Dec-31	1-Feb-79	1-Jan-88	915792	76316	57	dead
97	M	24-Mar-41	1-Jan-77	1-Mar-94	1669106.3 5	139092.19 58	53	dead
98	M	24-May-37	1-Sep-68	1-May-96	10950168. 75	912514.06 25	59	alive
99	F	26-May-43		1-Dec-94	189786.9	15815.575	51	dead
100	M	30-Jun-44	1-Jan-91	1-Jul-94	195416.35	16284.695 83	50	dead

101	F	18- Jan- 42	1-Jan- 88	18-Jan-02	191222.95	15935.245 83	60	alive
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