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Marital Survival in the Upper East Region of Ghana

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Abstract
Marriage is considered one of the key components of family life used to measure social cohesion and stability. Marriage and divorce are central to the study of living arrangements and family composition. Social and economic events as well as changes in cultural attitudes shape marital behavior, which then affect family life and other interactions.
The study used survival analysis to find the average duration of marriages for married couples in the Upper East region of Ghana. It further sought to find out if there was an association between marital survival and covariates such as education, religion, age prior to marriage, tribe, type of marriage and occupation. The research was carried out on a sample of four thousand and ninety four (4094) respondents, consisting of 2267 males and 1827 females using convenience sampling.
The study revealed that the average time to divorce for couples in the Upper East region of Ghana is forty–five (45) years. The best age of marriage for better marital survival is 19 to 25 years. The study also noted that religious and age difference did not influence couple's decision to divorce.
Keywords: Marriage, Survival Analysis, Censoring, Divorce, Upper East Region

1 Introduction

Marriage is a socially recognized and approved union between individuals, who commit to one another with the expectation of a stable and lasting intimate relationship. (Microsoft Encarta, 2009). The common assumption that longer life-spans mean longer marriages does not appear to be holding true especially in western industrialized nations. Instead, what is changing is the cause of the end of the marriage: from death to divorce. Thus the "rule" that marriage is an everlasting bond and ends only in death has changed. This has put marriage in jeopardy (Pinsof, 2002)
Divorce or dissolution is a legislatively created and judicially administered process that legally terminates marriage (Microsoft Encarta, 2009). Statistics offered by the majority of modern researchers indicates that divorce rates have generally soared throughout the world. This is however quite strange since prospective partners nowadays think more carefully before choosing their partners and parents no longer have the upper hand in the choice of the partners of their children as it used to be in the past (Ceridwen, 2002).
In modern times, marriage instability is on the increase. The frequency of divorce has caught the attention of researchers. Marriages now 'die' younger than before. Since marriage results in the formation of the most basic unit of community, marriage stability is of the utmost importance to one and all. The collapse of a single marriage is the collapse of a family and the demise of a whole community. The study therefore sought to find out the marital survival in the Upper East Region.
Researchers have done a great deal of work concerning divorce in various parts of the world. Though variations do exist between findings, all seem to follow a common trend. The variations could be attributed to various factors such as cultural differences, religion, values and statutory laws among others. On the average time to divorce, a consideration of extensive studies by various researchers show that they are not at variance regarding the average length of marriage before divorce. According to Pinsof (2002), approximately one-half of US marriages will end by divorce or separation before the couple's 20^{th} wedding anniversaries. An isolated research by Pearson (2004) seems to buttress the point. She claimed that less than 6% of Japanese divorces in 1975 were by couples married over 20 years. In the 1990s however, 17% were by couples married over 20 years.
Commenting on the likelihood of divorce in the US, Smith (2002) observed "the number US first marriages ending in separation or divorce is highest during the first five years of marriage". She continues that the likelihood of a ten year-old US first marriage ending in separation or divorce is 33%. Bramlett and Mosher (2002) affirmed these results as their research revealed that, 20% of US first marriages have been disrupted after five years, either because of separation or divorce whilst one-third of all America's first marriages have been disrupted after ten years by either separation or divorce. They however added that these rates varied considerably by ethnic group. They concluded that a near perfect stability is achieved after 20 years of marriage and that anything worse that happened after this period was considered strange.
Dale (2003) observed that, the average marriage in the United Kingdom lasted 11.3 years. In the USA it is on the average 8years (www.marriage.families.com).
The story is not too different in Greece, Bagavos (2001) observed that "Among divorced couples in the late 1990s, the mean number of years or how long the marriage lasted before the couples got the divorce in 1980 had

been 15 years". An article by Sue (2012) which discussed the average length of marriage prior to divorce made generous use of Terri Orbuch, PhD's findings in which he concluded that 10% of first marriages end in divorce in the first five years. According to him, marriage gets rocky between 16 and 20 years. Thus these researchers generally agree that after 20 years of marriage, stability is likely to be achieved. Researching on why the increase in divorce rate, Mozny and Tomas (2005) came out with an interesting discovery in his research conducted in Czech that age before marriage plays a vital role in marriage stability.

It is claimed that there are as many divorces as there are marriages in the Upper East region of Ghana (Daily guide, 2009). This is reflected partly as there are countless number of street children and orphans from the region. Many stream to the south in search of nonexistent jobs. It is in the light of this that it is deemed appropriate to conduct this study in the region to determine the average length of marriages in the region and to find out some of the factors that could contribute to divorce.

2. Materials and Methods

2.1 Data and Source

Convenience sampling technique was used to select four districts from the nine in the region since the research was both resource and time constrained. Respondents were then chosen at random from each of the villages under these districts. Primary data on the demographic characteristics such as the respondent's age, marital status, occupation, gender, educational background, religion and marital history of the respondents was gathered using interviews and questionnaires.

The population for this study involved individuals of any gender who were married, separated, divorced or remarried from the Kassena Nankana and Builsa Districts of Upper East Region of Ghana. The study was conducted on a sample of four thousand and ninety four (4094) respondents, consisting of 2267 males and 1827 females. The study considered all cases that had not experienced divorce or separation by the time of the study (1st October, 2012) censored. The Upper East Region is one of the youngest regions in Ghana, located at the north-eastern part. It is divided into nine (9) Districts and thirteen (13) constituencies. As at 2005, the population of the region stood at 972,000. Most people of Upper East region engage in farming activities. The research was conducted specifically in the Kassena Nankana West, Kassena Nankana East, Builsa North and Builsa South districts.

2.2 Survival analysis

Survival analysis pertains to a statistical approach designed to take into account the amount of time an experimental unit contributes to a study. That is, it is the study of time between entry into observation and a subsequent event (Smith & Smith, 2000). These events are usually defined as a transition from one discrete state to another at an instantaneous moment in time (which may be years, months, days, minutes, or seconds) (Allison, 1995). It is advantageous because it uses more information in developing estimates as compared to other methods.

The event of interest in this study is divorce or separation, thus the study sought to find the average time to divorce or separation. The unit of measurement of time here is years. The ability of survival analysis is to handle censoring which is the main feature of this data makes it a suitable statistical tool for the study.

2.3 Censoring

Censoring helps analyze incomplete data due to delayed entry or withdrawal from study. It allows each experimental unit to contribute all information possible to the model for the amount of time of its existence in the study. Hence an observation in this study is censored if it has not experienced separation or divorce prior to the study, in other words if it remarked as married under marital status.

Censoring comes in many different forms and occurs for many different reasons. However random censoring is used in this study since the study has no control over the entry exit times of observations. The time an individual gets married cannot be pre-determined, though for all the observations, the study ends at a specific time determined by the study (1st October, 2012), known as the censoring time.

2.4 Kaplan-Meier estimator

The Kaplan-Meier (KM) method or product-limit estimator was used in estimating the survivors function (probability of a marriage surviving beyond a certain time *t*), since the data set was ungrouped. Let *T* be the time to divorce or separation for a particular case, the survivors function *S(t)*, which is the probability of the case surviving beyond time t is given by;

$S(t) = Pr(T > t) = 1 - F(t)$

where $F(t)$ is the cumulative density function $(c.d.f.)$ of the variable T. $S(t)$ is a probability and is bounded between 0 and 1'

Given there are k distinct divorce times, $t_1 < t_2 < \cdots < t_k$. At each time t_j, there are a number of marriages n_j that could possibly end in divorce before the censoring time (1st October, 2012). Thus these cases are said to be

at risk of divorce. Let d_j be the number of divorce cases at time t_j. The KM estimator is defined as;

$\hat{S}(t) = \prod_{j:t_j \leq t} \left[1 - \frac{d_j}{n_j}\right]$ for $t_1 \leq t \leq t_k$

2.5 Comparing the Survivors functions

Survival functions can be estimated for different groups hence there is the need to verify whether or not these functions are the same for the various groups. Difference in survival functions for the different groups may be an indication that the grouping factor is a prognostic factor producing different survivals at different levels.

These different groups are compared using Non Parametric methods especially when the distributions are not defined at that stage. The Log-Rank test is one such non- parametric test of difference for survivals functions widely used. It measures the difference in the survival for the different groups at each given time. For a k factor group, it test the hypothesis that;

$H_0: S_1(t) = \cdots = S_k(t)$ for all t. Against the alternative; H_1: $not\ all\ S_j(t)\ are\ equal$, $j = 1,2, \ldots, k$.

Where $S_k(t)$ is the survival function for the j^{th} group.

This is tested as a chi-squared test which compares the observed number of failures to the expected number of failure under the hypothesis. Given O_j and E_j are the observed and expected number of divorce or seperations for the j^{th} group, the test statistic

$\chi^2 = \sum_{j=1}^{k} \frac{(O_j - E_j)^2}{E_j}$ has a chi-squared distribution with $k - 1$ degrees of freedom. A large chi-squared value will lead to the rejection of the null hypothesis in favor of the alternative that the k groups do not have the same survival distribution.

3. Results and Discussion

The overall average length of marriage was found to be 45 years. The probabilities of a marriage ending in a divorce or separation after five and ten years are respectively 0.1259 and 0.2052. These probabilities are relatively lower as compared to those recorded for U.S. BY Bramlett and Mosher in their study due to geographical and cultural differences. The survival probabilities of fifteen and twenty year old marriages are respectively 0.7423 and 0.6898. The survival probabilities of thirty and forty year old marriages are 0.6193 and 0.5218 respectively. After 72 years of marriage the probability of divorce or separation is 0.1474 as shown in Fig 1.

A test of equality over strata indicates that the survival time for marriages varied for the different categories in all the variables (education, religion, age prior to marriage and tribe) tested as shown in Table 1. The average time to divorce for respondents with basic education was found to be 55years, whilst that for respondents with secondary education was 40 years. Thus marriages involving individuals with basic education tends to last longer than that for respondents with secondary education as shown in Table 2. This could be attributed to the fact that 78.02% of the entire data was censored as they had neither experienced divorce nor separation as at the time of the study, as shown in Table 3. This implies that the situation in these district falls outside the norm of 20years as established by most researchers in the field. This could probably be due to difference in the geographical locations of the studies.

Christian marriages survived averagely for 50 years, Muslim marriages averagely survive for 32 years whilst traditional marriages averagely survive for 40years as depicted in Table 2. This may be attributed to the various religious believes on marriage. The average time to divorce was 42 years for individuals entering the institution of marriage between the ages of 26 and 35 years, whilst it was 50years for individuals entering this institution between the ages of 19 and 25 years. It was however 40 for individuals aged 18 and below entering this institution as shown in Table 3. About 78.02% of the total data was censored.

A test to determine if there is an association between the average length of marriage and the covariates (education, religion, age prior to marriage, tribe, type of marriage and occupation) was significant for religion, age prior to marriage and tribe. The rest were insignificant as shown in Table 4. This implies religion, age prior to marriage and tribe of an individual had a significant association with the length of marriage and thus agrees with Mozny and Tomas (2005) conclusion that age before marriage plays a vital role in marital stability. From the results a negative relationship between age prior to marriage and length of marriage has been established. Thus the younger an individual at the time of marriage the more the time the individual is likely to spend in the marriage before an eventual divorce.

4. Conclusion

The study sought to determine on the average how long a marriage is likely to last in the Kassena Nankana and Builsa districts of the Upper East Region. It further sought to find out if there was an association between the average length of marriage and covariates such as education, religion, age prior to marriage, tribe, type of marriage and occupation.

The average time to divorce for the districts was found to be 45 years and it varied for individuals of different religious believes, tribes, occupations, educational levels, type of marriage and the age prior to marriage of the individual. The average time to divorce for an individual who got married between the ages of 19 and 25 is 50years whilst that for an individual getting married at an age 18years and below is 40years.
Of all the covariates tested, religion, age prior to marriage and tribe of an individual were observed to have a significant relationship with the average length of marriage. It was realised that the earlier an individual gets into marriage the more time the individual is likely to spend in the marriage.

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Table 1: Log-Rank Test of Equality over Strata

variable	Chi-Square	DF	Pr > Chi-Square
religion	19.0617	3	0.0003
education	16.1593	3	0.0011
Age married	13.2427	5	0.0212
education	16.1593	3	0.0011
tribe	11.1068	5	0.0493

Table 2: Summary Statistics of Time to divorce or separation

Quartile Estimates							
Variable	Stratum	Percentage	Point estimate	95% Confidence interval		Mean	Standard Error
				Lower	Upper		
entire data		75	72	67	*	42.4761	1.0627
		50	45	40	53		
		25	15	14	17		
Religion	Christian	75	*	*	*	35.4177	0.6252
		50	50	40	*		
		25	18	15	20		
	Muslim	75	*	*	*	28.5254	7.08
		50	32	25	*		
		25	12	10	16		
	Traditionalist	75	67	57	72	39.2236	1.5936
		50	40	35	53		
		25	11	10	15		
	others	75	*	*	*	9.1077	0.7344
		50	*	10	*		
		25	*	2	*		
education	None	75	72	67	*	43.5366	1.2665
		50	45	40	57		
		25	17	15	20		
	basic	75	72	55	*	36.5584	1.0373
		50	45	37	*		
		25	15	12	18		
	Secondary	75	*	42	*	27.9041	1.0219
		50	40	25	*		
		25	10	8	15		
	tertiary	75	*	*	*	23.8859	0.7077
		50	*	28	*		
		25	19	12	28		

Table 3: Summary Statistics of Time to divorce or separation

Quartile Estimates							
Variable	Stratum	Percentage	Point estimate	95% Confidence interval		Mean	Standard Error
				Lower	Upper		
Agemarried	< 18	75	67	45	*	41.8283	2.4553
		50	40	39	45		
		25	24	18	25		
	19-25	75	*	*	*	38.2084	0.7795
		50	50	40	*		
		25	18	15	20		
	26-35	75	*	*	*	31.0443	0.692
		50	42	37	*		
		25	12	10	15		
	36-40	75	*	*	*	15.0102	0.8127
		50	*	14	*		
		25	10	6	14		
	41-60	75	*	*	*	13.968	1.3873
		50	*	8	*		
		25	5	3	19		
	> 60	75	*	*	*		
		50	*	*	*		
		25	*	*	*		
Tribe	Buisa	75	67	57	67	40.4601	1.8828
		50	46	39	67		
		25	16	12	20		
	Grushie	75	*	37	*	26.2323	2.8438
		50	37	15	*		
		25	15	4	37		
	Grusi	75	55	37	55	33.8076	2.7022
		50	37	30	55		
		25	11	8	19		
	Dagomba	75	72	40	72	38.8826	3.7063
		50	40	30	44		
		25	16	8	30		
	kassena	75	*	*	*	36.5665	0.6536
		50	50	45	*		
		25	16	13	20		
	Others	75	*	40	*	25.6288	1.4069
		50	32	20	40		
		25	14	9	15		

Table 4: Univariate Chi-Squares for the Wilcoxon Test

Variable	Test Statistic	Standard Error	Chi-Square	Pr > Chi-Square
education	-20.7496	23.5289	0.7777	0.3778
Religion	-88.0299	22.1854	15.7444	<.0001
age married	-63.8272	18.2049	12.2924	0.0005
Tribe	**-75.0764**	**36.8943**	**4.1408**	**0.0419**
type marriage	**-9.9738**	**17.8015**	**0.3139**	**0.5753**
occupation	**25.2988**	**25.2988**	**0.9505**	**0.3296**

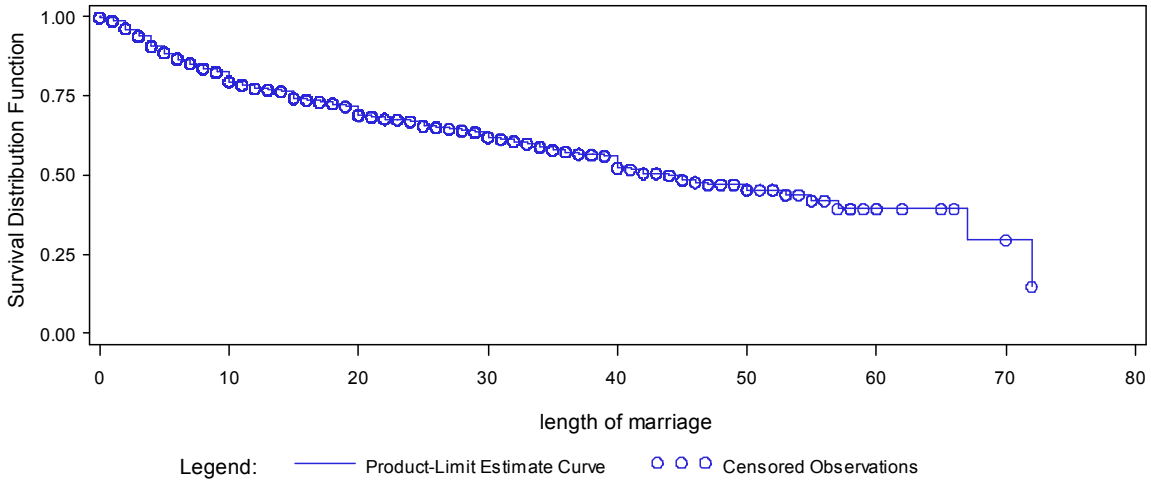

Fig. 1: Plot of the survivor function for average time to divorce.

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