

# Average Time to Justice Delivery; A Case Study in the Upper West and East Regional District and Circuit Courts in Ghana

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## Abstract

In this study, survival analysis was used to determine the average time to justice delivery in law courts for the Upper East and Upper West regions of Ghana. The study revealed that the average time to justice delivery was 103 days. Four major factors were found to contribute significantly to the average time to justice delivery. These were; the type of court handling the case, the type or nature of case, the occupation of the accused and the number of subsequent hearings. Also, it was evident from the study that cases terminated faster in Upper East courts as compared to the Upper West courts. Finally, it was found that civil cases tend to have shorter life spans than criminal cases.

**Keywords:** Justice Delivery, Survival Analysis, Censoring, Court

## 1. Introduction

The right to a fair hearing within a reasonable time by a court when charged with a criminal offence and to a *speedy* and public trial in all criminal prosecutions are some of the basic rights guaranteed by the 1992 constitution of the Republic of Ghana. The word *speedy* is emphasized so that an accused would not languish in prison for a long time prior to the trial or have his or her fate put off for an unduly long period of time. Although this word has been defined in various ways by the Supreme Courts, in the United State, Congress gave new meaning to the term when it passed the Speedy Trial Act of 1974 (<http://www.america.gov>, 2008). The act mandated time limits, ultimately reaching 100 days, within which criminal charges must either be brought to trial or dismissed. Most states have similar measures on the statute books, although the precise time period varies from one jurisdiction to another.

Investigating the average time to justice delivery in the law court is vital for judicial reforms in justice delivery system. A number of studies have been carried out on justice delivery all over the world. Sinha (2004) concluded in his study on judicial reforms in justice delivery system that failure of the judiciary to deliver within a time frame leads to a sense of frustration among lawyers and litigants. The national statistics department of the ministry of justice, United Kingdom employed time series analysis to obtain the interval from arrest to charge. This study was undertaken to monitor the pledge by the Government in its manifesto in 1997 to halve the average time from arrest to sentence for persistent young offenders in England and Wales from 142 days in 1996 to 71 days and were based on annual data collected from the police national computer over the period 1997 to 2007 and monthly data of 2008 of all cases sentenced in magistrates' courts and the Crown Court in England and Wales that are recorded on the Police National Computer. The study revealed the average time from arrest to sentence for persistent young offenders (PYOs) in England and Wales was 57 days in 2008 and the overall average time from arrest to sentence for cases sentenced in magistrates' courts was 47 days in 2008. Cases sentenced in the Crown Court however took an average of 206 days from arrest to sentence in 2008 ([www.justice.gov.uk](http://www.justice.gov.uk), 2008).

A similar study was made by Farzana (2007) of the economics and statistics division of the ministry of justice and performance directorate in her majesty's court service. The study on criminal justice was to determine the time intervals from offence or arrest to completion, from offence to charge or laying of information, from charge or laying of information to first listing and from first listing to completion. Farzana reported that, the average time from offence to completion for indictable cases was 111 days, the average time from offence to charge or laying of information was 56 days, the average time from charge or laying of information to first listing was 8 days, the average time from first listing to completion was 47 days and an average of 2.1 adjournments for indictable/triable either way cases, the average length of adjournments was 23 days.

This study thus employs survival analysis to determine the average time to justice delivery. That is the time from the arrest to sentence for criminal cases and from filing of writ to judgment in civil cases, for all (closed, pending and withdrawn) cases within the one year period considered.

## 2. Materials and Methods

secondary data on; the date a case is first reported (or an arrest is made) in criminal cases or a writ is filed in civil cases, the age, sex, religion and occupation of the accused, date of first hearing of the case in court, the number of subsequent hearings, the date of the last hearing (or of judgment) to time and the remark (thus the status of the case; withdrawn, pending or closed) were obtained on cases opened and worked on within a year period by the Wa and Bolgatanga District and Circuit courts for the year 2009.

The data was obtained for cases opened and handled between 2<sup>nd</sup> January 2009 and 31<sup>st</sup> December 2009 in these courts. If a case did not end by the 31<sup>st</sup> of December 2009 (which is the censoring time) it is remarked as pending whilst those cases on which judgment was pronounced before or by 31<sup>st</sup> December 2009 were remarked as closed. The study considered justice delivered the moment a judgment is passed on a case irrespective of the nature of form or as to whether the parties are satisfied or not thus appeal cases were not considered. All withdrawn and pending cases were censored in the study.

The Wa and Bolgatanga municipalities are the regional capitals of the Upper West and East regions of Ghana with populations of 224,066 and 228,815 and a growth rate of 1.7% and 1.1% respectively (population & housing census report 2000).

Wa makes up 38.95% of the total population of the Upper West region whilst Bolgatanga makes up 24.9% of the total population of the Upper East region.

### 2.1 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)).

The event of interest in this study is the passing of judgment, thus the study sought to find the time between the reporting of a case (or filing of writ) and pronouncement of judgment. The unit of measurement of time here is days.

The ability of survival analysis is to handle censoring which is the main feature of this data is what makes it the choice of the statistical tool for the study.

### 2.2 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 is either remarked as withdrawn or pending.

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 time of observations. The time a crime is committed or a writ is filed cannot be controlled, hence the entry time of an individual to the study cannot be pre-determined, though for all the observations, the study ends at a specific time determined by the study (2<sup>nd</sup> January, 2010), known as the censoring time.

### 2.3 Kaplan-Meier estimator

The Kaplan-Meier (KM) method or product-limit estimator was used in estimating the survivors function (probability of a case surviving or being judgment-free beyond a certain time  $t$ ), since the data set was quite small and ungrouped. Let  $T$  be the time to judgment 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 judgment times,  $t_1 < t_2 < \dots < t_k$ . At each time  $t_j$ , there are a number of pending cases  $n_j$  that could possibly end (have judgment pronounced on them) before the 31<sup>st</sup> December 2009 (censoring time). Thus these cases are said to be at risk of judgment. Let  $d_j$  be the number of cases that received judgment at time  $t_j$ . The KM estimator is then defined as;

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

### 2.4 Parametric regression models

The regression model was estimate using the method of maximum likelihood. This accommodates all types of censoring data and also enables us to test certain hypothesis about the shape of the hazard function.

Let  $T_i$  be a random variable denoting judgment time for the  $i^{th}$  case in the sample, and let  $x_{j1}, \dots, x_{j7}$  be the values of 7 covariates (the age, sex, religion and occupation of the accused, the type of case, type of court and number of subsequent hearings) in the case. The model is;

$$\log T_i = \beta_0 + \beta_1 x_{i1} + \dots + \beta_7 x_{i7} + \sigma \varepsilon_i$$

Where  $\varepsilon_i$  is a random disturbance term, and  $\beta_0, \dots, \beta_7$  and  $\sigma$  are parameters to be estimated.

The parameters of the model were estimated using the method of maximum likelihood estimation.

### 3. Results and Discussion

The overall average time to justice delivery was found to be 103 days. This time varied across the regions with Upper West recording the highest of 184 days and Upper East recording the lowest of 86 days as illustrated by table 1. Thus, cases in Upper West tend to keep longer in obtaining judgment than those in Upper East. This was due to the fact that most (63.5%) of the data from the Upper West region was censored as most of the cases were still pending as at the time of data collection as shown in Table 2. This was attributed to factors such as the poorly equipped nature of the Upper West regional courts and the in disposal of the judge of the Upper West circuit court judge for some time. The average time from start of a civil case irrespective of the court to its end was observed to be 87 whilst that for a criminal case was 109 as shown in Table 1. It was also observed that irrespective of the type of case, on the average, district courts ended or delivered justice within 179 days whilst circuit courts used 76 days.

Average time to justice delivery in the various courts was observed to have varied from case to case as illustrated in Table 1. Criminal cases in district courts were found to have recorded the highest of 227 days followed by civil cases in district courts. Criminal cases in circuit courts recorded the lowest of 76 days. It was however observed that none of the civil cases sent to the circuit courts has had judgment passed on it at the time of the study.

The probability of a case closing within a day or a week after it is being reported for criminal cases was small (failure rates of 0.02 and 0.11 respectively). This was however better than that of a civil case, where there was no chance (failure rates of 0) of the case ending on the same day and a relatively smaller chance (failure rates 0.03) of it ending a week after the filing of writ as shown in Fig.1. However, the average time to justice delivery for civil cases was 87 days whilst that for criminal cases was 109 days as illustrated by table 1. This can be attributed to factors such as the delay in finding evidence.

In general, cases survive longer in district courts (with survival time of 179 days) than in circuit courts (with survival time of 55 days) as depicted in Table 1. This may be due to the fact that one of the circuit courts was inactive.

The average time to justice delivery for civil cases in district courts was 79 days, that for criminal cases in district courts was 227 days and for criminal cases in circuit courts was 75 days as indicated in Table 1. It was however realized that all civil cases reported in the circuit courts were still pending at the time of data collection and hence censored as shown in table 2.

The parametric model was chosen over the semi parametric model since it tested the hypothesis about the shape of the hazard function and hence was easier to interpret unlike the semi parametric model which gives only the nonparametric estimates of the survivor function, which could be difficult to interpret.

Though so many survival distributions were tried, the gamma distribution fitted best since it had the highest log-likelihood as illustrated in Table 3. The variables that accounted for the average time to justice delivery were; the type of court (court), the type of case (type), the occupation of the accused (occupation) and the number of subsequent hearings (subh) as indicated in Table 4. Hence, the parametric regression model for the average time to justice delivery followed a gamma distribution and was given as;

$$y = e^{5.0434 - 0.6294x_2 - 0.9834x_4 - 0.7525x_6 - 1.1896x_8 + 0.4249x_9 + 0.1875x_{10}}$$

From the model it was deduced that controlling for other covariates; the average time to justice delivery for cases in the circuit court was 229% less than those in the district court. The average time to justice delivery for criminal cases was 52% greater than that for civil cases controlling for other covariates. However, every additional hearing was associated with a 21% increase in the average time to justice delivery. This may be attributed to the fact that higher number of subsequent hearings was associated with complex cases such as; rape, defilement, murder, etc., most of which were still pending and hence censored.

Also, the average time to justice delivery for traders was 47% less than others, that for drivers was 62% less than others whilst that for students and unemployed was 53% less than others. A residual plot of the gamma distribution to test the fitness of the model using the Cox-Snell residual plot for the data indicates the model fitted is correct since the residuals have an exponential distribution with parameter  $\lambda = 1$  and the resulting graph is a straight line with slope of 1 and an origin 0 as illustrated in Fig. 2.

## 5. Conclusion

The study sought to determine the average time it takes for judgment to be passed on a case after it has been reported or after a complaint has been made (average time to justice delivery) for the entire data, for the various regions, courts, types of cases and the cases in the courts. It also sought to come out with a model to determine the average time to justice delivery.

The average time to justice delivery for the entire data was found to be 103 days and that for the Upper West and East regions were respectively found to be 184 and 86 respectively. Criminal cases tend to have longer life spans in courts than civil cases with their average times to justice delivery being 107 and 79 respectively.

Of all the survival distributions tried, the gamma distribution fitted best. The variables that accounted for the average time to justice delivery were; the type of court (court), the type of case (type), the occupation of the accused (occupation) and the number of subsequent hearings (subh).

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**Table 1: Summary Statistics of Time from the start of a case to finish**

Quartile Estimates											
Variable	Stratum	Percentage	Point estimate	95% Confidence interval		Mean	Standard Error				
				lower	Upper						
Entire data		75	230	179	310	136.12	6.64				
		50	103	81	123						
		25	35	27	42						
Region	Upper West	75	*	*	*	123.02	6.84				
		50	184	101	*						
		25	57	42	81						
	Upper East	75	179	179	181			114.87	7.08		
		50	86	57	109						
		25	27	18	38						
type of case	Civil	75	*	256	*	129.57	11.97				
		50	87	49	256						
		25	28	19	41						
	Criminal	75	195	179	310			135.9	7.42		
		50	109	88	126						
		25	38	26	52						
Court	District	75	*	310	*	172.51	10.18				
		50	179	101	310						
		25	42	37	57						
	Circuit	75	179	133	179			103.98	7.84		
		50	76	55	107						
		25	20	8	33						
Cases in courts	Civil cases in District Court	75	*	256	*	129.57	11.97				
		50	87	49	256						
		25	28	19	41						
	Criminal cases in District Court	75	*	310	*			196.24	13.68		
		50	227	125	*						
		25	79	53	101						
	Criminal cases in Circuit Court	75	179	133	179					103.98	7.84
		50	76	55	107						
		25	20	8	33						

\*: Means that the percentile does not exist

**Table 2: Summary of Censoring for the data**

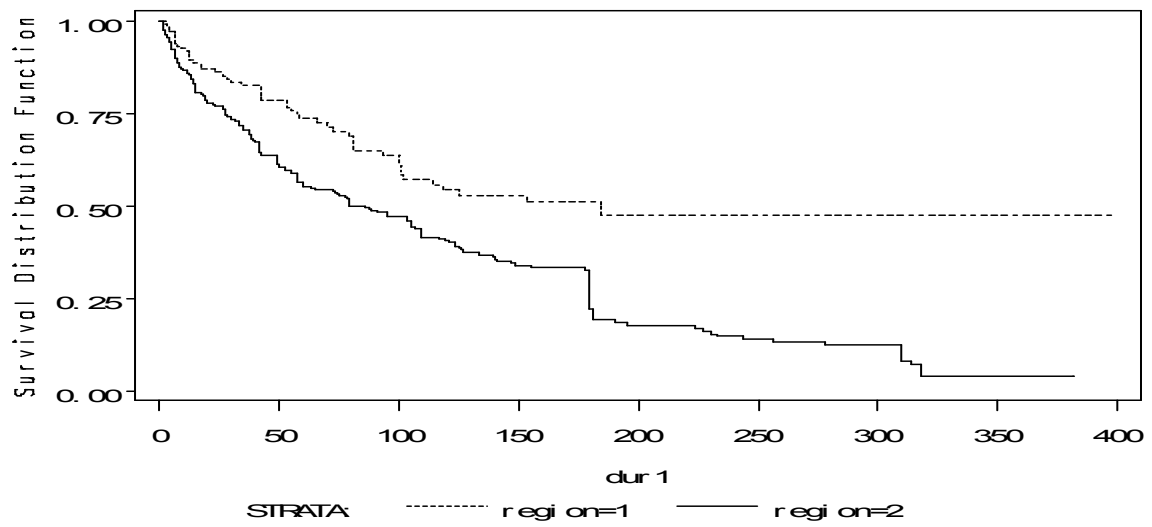
Variable	Stratum	Total	Failed	Censored	%Censored
Entire data	<b>Total</b>	<b>366</b>	<b>239</b>	<b>127</b>	<b>34.7</b>
Region	Upper West	137	50	87	63.5
	Upper East	229	189	40	17.47
	<b>Total</b>	<b>366</b>	<b>239</b>	<b>127</b>	<b>34.7</b>
Type of case	Civil	93	51	42	45.16
	Criminal	273	188	85	31.14
	<b>Total</b>	<b>366</b>	<b>239</b>	<b>127</b>	<b>34.7</b>
Court	District	212	94	118	55.66
	Circuit	154	145	9	5.84
	<b>Total</b>	<b>366</b>	<b>239</b>	<b>127</b>	<b>34.7</b>
Case in Courts	civil cases in District Courts	93	51	42	45.16
	criminal cases in District Courts	119	43	76	63.87
	criminal cases in Circuit Courts	154	145	9	5.84
	<b>Total</b>	<b>366</b>	<b>239</b>	<b>127</b>	<b>34.7</b>

**Table 3: Log Likelihood for the various distributions**

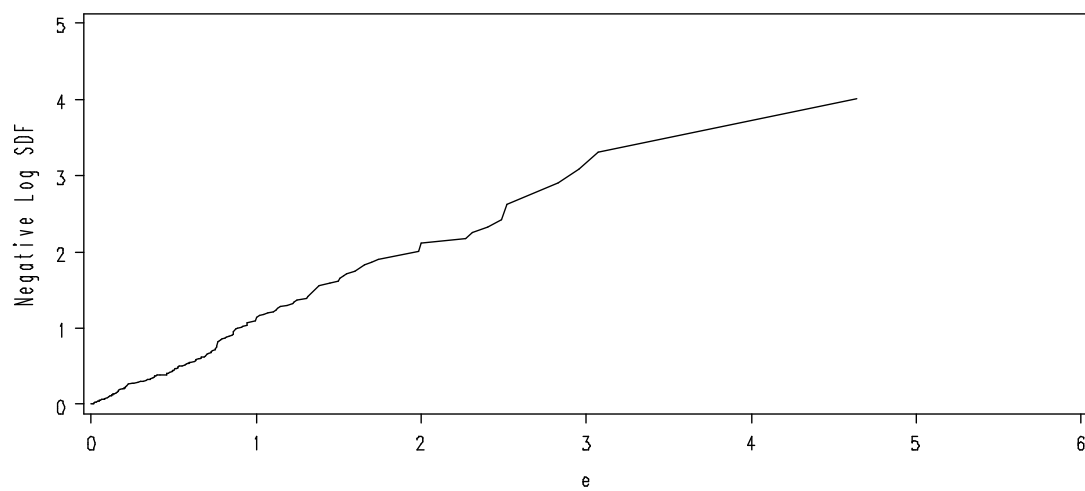
Name of Distribution	Log Likelihood
Gamma	-386.4717
Weibull	-390.4083
Exponential	-393.4868
Lognormal	-392.4353
LogLogistic	-386.4435

**Table 4: Analysis of Parameter Estimates for the parametric regression model**

Parameter	DF	Estimate	Standard Error	95% confidence Limits		Chi-Square	Pr > Chi Square
Intercept	1	5.0434	0.2814	4.4918	5.5950	321.14	<.0001
Civil servant ( $x_1$ )	1	-0.3226	0.2285	-0.7705	0.1252	1.99	0.1579
Trader ( $x_2$ )	1	-0.6294	0.1856	-0.9931	-0.2657	11.50	0.0007
Artisan ( $x_3$ )	1	-0.4905	0.2977	-1.0740	0.0931	2.71	0.0995
Driver ( $x_4$ )	1	-0.9834	0.2433	-1.4602	-0.5066	16.34	<.0001
Farmer ( $x_5$ )	1	-0.2836	0.2003	-0.6761	0.1090	2.00	0.1568
Unemployed ( $x_6$ )	1	-0.7525	0.2224	-1.1883	-0.3167	11.45	0.0007
Others ( $x_7$ )	0	0.0000	.	.	.	.	.
Court ( $x_8$ )	1	-1.1896	0.1586	-1.5004	-0.8788	56.28	<.0001
TYPE ( $x_9$ )	1	0.4249	0.1857	0.0609	0.7888	5.23	0.0221
SUBH ( $x_{10}$ )	1	0.1875	0.0139	0.1602	0.2147	181.39	<.0001
Scale	1	0.9249	0.0616	0.8117	1.0539		
Shape	1	0.5893	0.1618	0.2723	0.9064		



**Fig. 1: Plot of the survivor function for average time to justice delivery for the two region**



**Fig 2: Residual plot of gamma distribution.**



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