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Understanding Criminal Victimization in Jamaica

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ABSTRACT

This paper explores the hypothesis that crime in Jamaica is sporadic and random in nature. It employs both univariate statistical techniques and logistic regression analysis to determine if the incidence of criminal victimization varies based on selected socio-economic and demographic factors. The preliminary findings supports the position that criminal victimization, rather than being random and sporadic in nature, has well defined social, economic and demographic characteristics which vary with the type of crime being committed. The findings also suggest that criminal victimization is not concentrated in one specific region but that it is widespread across Jamaica.

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Introduction

This paper assesses criminal victimization in Jamaica by utilizing survey data from the Jamaica Survey of Living conditions (JSLC) in the 2002 which attempted to use victims of crime as the primary source of information. The data was gathered from surveys for 5 318 households out of 9 656 households island wide during June - October 2002. The survey focused on criminal victimization and perceptions of household safety over a 12 month period. Information was gathered based on reported crimes of murder, shooting, burglary, sexual assault/rape and attacks with or without weapons.³

This paper explores the hypothesis that crime in Jamaica is sporadic and random in nature. It does so by using empirical techniques to answer the following questions:-

- i) What specific types of socio-economic and demographic factors, if any, contribute to the overall levels of criminal victimization?
- ii) How much do specific socio-economic and demographic factors contribute incrementally to the odds of a family being a specific type of victim when one controls for other factors?
- iii) How does the overall probability of being exposed to a specific type of victimization vary with changes in socio-demographic and economic factors?

In order to explore the first question the research creates an index of overall victimization for each household in the sample and evaluates whether there are statistically meaningful differences in the mean scores as a function various socio-economic and demographic factors. In relation to the evaluation of the dynamics of specific forms of victimization a two pronged approach is employed. Firstly, univariate statistical techniques are used to determine if the incidence of specific types of criminal victimization vary based on selected socio-economic and demographic

³ This survey was undertaken by the Statistical Institute of Jamaica and the Planning Institute of Jamaica. The datasets used in this assessment are archived by the Sir Arthur Lewis Institute of Social and Economic Studies, UWI.

factors.⁴ Secondly, and perhaps more importantly a multivariate statistical technique is employed to explore specific types of criminal victimization in Jamaica. The types of criminal victimization that are explored include burglary, murder and rape. Specifically, logistic regression models are used to detect whether specific patterns in the characteristics of the households surveyed had an impact on the likelihood of being a victim of specific types of violent criminal activities.

The preliminary findings supports the position that criminal victimization, rather than being random and sporadic in nature, has well defined social, economic and demographic characteristics which vary with the type of crime being committed. The findings also suggest that criminal victimization is not concentrated in one specific region but that it is widespread across Jamaica. The empirical analysis also underscores the fact that marital status impacts on the vulnerability of households to criminal victimization in general. Interestingly, burglars tend to target families which have unmarried household heads, have high levels of income, and do not have an unattached youth present in the household. The preliminary findings also suggests that if a household lives in the KMA region and has a household head who is unmarried then as their expenditure and family size increases then so too do their chances of having a family member murdered. Finally, the two factors which characterized a household which had experienced a case of rape were the marital status of the household head and the presence of a teenage pregnancy.

The rest of the paper is as follows, **Section 1** looks at the socio-demographic and economic characteristics of the entire sample of Jamaican household heads that were surveyed. **Sections 2** and **Section 3** then conducts the empirical assessment of the relationship between victimization and the factors of interest, including but not limited to, marital status of the household head, the geographic region of the household, the size of the household, the highest level of education of the household head, the household expenditure (nominal), the ownership status of the house of dwelling and the gender of the household head. The paper concludes in **Section 4** with a

⁴ This section uses the Chi-square test to determine whether statistically meaningful differences exist between occurrences of specific types of victimization and the aforementioned factors. This test does not, however, indicate the strength of those differences nor does it control for the impact of other factors.

summary of the major findings emerging from the assessments conducted the preceding two sections.

1.0 Socio-Economic and Demographic Characteristics of the Population

1.1. Gender of Household Heads

Of the 5 318 household heads surveyed, the majority 3 001 (**56.4 per cent**) were headed by males. This was primarily influenced by the outturn in the Rural Areas where **59.9 per cent** of the households were headed by males. In Other Towns and the KMA region some **52.9 per cent** and **49.0 per cent** of households were headed by males, respectively. (See **Table 1.1.1**)

Table 1.1.1 Gender of Household Heads by Geographic Region

	KMA	Other Town	Rural	Total
Female	539	454	1324	2317
Per cent (%)	51.0	47.1	40.1	43.6
Male	517	509	1975	3001
Per cent (%)	49.0	52.9	59.9	56.4

1.2. Age Profile of Household Heads

The age distribution of household heads was skewed to the right with a mean age of **49.1 years** being larger than the median age of **46.0 years** and the modal age of household head of **36.0 years**. The distribution of the age of household heads was flatter than a normal distribution (platykurtic) with a negative kurtosis of **-0.775** and the dispersion of age, as measured by the range, was **81 years**. Accordingly, **34.6 per cent** of household heads were between the ages of 52 and 77 years and **32.9 per cent** of households were between the ages of 36 and 41 years (see **Table 1.2.1**).

Table 1.2.1 Distribution of Household Heads by Age Cohort

Age Groups	Frequency	Percent	Cumulative Percent
16 - 35 years	1365	25.6	27.0
36 - 51 years	1747	32.9	58.5
52 - 77 years	1842	34.6	93.2
78 - 97 years	363	6.8	100

1.3 Household (Nominal) Consumption and Poverty

The distribution of household consumption was multi-modal and skewed to the right with an average consumption of **J\$96 120.94 per month** and a median consumption expenditure of **J\$66 824 per month**. The distribution of consumption expenditure leptokurtic with a positive kurtosis of **53.71** indicating that there more observations of extreme low levels of consumption as well as many observations of extremely large levels of consumption relative to the normal distribution. Analyzing the data we note that the highest decile consumed 6.7 times that of the lowest decile. Specifically, the first decile consumed **J\$28 011.7** per month while the tenth decile consumed **J\$188 140.4** per month.

For households in the highest quintile (High Income) the KMA has the largest proportion of households (**37.1 per cent**) and the Rural Area had the lowest proportion (**13.2 per cent**). However, for the Middle Income category (the third quintile), the pattern was reversed with the Rural Area having the highest proportion (**21.0 per cent**) and the KMA region had the lowest proportion of households (**17.9 per cent**).⁵

⁵ These differences were found to be statistically significant at the 1.0 per cent level using the Pearson Chi-square test as well as the Likelihood ratio.

Table 1.3.1 Household Wealth by Region

	Area Code		
	KMA	Other Town	Rural
Very Low Income	8.1	14.7	25.4
Low Income	12.4	19.2	22.7
Middle Income	17.9	18.8	21.0
Upper Middle Income	24.4	22.6	17.8
High Income	37.1	24.6	13.2

The data also revealed that **16.3 per cent** of households (863 households) lived below the poverty line. Poverty was most prevalent in the Rural Areas recording a poverty rate of **20.1 per cent** and was lowest in the KMA region with a poverty rate of **6.7 per cent** (see **Table 1.3.2**).^{6,7}

Table 1.3.2 Proportion of Households Living Below the Poverty Line by Region

	Area Code			Total
	KMA	Other Town	Rural	
Below the Poverty Line	71	133	659	863
Per cent (%)	6.7	13.9	20.1	16.3
Total Number of Households by Region	1053	956	3283	5292

⁶ These differences were found to be statistically significant at the 1.0 per cent level using the Pearson Chi-square test as well as the Likelihood ratio.

⁷ There was no statistically significant difference in the status of households living below the poverty line by gender.

1.4 Household Size

Most households reported having only 1 member whereas the median size was **3** persons and the mean size of **3.4 persons**. Approximately **23.0 per cent** of the sample reported being a single member household whereas close to 50.0 per cent (**48.8 per cent**) report having household sizes between 2 and 4 members (see **Table 1.4.1**). Only **5.5 per cent** of families surveyed reported have more than 7 members. Not surprisingly, as anecdotal evidence would suggest, most of the families with more than 7 members lived in the Rural Areas and most of the families with 2 to 4 members lived in the KMA region.⁸

1.4.1 Size of Household (Primary Family Only)

Size of Household	Frequency	Percent	Cumulative Percent
Single member	1247	23.4	23.4
2 – 4 members	2596	48.8	72.3
5 – 7 members	1181	22.2	94.5
Over 7 members	294	5.5	100.0

1.5 Highest Level of Educational Attainment of Household Head

Of note, **85.5 per cent** of household heads reported not having any formal education while **0.8 per cent** reported having between a Grade 9 and Junior High level of Education. Only **6.3 per cent** of respondents reported having a Tertiary Level and above education and **7.4 per cent** indicated a CXC Basic to A-level educational training. Some **91.0 per cent** of household heads in the Rural Areas reported having no formal education compared to **70.4 per cent** of household heads in the KMA region. Similarly, the KMA region has the largest proportion of household heads with Tertiary Level and above education, **15.7 per cent**, compared to **8.8 per cent** for Other Towns and **2.8 per cent** for the Rural Area (see **Table 1.5.1**).⁹ A higher proportion of

⁸ Table showing Household size by Region is available from the Author upon request.

⁹ These differences were found to be statistically significant at the 1.0 per cent level using the Pearson Chi-square test as well as the Likelihood ratio.

females tended to be educated relative to their male counterparts with similar levels of education. These differences were found to be statistically significant at the **5.0 per cent level** using the Pearson Chi-square test as well as the Likelihood ratio.¹⁰

Table 1.5.1. Highest Level of Education for Household Head by Region

	Geographic Region			All Regions
	KMA	Other Town	Rural	
None (Per cent)	684 70.4	751 82.0	2925 91.0	4360 85.5
Grade 9 - Junior High (Per cent)	128 0.7	73 1.2	176 0.7	377 0.8
CXC Basic - A-Level (Per cent)	128 13.2	73 8.0	176 5.5	377 7.4
Tertiary & Above (Per cent)	152 15.7	81 8.8	89 2.8	322 6.3

1.5 Location of and Ownership of Dwelling

Most of the respondents indicated that they were from the Rural Areas in Jamaica (**62.0 per cent**) while the rest of the respondents were fairly evenly distributed between the KMA region and Other Towns representing **19.9 per cent** and **18.1 per cent**, respectively. With regard to the ownership status of the dwelling most of the respondents (**63.6 per cent**) indicated that they owned their place of residence while **18.0 per cent** indicated that they Squatted or had some other arrangement. Some **18.4 per cent** of respondents indicated that they Rented their place of residence.

Table 1.5.1 Ownership status of Dwelling by Geographic Region

	Geographic Region			
	KMA	Other Town	Rural	Total
Owned	473	538	2366	3377
Per cent	45.0	55.9	71.9	63.6
Rented	379	225	371	975
Per cent	36.0	23.4	11.3	18.4
Squatter	200	200	554	954
Per cent	19.0	20.8	16.8	18.0

In terms of ownership of dwelling by region, the survey revealed that **71.9 per cent** of household heads owned their own home resided in the Rural Areas while **45.0 per cent** of those persons in the KMA Area indicated that they owned their own home. Squatting was most prevalent in Other Town with an incidence rate of **20.8 per cent** and least prevalent in Rural Areas with an incidence rate of **16.8 per cent**. Rental arrangements were most common (**36.0 per cent**) in the KMA area (see **Table 1.5.1**). Interestingly, of the 379 persons within the KMA area that rented **41.4 per cent** were between the ages of 16 and 36 years and **81.8 per cent** were below the age of 51 years. Conversely, of the 473 persons within the KMA area that owned their dwelling **17.3 per cent** were between the ages of 16 and 36 years and **85.5 per cent** of the household with household heads between the ages of 36 and 77 years owned their own home.

1.5 Marital Status of Household Head

Some **57.0 per cent** of household heads reported that they were never married, while **28.8 per cent** indicated that they were Married, and **1.5 per cent** of household heads indicated that they were divorced.

2.0 Understanding Criminal Victimization in Jamaica

2.1 The Relationship between an Overall Index of Victimization and Socio-Demographic and Socio-Economic Factors

This section evaluates the relationship between a general index of victimization and various socio-demographic and socio-economic factors.¹¹ The socio-demographic and economic factors used in the assessment include the marital status of the household head, the geographic region of the household, the size of the household, the highest level of education of the household head, the household expenditure (nominal), the ownership status of the house of dwelling and the gender of the household head.¹²

2.1.1 The Victimization Index and Marital Status

Table 2.1.1. The Relationship between the Victimization Index and Marital Status

Marital Status	Mean Victimization Score	N	Std. Deviation
Married	0.136	1523	0.823
Never Married	0.2169	3010	1.097
Divorced, Separated and Widow	0.0887	748	0.520

The victimization score for household head who were never married was **0.2169** and was higher than the victimization score for household heads who were married and those who were divorced, separated and widowed with scores of **0.136** and **0.0887**, respectively. The Levene

¹¹ See Appendix B for the procedure used to derive this general index of victimization.

¹² Only the factors that yield statistically meaningful inferences about the relationship between socio-demographic and socio-economic factors are reported here. The tables for the other factors are included in Appendix C.

Statistic of the test of Homogeneity of Variances was 26.213 and the level of significance of 0.000 hence the Tamhane’s test was employed to determine if there were statistically significant differences between the categories. Based on the Tamhanes test one can conclude that household heads who are Unmarried are more likely to be victims of criminal activity and/or have direct family members who are victims of various forms of criminal victimization. The category of Divorced, Separated and Widowed had the lowest victimization score of **0.0887**.¹³ We cannot conclude that there is any statistical difference in the victimization score for household heads who are Married and those who are Divorced, Separated and Widowed.

2.1.2 The Victimization Index and the Geographic Location of the Household

Table 2.1.2. The Relationship between the Victimization Index and Region

Area Code	Mean Victimization Score	N	Std. Deviation
KMA	0.2550	1056	1.24
Other Towns	0.1427	963	0.621
Rural	0.1622	3299	0.948

The Levene’s statistic of the homogeneity of variances was **15.755** with a level of significance of 0.000, thus we used the Tamhanes test to identify if there were any statistically meaningful differences in the mean scores of victimization by geographic region. We conclude that KMA residents registered a higher victimization score (on average) than residence of Other Towns. That is, residents of KMA registered a victimization score of **0.255** while residents of Other Towns registered a score of **0.1427**. We cannot conclude however that residents in the Rural

¹³ The F-Statistic for the cross-table is 7.131 with a significance level of 0.001.

areas had a higher victimization score than those in Other Towns or a lower score than those residents in KMA region.¹⁴

2.2 The Relationship between Specific Forms of Criminal Victimization and Socio-Demographic and Socio-Economic Factors (Univariate Analysis)¹⁵

2.2.1 The Relationship between Specific Forms of Victimization and Household Expenditure¹⁶

Burglary was found to increase with the level of expenditure of the household. Specifically, households with Very Low levels of expenditure reported an incidence of burglary within the last 12 months of **6.6 per cent** while those households with High levels of expenditure recorded an incidence of burglary of **9.1 per cent**. *Thus, as household expenditure increased so did the level of burglary experienced those households.* This was found to be statistically significant using the Pearson's Chi-square test and the Likelihood Ratio at the **1.0 per cent** level.¹⁷ All the other specific forms of victimization, Attacked without/with a weapon/with a gun, being raped and murder were not found to be related to level of household expenditure (see **Table 2.2.2**).

¹⁴ The F-Statistic for the entire cross-table is 4.432 and the level of significance is 0.012.

¹⁵ This section uses the Chi-square test to determine whether statistically meaningful differences exist between occurrences of specific types of victimization and the aforementioned factors. This test does not, however, indicate the strength of those differences nor does it control for the impact of other factors.

¹⁶ Theft and Burglary An analysis of the data revealed a total of 7.1 household head who indicated that they had been victims of burglary. Approximately 4.0 of households stated that they had been victims of burglary (Table). A large proportion of those victims belonged to quintile five (**44.2 per cent**).

¹⁷ Pearson's Chi-square statistic was 13.577 and the Likelihood ratio was 12.732 yielding probabilities of a type 1 error of 0.009 and 0.013, respectively.

Table 2.2.1. Household Expenditure and the Incidence of Specific Types of Criminal Victimization

	VERY LOW	LOW	MEDIUM	UPPER MEDIUM	HIGH
Burglary***	70	60	70	75	96
% within each category	6.6	5.7	6.6	7.1	9.1
Attacked Without Weapon	28	22	27	30	32
% within each category	2.6	2.1	2.6	2.8	3
Attacked With Weapon	29	29	26	36	45
% within each category	2.7	2.7	2.5	3.4	4.3
Attacked With Gun	13	15	16	14	21
% within each category	1.2	1.4	1.5	1.3	2
Raped	12	16	14	9	14
% within each category	1.1	1.5	1.3	0.8	1.3
Murdered	11	12	14	15	17
% within each category	1	1.1	1.3	1.4	1.6

2.2.2 The Relationship between Specific Forms of Victimization and Age of Household Head

Table 2.2.2. Age of Household Head and the Incidence of Specific Types of Criminal Victimization

	16 - 35 years	36 - 51 years	52 - 77 years	78 - 97 years
Burglary**	54	83	50	14
% within each category	4.0	4.8	2.7	3.9
Attacked Without Weapon	50	51	33	5
% within each category**	3.7	2.9	1.8	1.4
Attacked With Weapon	58	61	42	4
% within each category***	4.3	3.5	2.3	1.1
Attacked With Gun**	30	27	19	3
% within each category	2.2	1.6	1.0	0.8
Raped	21	24	17	3
% within each category	1.5	1.4	0.9	0.8
Murdered	24	21	20	2
% within each category	1.9	1.2	1.1	0.6

Burglary was most prevalent in households whose head was between the ages of 36 and 51 years of age, recording an incidence rate of **4.8 per cent**, and least prevalent, at **2.7 per cent**, in households in where the household head was between the 52 years and 77 years of age. These two age categories are broadly consistent with the wealth accumulation and the wealth consolidation phases of a household investment cycle. One can surmise that the wealth accumulation increases the attractiveness of this particular category of households to potential burglars. These differences were found to be statistically significant at the **5.0 per cent** level of confidence. On the other hand, being attacked with and without a weapon were found to be highest in households whose head was between the age of 16 and 35 years of age and least among households whose head was between the ages of 78 and 97 years of age. That is, the incidence of attacks with or without weapons and guns were found to diminish as the age of the household head increased. These differences were found to be statistically significant at the atleast the **5.0 per cent** level of confidence. Finally, the incidence of being attacked by a gun decline to **0.8 per cent** for household heads between the age of 78 – 97 years of age from **2.2 per cent** for household heads between the ages of 16 and 35 years of age. Again, the incidence of attacks with guns declined as the age of the household head increased.¹⁸ The occurrences of rape and murder were not found to be related to the age of the household head (see **Table 2.2.2**).

2.2.3 The Relationship between Victimization and Region

The KMA region was found to have the highest levels of victimization for burglaries as well as violent types of crime including attacks with guns, rape and murder. Specifically, the burglary rate, attacks with guns, rape and murder rates were found to be **5.2 per cent**, **2.8 per cent**, **2.2 per cent** and **2.7 per cent**. The lowest incidence rate for burglaries was **3.0 per cent** was recorded for the Rural Area. The lowest rate of incidence for rape and murders was found in Other Town at **0.3 per cent** and **0.2 per cent**, respectively (see **Table 2.2.3**).

¹⁸ These differences were found to be statistically significant at the 5.0 per cent level of confidence.

Table 2.2.3. Geographical Region and the Incidence of Specific Types of Criminal Victimization¹⁹

	KMA	Other Town	Rural
Robbed**	55	46	100
% within each category	5.2	4.8	3.0
Attacked Without Weapon	30	22	87
% within each category	2.9	2.3	2.6
Attacked With Weapon	43	29	93
% within each category	4.1	3.0	2.8
Attacked With Gun	29	7	43
% within each category***	2.8	0.7	1.3
Raped	23	3	39
% within each category***	2.2	0.3	1.2
Murdered	28	2	39
% within each category***	2.7	0.2	1.2

2.2.4 The Relationship between the Type of Victimization and Marital Status

Household heads who indicated that they had never been married consistently reported higher levels of victimization (burglary, attacks, rape, and murder) when compared to their Married or Divorced, Separated or Widowed counterparts. By contrast, the category of Divorced, Separated or Widowed recorded the lowest levels of victimization. These differences were found to statistically significant at the **5.0 per cent** and **1.0 per cent** level of confidence (see **Table 2.2.4**).

¹⁹ Table H-5 shows the distribution of households island-wide a member who experienced sexual assault or rape. In 2002, some 1.2 per cent of households had a member who was a victim of sexual assault or rape in the past twelve months. Some 50.0 per cent of all sexual assault/rape victims were located in the KMA. Those in quintile four and five recorded the highest level of sexual victimization (Figure

Table 2.2.4. Marital Status of Household Head and the Incidence of Specific Types of Criminal Victimization

	Married	Never Married	Divorced, Separated or Widowed
Robbed**	54	126	17
% within each category	3.6	4.2	2.3
Attacked Without Weapon	31	95	12
% within each category**	2.0	3.2	1.6
Attacked With Weapon	36	114	13
% within each category***	2.4	3.8	1.97
Attacked With Gun*	17	54	7
% within each category*	1.1	1.8	0.9
Raped	12	49	3
% within each category***	0.8	1.6	0.4
Murdered**	13	50	5
% within each category	0.9	1.7	0.7

2.2.5 The Relationship between Type of Victimization and Ownership Status of Dwelling

There was no statistically significant difference between the ownership status of the dwelling (Owned, Rented or Squatter) and any specific type of victimization (see **Table 2.2.5**).

Table 2.2.5. Ownership Status of Dwelling and the Incidence of Specific Types of Criminal Victimization

	Owned	Rented	Squatter
Robbed	119	41	41
% within each category	3.5	4.2	4.3
Attacked Without Weapon	82	31	26
% within each category	2.4	3.2	2.7
Attacked With Weapon	93	38	34
% within each category	2.8	3.9	3.6
Attacked With Gun	50	19	10
% within each category	1.5	2.0	1.0
Raped	39	14	11
% within each category	1.2	1.4	1.2
Murdered	40	17	12
% within each category	1.2	1.8	1.3

2.2.6. The Relationship between Type of Victimization and Size of Household

Table 2.2.6. Size of the Household and the Incidence of Specific Types of Criminal Victimization

	Single Member	2-4 Members	Over 5 Members
Burglary	48	92	61
% within each category	3.9	3.6	4.1
Attacked Without Weapon	38	59	42
% within each category	3.1	2.3	2.9
Attacked With Weapon	51	74	40
% within each category	4.1	2.9	2.7
Attacked With Gun	19	34	26
% within each category	1.5	1.3	1.8
Raped	14	28	23
% within each category	1.1	1.1	1.6
Murdered	20	33	16
% within each category	1.6	1.3	1.1

There was no statistically significant difference between different types of criminal victimization and the size of the household.

3.0 Decoding the Socio-Economic and Demographic Traits of Specific Types of Criminal Victimization

A logistic-regression model was used to analyze the relationship between the binary dependent variable (e.g. 1 being a victim of a specific type crime, 0 not being a victim) and a number of explanatory variables. The explanatory variables can be a scale variable (household consumption) or categorical (level of education). The logistic regression models the logit-transformed probability as a linear relationship with the predictor variables. More formally, let y be the binary outcome variable indicating failure/success with 0/1 and p be the probability of y to be 1, $p = \text{prob}(y=1)$. Let x_1, \dots, x_k be a set of predictor variables. Then the logistic regression of y on x_1, \dots, x_k estimates parameter values for $\beta_0, \beta_1, \dots, \beta_k$ via maximum likelihood method of the following equation.

$$\text{logit}(p) = \log(p/(1-p)) = \beta_0 + \beta_1 * x_1 + \dots + \beta_k * x_k \text{ (Equation 1)}$$

In terms of probabilities, the equation above is translated into

$$p = \exp(\beta_0 + \beta_1 * x_1 + \dots + \beta_k * x_k) / (1 + \exp(\beta_0 + \beta_1 * x_1 + \dots + \beta_k * x_k)). \text{ (Equation 2)}$$

The types of question which we wish answer include, but are not limited to:

- i) How much to specific socio-economic and demographic factors contribute incrementally to the odds of a family being a specific type of victimization when one controls for other factors?
- ii) How does the overall probability of being a specific type of victimization vary with changes in socio-demographic and economic factors?

3.1 Decoding the Socio-Economic and Demographic Traits of a Burglary Victim in Jamaica

For burglary logistic regression model there were **1553** cases which were included in the analysis where the dependent variable was coded as 1 when a household was a victim of at least one burglary within the last 12 months and 0 not being a victim of burglary. There were **63** cases of burglary within this sample.

The overall performance of the model in identifying burglar victims is **94.1 per cent**, with the model being better at identifying a non-victim being **97.7 per cent**, and the model identifying 6 of the 63 burglar victims (**9.5 per cent**) correctly (see **Table 3.1.1**). The Hosmer and Lemeshow test statistic is **10.329** with a significance of **0.280** indicating the overall model performs adequately. Finally, the Nagelkerke R-square, the logistic regression equivalent of the OLS R-squared, is **4.3 per cent**. The explanatory variables were not highly correlated with each other, with the highest absolute correlation of -0.268 being between marital status and the size of the household. (See **Table 3.1.2**).

Table 3.1.1 Classification Table for the Logistic Burglary Regression Model

Observed		Predicted		
		No	Yes	Percentage Correct
	No	1455	35	97.7
	Yes	57	6	9.5
Overall Percentage				94.1

a. The cut off value is 0.10

Table 3.1.2 Correlation Table of Explanatory Factors for Burglary

Correlation Matrix

		Constant	nounatty_cat(1)	Mari_dummy(1)	sex(1)	hhsiz2	r2(1)	area(1)	area(2)	per_cap2
Step 1	Constant	1.000	-.487	-.126	-.282	-.672	-.094	-.250	-.245	-.282
	nounatty_cat(1)	-.487	1.000	-.015	.039	.230	.184	-.030	-.007	-.089
	Mari_dummy(1)	-.126	-.015	1.000	.179	-.268	.065	.054	.025	-.015
	sex(1)	-.282	.039	.179	1.000	-.123	-.052	-.082	-.074	.079
	hhsiz2	-.672	.230	-.268	-.123	1.000	-.133	.065	.041	.206
	r2(1)	-.094	.184	.065	-.052	-.133	1.000	-.005	-.002	.016
	area(1)	-.250	-.030	.054	-.082	.065	-.005	1.000	.349	-.173
	area(2)	-.245	-.007	.025	-.074	.041	-.002	.349	1.000	-.150
	per_cap2	-.282	-.089	-.015	.079	.206	.016	-.173	-.150	1.000

The absence of an unattached youth in the household is found to be *weakly* statistically significant at the **10.0 per cent** level. The odds ratio for the absence on an unattached youth is **1.652**. That is, the absence of an unattached youth is found to *increase* the odds of being burglarized by **65.8 per cent** compared to household with an unattached youth holding all other factors constant. The presence of a married, divorced, separated or widowed household head is also found to be weakly statistically significant at the **10.0 per cent level** of confidence. The odds ratio for this variable is **0.542**, holding all other factors constant. Thus, married, divorced, separated or widowed heads have reduced the odds of being burglarized by **45.8 per cent** compared to the odds for unmarried household heads. Low to Middle Income families also *lowered* their chances of being burglarized by **40.5 per cent** compared to the odds of high income families. Interestingly, the absence of a teenage pregnancy in the household is found also to be statistically significant at **5.0 per cent** level. This was found to *reduce* the odds of being burglarized by **67.5 per cent**. All other factors were not found to be statistically

insignificant at the **10.0 per cent** level of confidence (See **Table 3.2**). Therefore, our finding seems to confirm our earlier suggestion that burglars are interested in families which have unmarried household heads and *do not* have an unattached youth and have high levels of income. Surprisingly, the area in which the household was located did not turn out to be statistically significant.

Table 3.1.2 Logistic Regression Results for Burglary Victims (Burg = 1, Not Burg = 0)

Explanatory Variable	B	Wald Statistic	Sig.	Odds Ratio	95.0% for Exp(B)	
					Lower Bound	Upper Bound
<i>No Unattached Youth</i>	0.5020	3.17	0.075	1.652	0.951	2.871
<i>Household head Not Unmarried</i>	-0.624	3.405	0.065	0.536	0.276	1.040
<i>Female Household Head</i>	-0.208	0.588	0.445	0.812	0.478	1.382
<i>Size of Household</i>	0.047	0.259	0.424	1.048	0.934	1.175
<i>No Teenage Pregnancy</i>	-1.122	6.466	0.011	0.326	0.137	0.773
<i>KMA Area</i>	0.089	0.068	0.794	1.093	0.613	2.243
<i>Low to Middle Per Cap Expend.</i>	-0.519	2.743	0.098	0.595	0.322	1.100
<i>Constant</i>	-1.983	9.902	0.002	0.138		

From this analysis and invoking equation (2) we can surmise that the probability of a two person household, unmarried household head with high income, no unattached youth being burglarized is **6.7 per cent**. This compared with a probability of being burglarized of **1.5 per cent** for a four person household, with a married, divorced or widowed household head with a low to middle income and an unattached youth.²⁰

3.2 Decoding the Socio-Economic and Demographic Traits of a Rape Victim in Jamaica

For the rape logistic regression model there were **5209** cases which were included in the analysis where the dependent variable was coded as 1 if a family member was a rape victim within the last 12 months and 0 not being a victim of rape. There were **26** cases of rape used in the analysis.

²⁰ Both households in this instance would live in the KMA region.

The overall performance of the model in identifying burglar victims is **97.4 per cent**, with the model being better at identifying a non-victim being **99.1 per cent**, and the model identifying 5 of the 26 cases of atleast one rape incident within a household (**16.1 per cent**) correctly (see **Table 3.3**). The Hosmer and Lemeshow test statistic is **21.884** with a significance of **0.004** indicating the overall model performs was not robust was perhaps influenced by the very small number of cases of rape in the binary dependent variable. The Nagelkerke R-square, the logistic regression equivalent of the OLS R-squared, is **7.9 per cent**.

Table 3.2.1 Classification Table the Logistic Rape Regression Model

Observed		Predicted		
		No	Yes	Percentage Correct
	No	1508	14	99.1
	Yes	26	5	16.1
Overall Percentage				97.4

a. The cut off value is 0.10

Table 3.2.2 Correlation Table of Explanatory Factors for Rape

Correlation Matrix

	Constant	nounatty_cat(1)	Mari_dummy(1)	sex(1)	hysize2	r2(1)	area(1)	area(2)	per_cap_dummy(1)	
Step 1	Constant	1.000	-.480	-.166	-.265	-.393	-.096	-.463	-.196	-.464
	nounatty_cat(1)	-.480	1.000	.010	.029	.156	.198	.009	.007	.171
	Mari_dummy(1)	-.166	.010	1.000	.193	-.257	.034	.087	.031	.076
	sex(1)	-.265	.029	.193	1.000	-.082	-.085	-.074	-.032	-.057
	hysize2	-.393	.156	-.257	-.082	1.000	-.129	.009	.019	-.331
	r2(1)	-.096	.198	.034	-.085	-.129	1.000	.003	-.017	-.010
	area(1)	-.463	.009	.087	-.074	.009	.003	1.000	.228	.309
	area(2)	-.196	.007	.031	-.032	.019	-.017	.228	1.000	.072
	per_cap_dummy(1)	-.464	.171	.076	-.057	-.331	-.010	.309	.072	1.000

The two statistically significant factors which characterized a household which had experienced a case of rape were:- the marital status of the household head and the presence of a teenage pregnancy. Specifically, the presence of a teenage pregnancy, which was statistically significant at the **1.0 per cent** level of confidence, was found to increase the odds of rape by **4.5 to 1.0** compared to a household which did not have a teenage pregnancy. The marital status of the

household head was found to be statistically significant at the **5.0 per cent** level. In this case, being married, widowed or divorced decreased the odds of being raped by **63.8 per cent** to **0.362** compared to an unmarried household head. All other factors were found to statistically insignificant at the **10.0 per cent** level of confidence (see **Table 3.2**). From this analysis we can surmise that the probability of a six person household in the KMA region, with an unmarried household head with very low to middle income, with a teen pregnancy having a rape case is **15.1 per cent**. A household living outside the KMA region, that is rural or Other Towns, with the same characteristics would reduce the probability to **8.4 per cent**. By contrast, the probability of a three person household, with a married household head with very low to middle income but no case of teenage pregnancy is estimated at **3.4 per cent**.

Table 3.2.2 Logistic Regression Results for Rape Victims (Rape = 1, No Rape = 0)

Explanatory Variable	B	Wald Statistic	Sig.	Odds Ratio	95.0% for Exp(B)	
					Lower Bound	Upper Bound
<i>No Unattached Youth</i>	-0.007	0.000	0.987	0.993	0.432	2.281
<i>Household head Not Unmarried</i>	-1.017	4.853	0.028	0.362	0.146	0.894
<i>Female Household Head</i>	-0.225	0.380	0.554	0.799	0.380	1.682
<i>Size of Household</i>	0.088	0.70	1.575	1.092	0.952	1.253
<i>KMA Area</i>	0.668	2.601	0.107	1.950	0.866	4.388
<i>Teenage Pregnancy</i>	1.506	9.051	0.003	4.510	1.690	12.034
<i>Low to Middle Per Cap Expend.</i>	-0.229	0.247	0.619	0.795	0.322	1.963
<i>Constant</i>	-3.967	48.051	0.002	0.019		

3.3 Decoding the Socio-Economic and Demographic Traits of a Murder Victim in Jamaica

For the murder logistic regression model there were **5173** cases which were included in the assessment of the socio-economic and demographic characteristics of households who had experienced a murder with the last 12 months.

The overall performance of the model in identifying households which had a family member who is a murder victim is **98.7 per cent**. Although, the model was not able to identify any of the 67 cases of murder within the sample, it was however able to correctly classify **100.0 per cent** households which had not experienced a murder within the last 12 months. (See **Table 3.5**). Both the Nagelkerke R-squared and Hosmer and Lemeshow tests indicated that the model was adequate. The Nagelkerke R-square is **5.5 per** and the Hosmer and Lemeshow test statistic is **6.44** with a significance of **0.598** indicating the overall model performs well.

Table 3.3.1 Classification Table the Logistic Murder Regression Model

Observed		Predicted		
		No	Yes	Percentage Correct
	No	5106	0	100.0
	Yes	67	0	0.0
Overall Percentage				98.7

a. The cut off value is 0.25

Table 3.3.2 Correlation Table of Explanatory Factors for Murder

		Constant	area_cat(1)	Mari_dumy(1)	sex(1)	hhsz2	per_cap2	r2(1)	d25(1)	d25(2)
Step	Constant	1.000	-.386	-.148	-.360	-.291	-.332	-.014	-.703	-.496
1	area_cat(1)	-.386	1.000	-.028	.107	-.017	.187	-.010	.015	.015
	Mari_dumy(1)	-.148	-.028	1.000	.181	-.185	-.064	.051	.051	-.018
	sex(1)	-.360	.107	.181	1.000	-.156	.080	-.030	.158	-.019
	hhsz2	-.291	-.017	-.185	-.156	1.000	.287	-.197	-.115	-.021
	per_cap2	-.332	.187	-.064	.080	.287	1.000	.028	-.094	-.028
	r2(1)	-.014	-.010	.051	-.030	-.197	.028	1.000	.023	-.009
	d25(1)	-.703	.015	.051	.158	-.115	-.094	.023	1.000	.620
	d25(2)	-.496	.015	-.018	-.019	-.021	-.028	-.009	.620	1.000

This was the only model where region played a statistically significant role in determining the likelihood of a murder incident at the **1.0 per cent** level of confidence. That is, being located in the *Other Towns and the Rural* area reduced the odds having a family member murdered. The odds ratio was **0.361**, holding all other factors constant. Again, the marital status of the household head was found to be statistically significant at the **1.0 per cent** level. In this case,

being married, widowed or divorced decreased the odds of experiencing the murder of a family member by **56.2 per cent** to **0.438** compared to an unmarried household head. Increases in the size of the household had a positive impact on the odds of having a family member murdered as well. This was found to be statistically significant at the **5.0 per cent** level. The household expenditure was also found to be statistically significant at the **10.0 per cent** level of confidence with an odds ratio equal to **1.0**. All other factors were found to statistically insignificant at the **10.0 per cent** level of confidence. Therefore, our findings suggests that if a household lives in the KMA region, has a household head who is unmarried, as there expenditure and family size increases then so too do their chances of having a family member murdered. As an example, a household living in either Rural or Other Towns, Married, with a family of 3 persons would have a probability of having a household member murdered of **0.4 per cent**. On the other hand, a household living in the KMA region, with a family of 6 persons and a married, divorced or widowed household head would have a **6.0 per cent** chance of having a household member murdered.

Table 3.3.2 Logistic Regression Results for Murder Victims (Murder = 1, No Murder = 0)

Explanatory Variable	B	Wald Statistic	Sig.	Odds Ratio
<i>Rural and Other Towns</i>	-1.018	15.617	0.000	0.361
<i>Household head Not Unmarried</i>	-0.826	8.272	0.004	0.438
<i>Female Household Head</i>	-0.301	1.288	0.256	0.740
<i>Size of Household</i>	0.119	6.054	0.014	1.126
<i>Household Expenditure</i>	0.000	2.937	0.087	1.000
<i>Salaries as Main Income Source</i>	0.026	0.004	0.947	1.026
<i>Constant</i>	-3.905	68.310	0.000	0.02

4.0 Conclusion

4.1 Findings Concerning the Overall Level of Victimization

Based on the empirical assessment we conclude that household heads that are unmarried are more likely to be victims of criminal activity and/or have direct family members who are victims of various forms of criminal victimization. We conclude also that KMA residents experience higher victimization than residence of Other Towns. We cannot conclude however that residents in the Rural Areas are victimized more than those in Other Towns or less than those in the KMA region. *This suggests that criminal victimization is not concentrated in one specific region but that it is widespread across Jamaica.*

4.2 Findings Concerning Specific Types of Victimization

Burglary

Based on our univariate analysis, as household expenditure increases so too does the level of burglary experienced by households. Burglary is most prevalent in households whose head was between the ages of 36 and 51 years of age, recording an incidence rate of **4.8 per cent**, and least prevalent, at **2.7 per cent**, in households in where the household head was between the 52 years and 77 years of age. One can surmise that the accumulation of wealth increases the attractiveness of this particular category of households to potential burglars. Our multivariate logistic regression analysis provided some evidence which suggests that burglars are interested in families which have unmarried household heads, have high levels of income, and do not have an unattached youth present in the household. Surprisingly, the area in which the household was located did not turn out to be statistically significant. The findings suggest that **7 out of 100** households in Jamaica who have three persons in the household, unmarried household head with high income and no unattached youth will be burglarized.

Violent Attacks and Murder

The incidence of violent attacks with guns and with and without weapons declined as the age of the household head increased. The KMA region was found to have the highest levels of victimization for burglaries as well as other violent types of crime including attacks with guns, rape and murder. Finally, Household heads who indicated that they had never been married consistently reported higher levels of victimization (burglary, attacks, rape, and murder) when compared to their married or divorced, separated or widowed counterparts. The preliminary findings suggests that if a household resides in the KMA region and has a household head who is unmarried then as their expenditure and family size increases then so too do their chances of having a family member murdered. As an example, a household living in either Rural or Other Towns, married, with a family of 3 persons would have a probability of having a household member murdered of **0.4 per cent**. On the other hand, a household living in the KMA region, with a family of 5 persons and an unmarried, divorced or widowed household head would have a **6.0 per cent** chance of having a household member murdered.

Sexual Assault/Rape

The two statistically significant factors with characterized a household which had experienced a case of rape were: - the marital status of the household head and the presence of a teenage pregnancy. The probability of a six person household in the KMA region, with an unmarried household head with very low to middle income, with a teen pregnancy having a rape case is **15.1 per cent**.

Bibliography

Jamaica Survey of Living Conditions Report 2002. A Joint Publication of the Planning Institute of Jamaica and the Statistical Institute of Jamaica. December 2003.

Bryan, A and Cramer, D (2001) Quantitative Data Analysis with SPSS for Windows: A Guide for Social Scientist, London: Routledge.