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A RISK-LEVEL ANALYSIS OF INTRA-COMMUNAL VIOLENCE A CASE STUDY OF UVWIE LOCAL GOVERNMENT AREA, DELTA STATE NIGERIA

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ABSTRACT

Intra-communal violence perpetrates across various families and factions in a community and this is strongly supported by the undeniable solidarity felt and exhibited by the violent parties for their respective groups. In this research work, we made some assumptions regarding the violence risk level of the human community. Basic mathematical analyses such as the violence-free and the violent-persistent equilibrium points and the basic reproduction number were examined. As a case study, an analysis of the violence risk level of Uvwie local government, Delta State, Nigeria, was carried out, and the data collected via questionnaires revealed that the community is at high risk level of violence, and so violence will occur in most cases. The violence risk level and the peace level perceptions of various categories of the residents of the community were clearly presented and analyzed. The computational software used in this research was the Version 12 Mathematica Programming Software.

Keywords: Violence, Risk level, Sensitivity analysis, Peace level, Violence-persistent equilibrium

INTRODUCTION

The level of communal and intra-communal violence in different parts of Nigeria is on the increase on a daily basis. Delgadillo-Aleman, et al (2019), Izevbizua and Apanapudor(2019a) defined violence as the intentional use of physical force, power, or threat against oneself, against another person, against a group or community, with a high likelihood of causing injury, death, psychological harm, damage, distinction, mal-development, or deprivation. They further added that violence is considered as a common universal public health issue due to its frequency and consequences within a given community. Lazarus (2014), Thompson(2018), Shewafera(2022) opined that ethnic violence is a comprehensive term for violence that is prompted from hatred or racism or ethnic stresses or ethnic conflict. Research works on violence, racism, social media addiction, and corruption, mathematical models on violence have been carried out by many scholars(see for instance, Izevbizua and Apanapudor, 2020; Iweobodo, et al, 2023; Omokoh, et, al, 2023; Eshagberi(2019); Cieślik and Goczek, 2021; Hathroubi and Trabelsi, 2014; Mcgrew, 2009; Kotola and Mekonnen, 2022;Apanapudor and Olowo, 2023; Osorio, 2017; Mousavi and Pourkiani, 2013; Aderibigbe and Apanapudor(2014); Peters, 2018; Rose-Ackerman, 1997; Venkatesan, 2019; Werner, 1983; Patten and Arboleda-Flórez, 2004; Okwonu, et al, 2022, Mahapatra and Kant, 2005).

Patten and Arboleda-Flórez (2004), JCI(2018), Okwonu, et al (2020), Gbaramatuvoice(2019) stated that violence brings about behavioral contagion which has been observed to occur in larger groups, consistent with the behavior of infectious epidemics. Neelo and Absar (2021), Michael, et al (1999), Mamo(2021) demonstrated that communal violence in India has become more frequent due to the unwanted interplay between religion and political manipulation. They further added that communal violence has also been recognized as a significant social and public health problem, resulting in long-term human and economic costs. Neelo and Absar said that the dominant form of communal violence in India has involved the two communities, i.e. Hindus and Muslims, Mesa(2017), Apanapudor, et al (2023d), Montroll(2007),Kumar(2013), Izevbizua and Apanapudor(2019b). On the case study, Uvwie is a local government in Delta State of Nigeria with different town, densely populated with different infrastructural development, The Nigeria Observer(2022).

Uvwie shares boundaries with Agbarho to the east, Udu to the south, Ughelli South to the south east, Okpe to the north and Warri to the west. Due to her proximity with Warri, rapid population growth and several road network linking both towns and her environs, it formed a conurbation collectively referred to as Warri by people from other parts of the state and Nigeria at large, though each towns in "Warri conurbation" are under different traditional and political authorities.

Uvwie is one of the major hubs of economic activities and businesses in Delta State. Uvwie is a subgroup of the Urhobo. Its inhabitants are predominantly Christians of different denominations, and some practice a mixture of African traditional religion most notably the Igbe religion common amongst Urhobos like most of Southern Nigeria. The local government along with Warri and environs are known nationwide for her unique Pidgin English, (Lazarus, 2014; De la Poza, et al, 2016; Ezimadu, et al, 2020; Punch Newspaper, 2019; Manpower, 2019). However, to the best of our knowledge, no one has carried out perception analysis on violent-risk level of a local government in Delta State, Nigeria.

MATERIALS AND METHODS

After the validation process, the questionnaires were administered directly to the sample of the Uvwie local government Area, Delta State. Two hundred copies of the questionnaire were successfully completed and returned. This successful retrieval of all questionnaires was as a result of the researcher's colleagues and friends who offered helping hands, Okwonu, et al (2023c). The questionnaire consists of twenty (20) simple questions which are divided into four sections: section 1 (infrastructural development), section 2 (injustice), section 3 (security strength) and section 4 (threat to life and property). The questions are referred to as Risk-level Determinant of Intra-communal Violence. The 200 questionnaires were critically analyzed to show the violence risk-level and the peace-level of Uvwie, Delta State, Okwonu, et al (2019), Apanapudor, et al (2023a), Aderibigbe and Apanapudor(2014). Calculations and analyses of the model

are generated using the Version 12 Mathematica Programming Software. Charts generated from Microsoft Excel Software are also used to clearly present the results obtained from different categories of respondents as retrieved from the community, Apanapudor, et al (2023b), Gelles and Straus(1979), Okwonu, et al(2021)

Risk-Level Analysis

We introduce the following notations, in other to carry out our analysis

$$\begin{cases} A_1 = Number\ of\ YES\ in\ section & 1 \\ A_2 = Number\ of\ NO\ in\ section & 1 \\ B_1 = Number\ of\ YES\ in\ section & 2 \\ B_2 = Number\ of\ NO\ in\ section & 2 \\ C_1 = Number\ of\ YES\ in\ section & 3 \\ C_2 = Number\ of\ NO\ in\ section & 3 \\ D_1 = Number\ of\ YES\ in\ section & 4 \\ D_2 = Number\ of\ NO\ in\ section & 4 \end{cases} \quad (1)$$

From the retrieved questionnaire, we observe that if $A_1 + C_1 > A_2 + C_2$, then the community is xat low risk of intra-communal violence, else, the community is at high risk of intra-communal violence. Also, if $B_2 + D_2 < B_1 + D_1$, then the community is at high risk of intra-communal violence, else, the community is at low risk of intra-communal violence. When all four sections of the questionnaire are considered, we obtained the mean scores:

$$\bar{x} = \frac{A_2+C_2+B_1+D_1}{4}, \quad (2)$$

$$\bar{y} = \frac{A_1+C_1+B_2+D_2}{4}. \quad (3)$$

If $\bar{x} > \bar{y}$ then the community is at high risk of intra-communal violence. Else the risk is low. We assume that $\bar{x}$ determines the Risk-level while $\bar{y}$ determines the peace-level of a community. The Risk-level ranges from $0-5$ and the peace-level ranges from $0-5$. The risk classes are presented in figure 1.

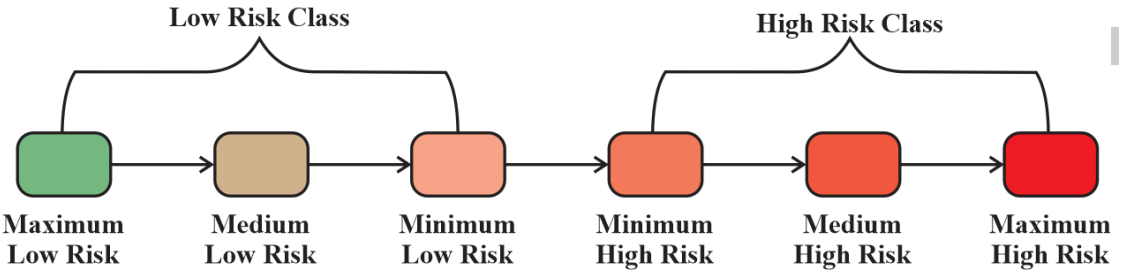

Figure 1: Risk Classes

We make the following assumptions on the risk levels, noting that the peace-level decreases as the risk-level increases.

Risk level 0 (Maximum low risk): Violence will not occur at all

Risk level 1 (Medium low risk): Violence will not occur in most cases

Risk level 2 (Minimum low risk): Violence may not occur in most cases

Risk level 3 (Minimum high risk): Violence may occur in most cases

Risk level 4 (Medium high risk): Violence will occur in most cases

Risk level 5 (Maximum high risk): Violence is certain

Peace level 0 (Maximum low peace): Violence will not occur at all

Peace level 1: Medium low peace

Peace level 2: Minimum low peace

Peace level 3: Minimum high peace

Peace level 4: Medium high peace

Peace level 5: Maximum high peace

For the risk-level, let

$x_1 = Risk\ level\ obtained\ from\ first\ respondent,$

$x_2 = Risk\ level\ obtained\ from\ second\ respondent,$

$\vdots$

$x_n = Risk\ level\ obtained\ from\ nth\ respondent,$

then the average risk level of the entire sample is given by

$$\bar{x} = \frac{x_1+x_2+\cdots+x_n}{n}. \quad (4)$$

Similarly, for the peace-level, let

$y_1 = Peace\ level\ obtained\ from\ first\ respondent,$

$y_2 = Peace\ level\ obtained\ from\ second\ respondent,$

$\vdots$

$y_n = Peace\ level\ obtained\ from\ nth\ respondent,$

then the average peace level of the entire sample is given by

$$\bar{y} = \frac{y_1+y_2+\cdots+y_n}{n}. \quad (5)$$

RESULTS AND DISCUSSION

In this section, we analyze the results from the questionnaires retrieved from 200 respondents residing in Uvwie local government Area of Delta State. The analysis is based on the questions raised in the questionaires.

Table 1: Community Risk Levels obtained from Respondents

Respondent	*Section 1*		*Section 2*		*Section 3*		*Section 4*		*Risk Level*	*Peace Level*
	A_1	A_2	B_1	B_2	C_1	C_2	D_1	D_2		
					Youth Stakeholders					
1.	3	2	3	2	2	3	4	1	3	2
2.	4	1	4	1	1	4	3	2	3	2
3.	3	2	5	0	0	5	5	0	4.25	0.75
4.	5	0	4	1	2	3	3	2	2.5	2.5
5.	3	2	3	2	1	4	4	1	3.25	1.75
6.	3	2	4	1	1	4	3	2	3.25	1.75
7.	4	1	5	0	0	5	5	0	4	1
8.	5	0	5	0	2	3	4	1	3	2
9.	3	2	4	1	2	3	3	2	3	2
10.	3	2	4	1	1	4	5	0	3.75	1.25
11.	4	1	4	1	2	3	4	1	3	2
12.	4	1	5	0	2	3	3	2	3	2
13.	5	0	4	1	1	4	5	0	3.25	1.75
14.	3	2	3	2	0	5	3	2	3.25	1.75
15.	5	0	4	1	2	3	4	1	2.75	2.25
16.	5	0	5	0	1	4	3	2	3	2
17.	4	1	5	0	0	5	5	0	4	1
18.	4	1	4	1	2	3	4	1	3	2
19.	5	0	4	1	2	3	3	2	2.5	2.5
20.	3	2	5	0	1	4	5	0	4	1
					Farmers					
21.	4	1	5	0	2	3	4	1	3.25	1.75
22.	4	1	4	1	1	4	3	2	3	2
23.	5	5	3	2	0	5	5	0	4.5	1.75
24.	3	2	4	1	2	3	3	2	3	2
25.	4	4	5	0	1	4	4	1	4.25	1.5
26.	3	2	5	0	1	4	3	2	3.5	1.5
27.	5	0	4	1	0	5	5	0	3.5	1.5
28.	3	2	4	1	2	3	4	1	3.25	1.75
29.	3	2	5	0	2	3	3	2	3.25	1.75
30.	4	1	3	2	1	4	5	0	3.25	1.75
31.	5	0	4	1	2	3	3	2	2.5	2.5
32.	3	2	5	0	1	4	5	0	4	1
33.	3	2	4	1	0	5	4	1	3.75	1.25
34.	5	0	3	2	2	3	3	2	2.25	2.75
35.	5	0	4	1	1	4	5	0	3.25	1.75
36.	4	1	5	0	0	5	3	2	3.5	1.5
37.	4	1	4	1	2	3	5	0	3.25	1.75
38.	5	0	5	0	2	3	4	1	3	2
39.	3	2	4	1	1	4	3	2	3.25	1.75
40.	4	1	3	2	2	3	5	0	3	2
					Secondary School Staff					
41.	5	0	5	0	1	4	3	2	3	2
42.	4	1	4	1	0	5	5	0	3.75	1.25
43.	4	1	4	1	2	3	3	2	2.75	2.25
44.	4	1	5	0	2	3	4	1	3.25	1.75
45.	3	2	3	2	1	4	3	2	3	2
46.	5	0	4	1	2	3	5	0	3	2
47.	4	1	5	0	1	4	4	1	3.5	1.5
48.	3	2	4	1	0	5	3	2	3.5	1.5
49.	3	2	3	2	2	3	5	0	3.25	1.75
50.	4	1	4	1	1	4	3	2	3	2
51.	3	2	5	0	0	5	5	0	4.25	0.75
52.	5	0	5	0	2	3	4	1	3	2
53.	4	1	4	1	2	3	3	2	2.75	2.25
54.	3	2	3	2	1	4	5	0	3.5	1.5
55.	3	2	4	1	0	5	3	2	3.5	1.5

Respondent	*Section 1*		*Section 2*		*Section 3*		*Section 4*		*Risk Level*	*Peace Level*
	A_1	A_2	B_1	B_2	C_1	C_2	D_1	D_2		
56.	4	1	3	2	2	3	5	0	3	2
57.	5	0	4	1	1	4	4	1	3	2
58.	4	1	5	0	0	5	3	2	3.5	1.5
59.	4	1	4	1	2	3	3	2	2.75	2.25
60.	4	1	3	2	2	3	5	0	3	2
61.	3	2	4	1	1	4	3	2	3.25	1.75
62.	5	0	5	0	2	3	5	0	3.25	1.75
63.	4	1	4	1	1	4	4	1	3.25	1.75
64.	3	2	3	2	0	5	3	2	3.25	1.75
65.	5	0	4	1	2	3	4	1	2.75	2.25
					Secondary School Students					
66.	4	1	4	1	0	5	3	2	3.25	1.75
67.	5	0	5	0	2	3	4	1	3	2
68.	4	1	3	2	2	3	5	0	3	2
69.	4	1	4	1	1	4	3	2	3	2
70.	4	1	5	0	2	3	4	1	3.25	1.75
71.	3	2	4	1	1	4	3	2	3.25	1.75
72.	5	0	3	2	0	5	5	0	3.25	1.75
73.	4	1	4	1	2	3	4	1	3	2
74.	3	2	5	0	1	4	3	2	3.5	1.5
75.	5	0	5	0	0	5	5	0	3.75	1.25
76.	3	2	4	1	2	3	3	2	3	2
77.	5	1	3	2	2	3	5	0	3	2.25
78.	4	4	3	2	1	4	4	1	3.75	2
79.	3	2	4	1	0	5	3	2	3.5	1.5
80.	5	0	5	0	1	4	5	0	3.5	1.5
81.	4	1	5	0	0	5	3	2	3.5	1.5
82.	4	1	4	1	2	3	5	0	3.25	1.75
83.	3	2	4	1	1	4	4	1	3.5	1.5
84.	5	0	3	2	1	4	3	2	2.5	2.5
85.	4	1	3	2	0	5	3	2	3	2
86.	3	2	4	1	2	3	5	0	3.5	1.5
87.	5	0	5	0	2	3	3	2	2.75	2.25
88.	3	2	4	1	1	4	5	0	3.75	1.25
89.	5	0	3	2	2	3	4	1	2.5	2.5
90.	5	0	3	2	1	4	3	2	2.5	2.5
91.	4	1	4	1	0	5	4	1	3.5	1.5
92.	3	2	5	0	2	3	3	2	3.25	1.75
93.	5	0	5	0	1	4	5	0	3.5	1.5
94.	3	2	4	1	0	5	3	2	3.5	1.5
95.	4	1	4	1	2	3	5	0	3.25	1.75
96.	3	2	3	2	2	3	4	1	3	2
97.	5	0	3	2	1	4	3	2	2.5	2.5
98.	4	1	4	1	2	3	4	1	3	2
99.	4	1	5	0	1	4	3	2	3.25	1.75
100.	3	2	4	1	0	5	5	0	4	1
101.	5	0	3	2	2	3	3	2	2.25	2.75
102.	4	1	4	1	1	4	5	0	3.5	1.5
103.	3	2	5	0	0	5	4	1	4	1
104.	5	0	5	0	2	3	3	2	2.75	2.25
105.	3	2	4	1	2	3	4	1	3.25	1.75
106.	4	1	3	2	1	4	3	2	2.75	2.25
107.	3	2	3	2	0	5	5	0	3.75	1.25
108.	5	0	4	1	1	4	3	2	2.75	2.25
109.	4	1	3	2	0	5	5	0	3.5	1.5
110.	3	2	4	1	2	3	3	2	3	2
111.	3	2	5	0	1	4	5	0	4	1
112.	5	0	3	2	2	3	4	1	2.5	2.5
113.	4	1	4	1	2	3	3	2	2.75	2.25

Respondent	***Section 1***		***Section 2***		***Section 3***		***Section 4***		***Risk Level***	***Peace Level***
	A_1	A_2	B_1	B_2	C_1	C_2	D_1	D_2		
114.	3	2	3	2	1	4	4	1	3.25	1.75
115.	5	0	4	1	0	5	3	2	3	2
116.	3	2	3	2	1	4	5	0	3.5	1.5
117.	4	1	3	2	0	5	3	2	3	2
118.	3	2	3	2	2	3	5	0	3.25	1.75
119.	5	0	4	1	1	4	3	2	2.75	2.25
120.	4	1	3	2	1	4	4	1	3	2
121.	3	2	4	1	0	5	3	2	3.5	1.5
					Reachable Chiefs					
122.	3	2	4	1	0	5	3	2	3.5	1.5
123.	4	1	3	2	2	3	4	1	2.75	2.25
124.	3	2	4	1	2	3	3	2	3	2
125.	5	0	3	2	1	4	5	0	3	2
126.	4	1	5	0	2	3	3	2	3	2
127.	3	2	3	2	1	4	5	0	3.5	1.5
128.	5	0	4	1	0	5	3	2	3	2
129.	4	1	3	2	2	3	4	1	2.75	2.25
130.	4	1	4	1	1	4	5	0	3.5	1.5
131.	5	0	3	2	0	5	3	2	2.75	2.25
					Commercial motorcyclists					
132.	3	2	3	2	0	5	5	0	3.75	1.25
133.	3	2	4	1	2	3	3	2	3	2
134.	4	1	3	2	1	4	5	0	3.25	1.75
135.	4	1	4	1	0	5	4	1	3.5	1.5
136.	5	0	5	0	2	3	3	2	2.75	2.25
137.	4	1	3	2	2	3	4	1	2.75	2.25
138.	3	2	4	1	1	4	3	2	3.25	1.75
139.	3	2	3	2	0	5	5	0	3.75	1.25
140.	4	1	4	1	1	4	3	2	3	2
141.	5	0	3	2	0	5	5	0	3.25	1.75
142.	4	1	4	1	2	3	3	2	2.75	2.25
143.	3	2	5	0	2	3	5	0	3.75	1.25
144.	5	0	3	2	1	4	4	1	2.75	2.25
145.	3	2	4	1	0	5	3	2	3.5	1.5
146.	4	1	3	2	1	4	4	1	3	2
147.	3	2	4	1	0	5	3	2	3.5	1.5
148.	5	0	3	2	2	3	5	0	2.75	2.25
149.	4	1	3	2	1	4	4	1	3	2
150.	4	1	4	1	1	4	3	2	3	2
151.	5	0	3	2	0	5	4	1	3	2
					Market Women/Men					
152.	3	2	4	1	2	3	3	2	3	2
153.	4	1	3	2	1	4	5	0	3.25	1.75
154.	5	0	4	1	0	5	4	1	3.25	1.75
155.	4	1	5	0	1	4	3	2	3.25	1.75
156.	3	2	3	2	0	5	4	1	3.5	1.5
157.	5	0	4	1	2	3	3	2	2.5	2.5
158.	3	2	3	2	1	4	5	0	3.5	1.5
159.	4	1	4	1	1	4	3	2	3	2
160.	3	2	3	2	0	5	5	0	3.75	1.25
161.	5	0	4	1	2	3	3	2	2.5	2.5
162.	4	1	5	0	2	3	5	0	3.5	1.5
163.	3	2	3	2	1	4	4	1	3.25	1.75
164.	4	1	4	1	0	5	3	2	3.25	1.75
165.	3	2	3	2	1	4	3	2	3	2
166.	5	0	4	1	0	5	5	0	3.5	1.5
167.	4	1	3	2	2	3	3	2	2.5	2.5
168.	4	1	3	2	2	3	5	0	3	2
169.	3	2	4	1	1	4	3	2	3.25	1.75

Respondent	*Section 1*		*Section 2*		*Section 3*		*Section 4*		*Risk Level*	*Peace Level*
	A_1	A_2	B_1	B_2	C_1	C_2	D_1	D_2		
170.	5	0	4	1	0	5	4	1	3.25	1.75
171.	3	2	3	2	1	4	3	2	3	2
172.	4	1	4	1	0	5	4	1	3.5	1.5
173.	3	2	5	0	2	3	3	2	3.25	1.75
174.	5	0	3	2	1	4	5	0	3	2
175.	4	1	4	1	1	4	3	2	3	2
176.	3	2	3	2	0	5	5	0	3.75	1.25
177.	4	1	4	1	0	5	3	2	3.25	1.75
178.	3	2	3	2	1	4	5	0	3.5	1.5
179.	3	2	3	2	0	5	4	1	3.5	1.5
180.	5	0	4	1	2	3	3	2	2.5	2.5
181.	4	1	3	2	1	4	3	2	2.75	2.25
182.	3	2	4	1	2	3	5	0	3.5	1.5
183.	4	1	4	1	2	3	3	2	2.75	2.25
184.	3	2	3	2	1	4	5	0	3.5	1.5
185.	5	0	4	1	0	5	3	2	3	2
186.	3	2	5	0	1	4	4	1	3.75	1.25
187.	4	1	3	2	0	5	3	2	3	2
188.	3	2	4	1	2	3	3	2	3	2
189.	5	0	3	2	1	4	5	0	3	2
190.	4	1	4	1	0	5	3	2	3.25	1.75
191.	3	2	3	2	1	4	4	1	3.25	1.75
192.	4	1	3	2	0	5	3	2	3	2
193.	3	2	4	1	2	3	5	0	3.5	1.5
194.	5	0	3	2	1	4	4	1	2.75	2.25
195.	4	1	4	1	1	4	3	2	3	2
196.	4	1	3	2	0	5	4	1	3.25	1.75
197.	3	2	4	1	2	3	3	2	3	2
198.	5	0	3	2	2	3	3	2	2.25	2.75
199.	3	2	3	2	1	4	4	1	3.25	1.75
200.	5	0	4	1	0	5	3	2	3	2

By equations (4) and (5), we obtain the average risk level ($\bar{x}$)and the average peace level ($\bar{y}$)for the entire sample as:

$\bar{x} = 3.18875$ (6)

$\bar{y} = 1.82625$ (7)

By equation (6), the respondents perceived that Uvwie local government of Delta State is at the minimum high risk level and violence may occur in most cases in the community. Pertaining to peace level, equation (7) reveals that the respondents perceived that Uvwie local government of Delta State is at minimum high peace level. We must opine here that the maximum low risk level and the maximum high peace level are obtainable for Uvwie local government of Delta State, and it is of a paramount importance that the residents, traditional rulers, well-meaning indigenes, influential indigenes, and the government, should swing into action in order to ensure that the maximum high peace level and the maximum low risk level are achieved in the community. In the light of this, Dominioni, et al (2018), Olson(1999), Seager(1997) asserted that "describing social dynamics requires models that are apt to capture multi-groups interactions. Building on the assumption of a relationship between multi-racial dynamics and *socioeconomic status (SES)*, we introduce an aggregate, contextual, and continuous index of SES accounting for measures of income, employment, expected life, and group numerosity. After, taking into account that groups' SES assumes the form of a *logit model*, we propose a Lotka-Volterra system to study and forecast the interaction among racial groups".

Global stability of the violence-free equilibrium guarantees that the desired peace-level an d risk level can be achieved no matter the number of the irascible individuals, the aggressive individuals and the brutal individuals, Apanapudor and Olowu(2023),. The following charts are used to show the risk levels and peace levels as perceived by the different categories of respondents in our considered population sample.

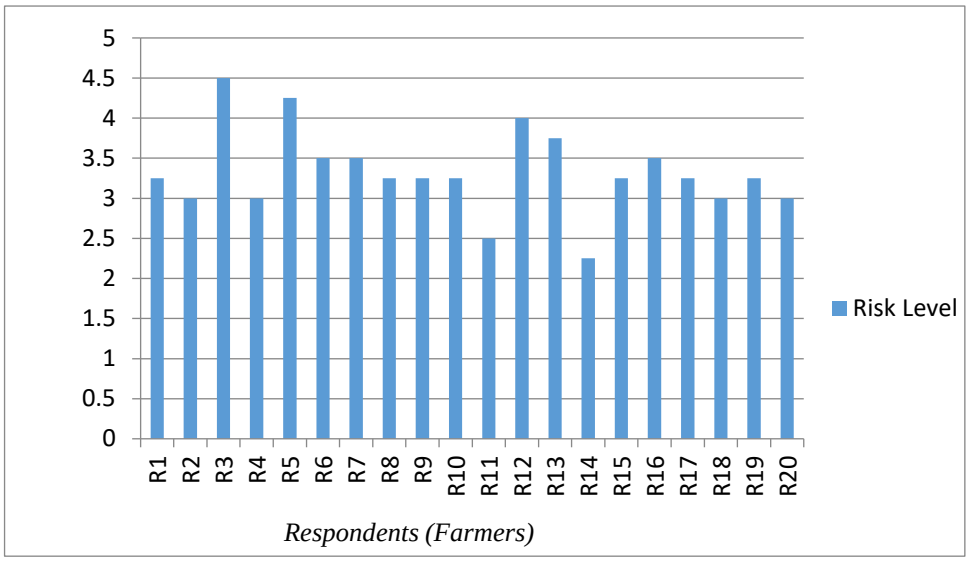

Figure 2: Risk level as perceived by Farmers

Figure 2 reveals that 95% of the farmers perceived at least a minimum high risk level. In other words, they perceived that violence may occur in most cases in the community.

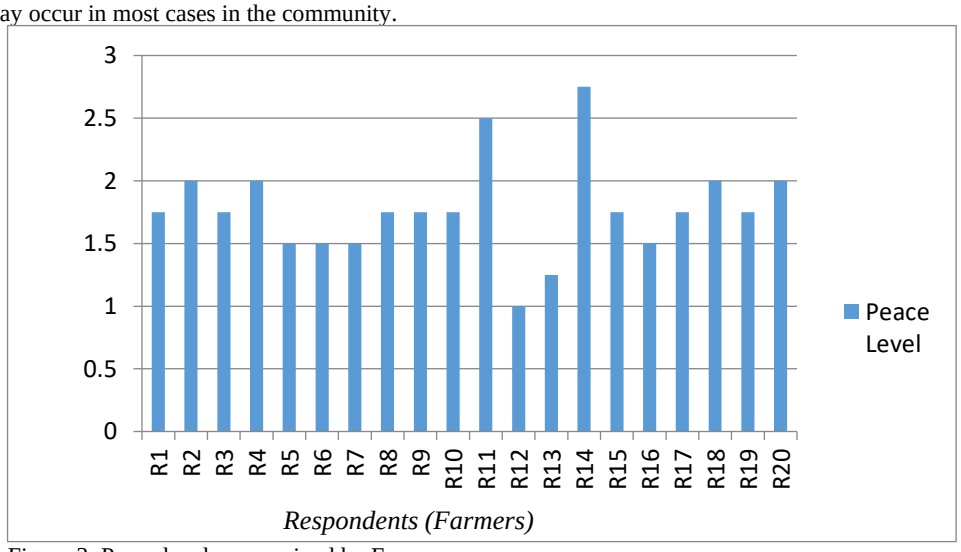

Figure 3: Peace level as perceived by Farmers

From Fig. 3 we observe that 90% of the farmers perceived a low peace level for the community.

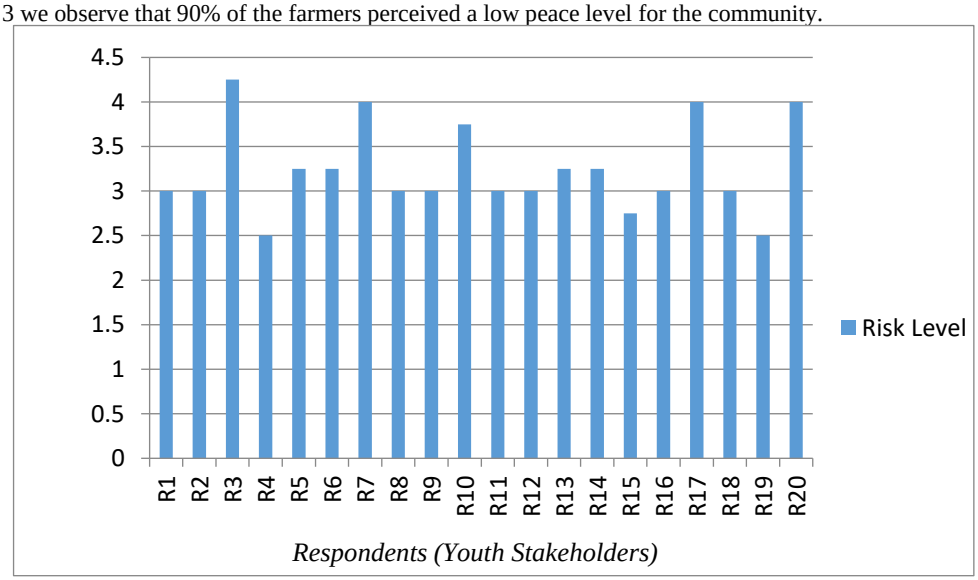

Figure 4: Risk level as perceived by Youth Stakeholders

We observe from equation Fig.4 that 100% of the youth stakeholders perceived that the community is at least a minimum high risk level and so violence may occur in most cases.

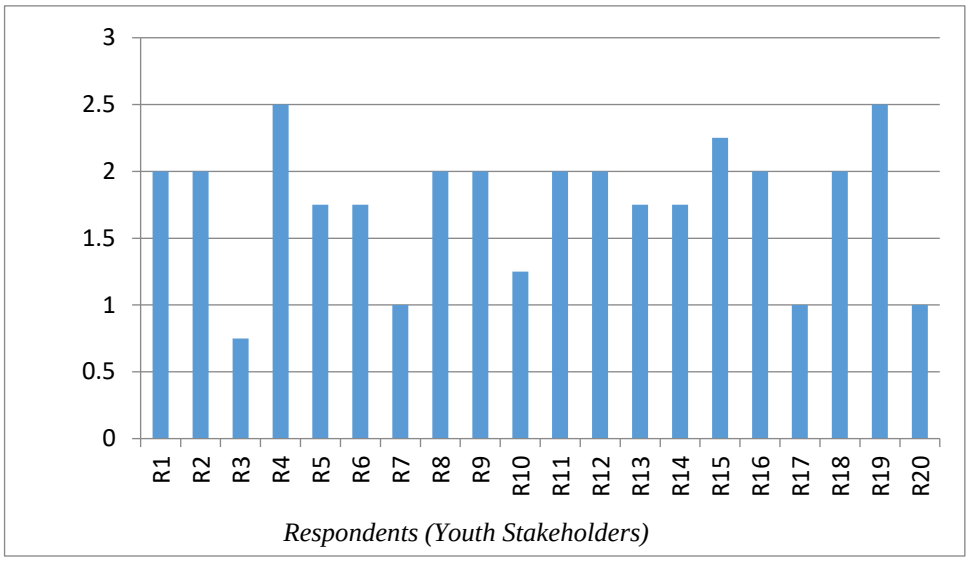

Figure 5: Peace level as perceived by Youth Stakeholders

Fig. 5 reveals that 90% of the youth stakeholders perceived that the community is at low peace level.

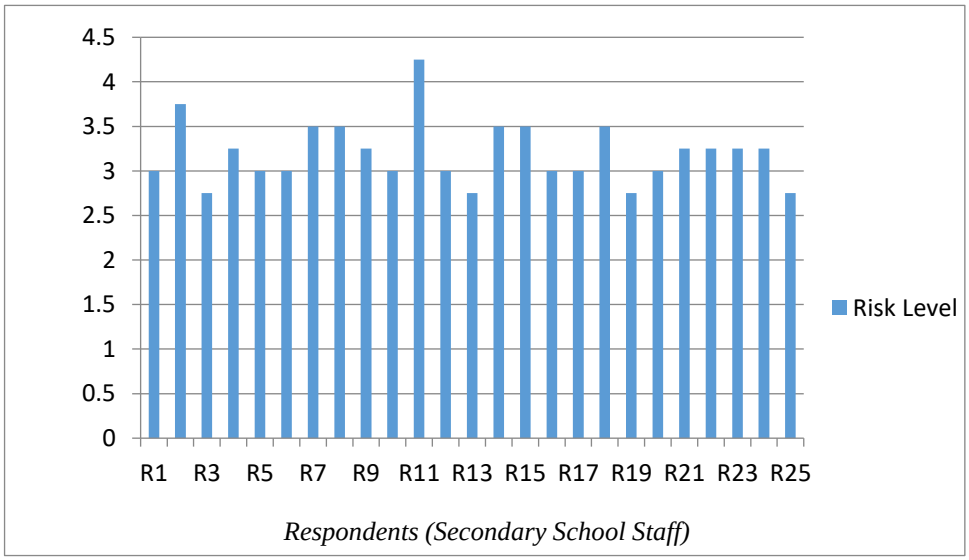

Figure 6: Risk level as perceived by Secondary School Staff

The risk level perceived by all the secondary school staff of the community was the high risk level as shown in Fig. 6. Thus, this 100% of the staff perceived that violence may, will or is certain to occur in most cases in the community.

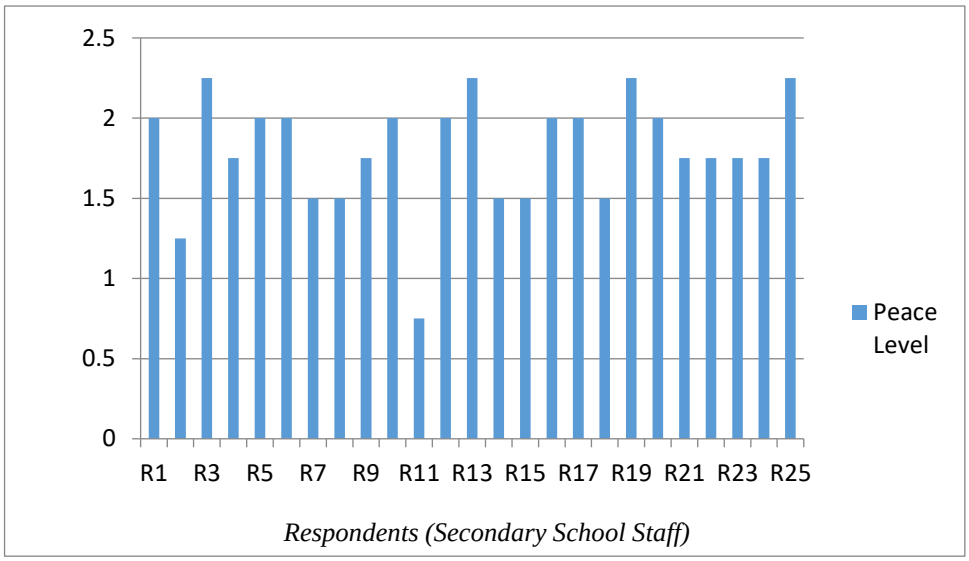

Figure 7: Peace level as perceived by Secondary School Staff

Fig.7. Shows that pertaining to the peace level, all the staff perceived that the community is at low peace level.

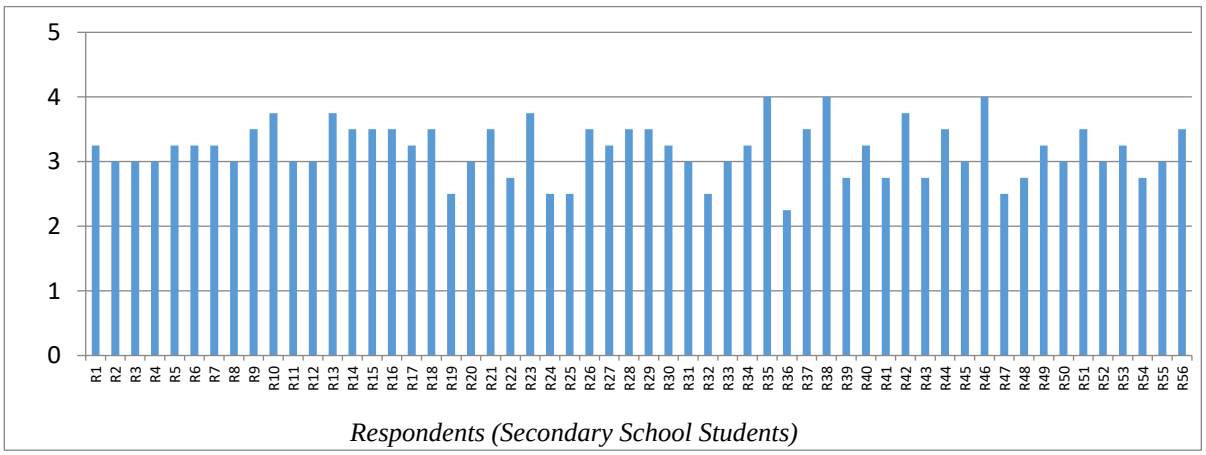

Figure 8: Risk level as perceived by Secondary School Students

From Fig. 8. we observe that only about 11% of the secondary school students perceived that the community is at low risk level. About 98% of the secondary school students perceived that the community is at high risk level and that violence may, will or is certain to occur in most cases.

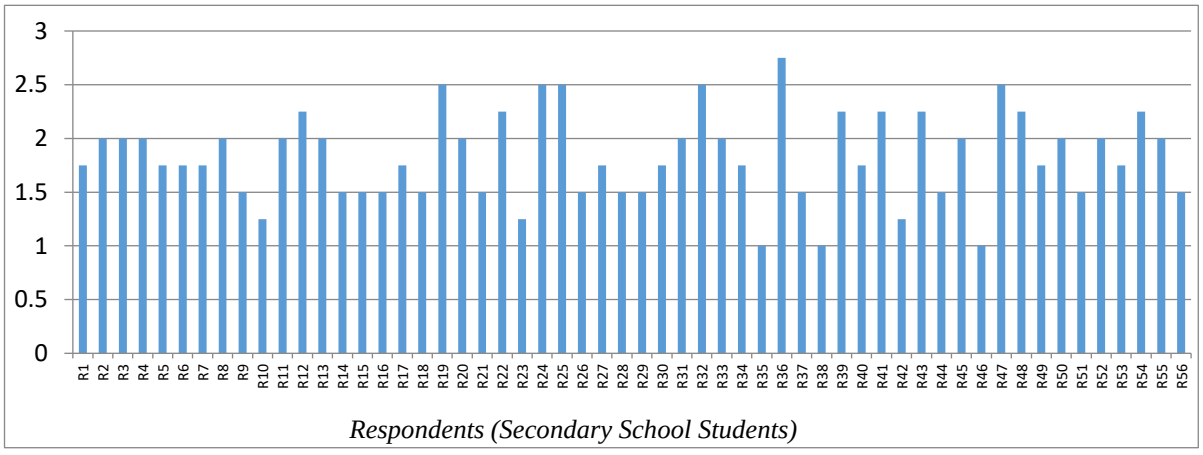

Figure 9: Peace level as perceived by Secondary School Students

Fig. 9. about 98% of the students perceived that the community is at low peace level.

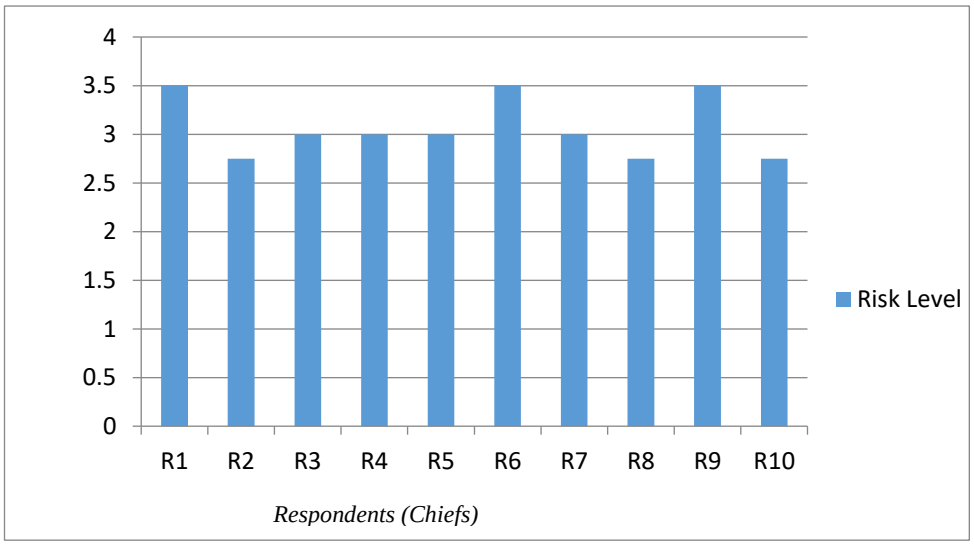

Figure 10: Risk level as perceived by Chiefs

Fig. 10. r*e*veals that 100% of Chiefs perceived that the community is at high risk level and so violence may, will or is certain to occur in most cases.

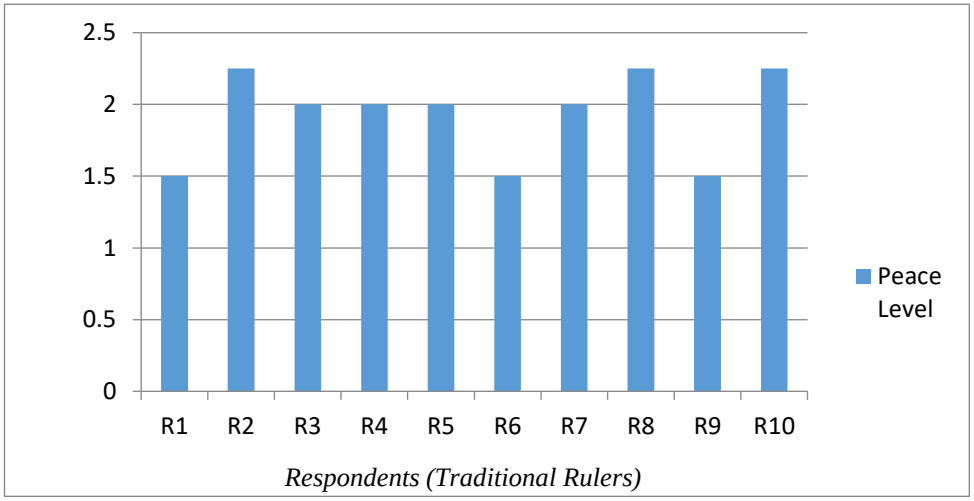

Figure 11: Peace level as perceived by Chiefs

Figure11 reveals that all the Chiefs perceived that the community is at low peace level.

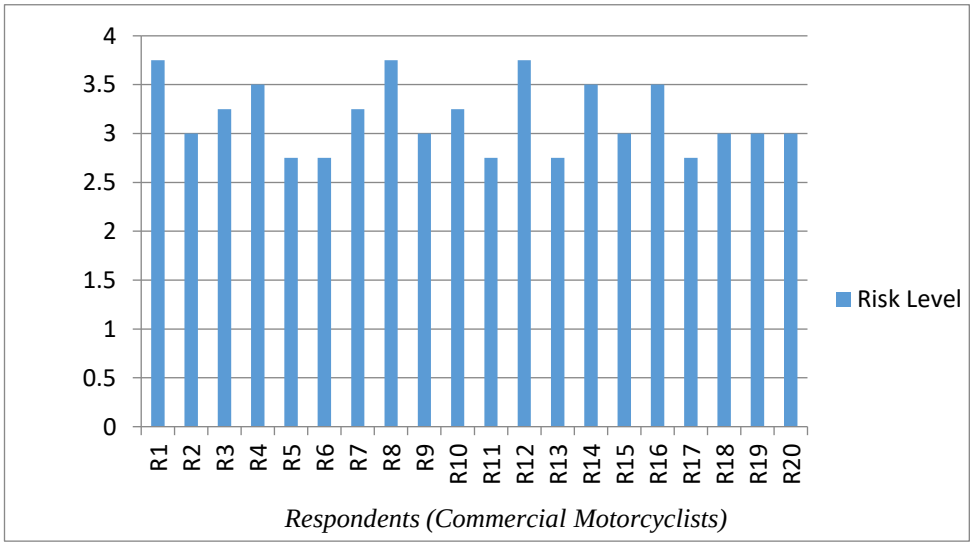

Figure 12: Risk level as perceived by Commercial Motorcyclists

We observe from Fig. 12. that all of the commercial motorcyclists perceived that the community is at high risk level.

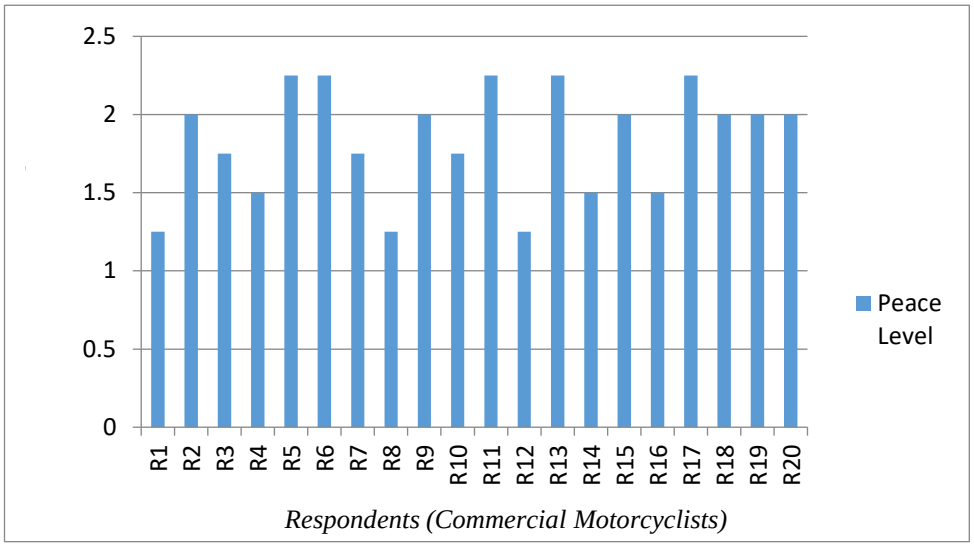

Figure 13: Peace level as perceived by Commercial Motorcyclists

Figure13. shows that the peace level perception by the commercial motorcyclists, none of them perceived that the community is at high peace level.

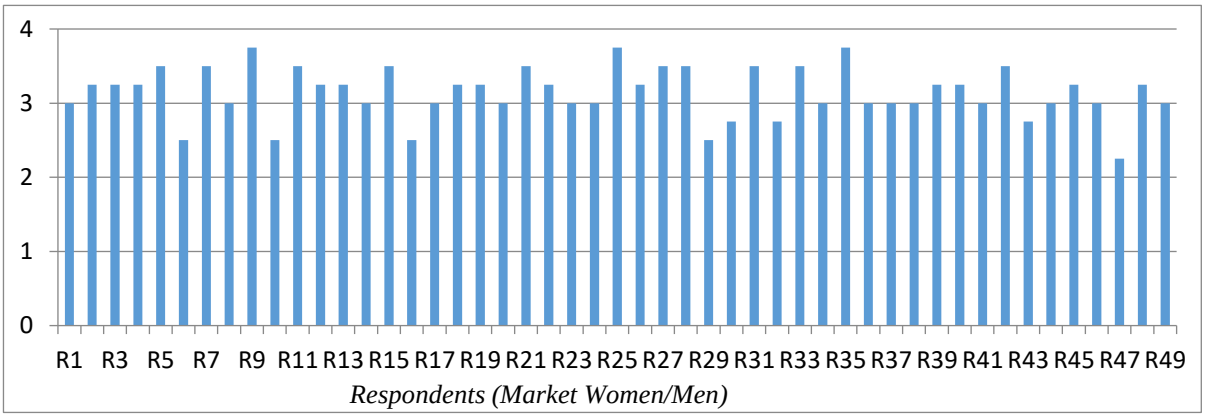

Figure14: Risk level as perceived by Market Women/Men

From figure 14, we see that about 98% of the market women/men perceived that the community is at high risk level and so violence may, will or is certain to occur in most cases in the community.

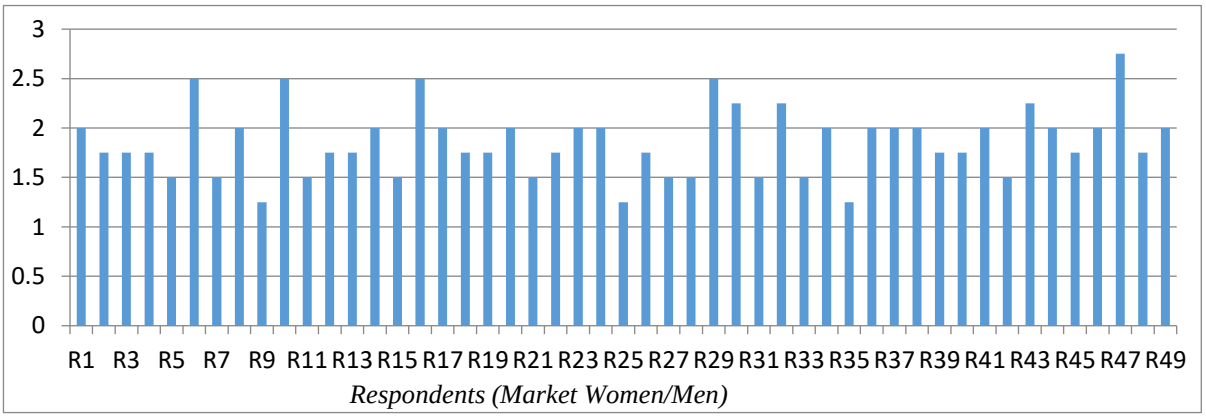

Figure 15: Peace level as perceived by Market Women/Men

From Fig. 15, we observed that pertaining the peace level, only about 10% of the market women/men perceived high peace level for the community.

The result of the questionnaire analysis revealed that the residents of the community perceived that the community is at the minimum high risk level and violence may occur in most cases in the community. Under the sensitivity analysis we presented some vital suggestions that can help bring the community to the maximum low risk level and the maximum high peace level. We have shown that violence within a community can be studied theoretically in the mathematical sense, and the results of these analyses are guides to individuals/organizations who are saddled with the responsibility of violence/crisis management in the community.

CONCLUSION

This research work had carry out the sensitivity analysis of the model and revealed that amongst the highly sensitive parameters of the basic reproduction number are injustice, security issues and infrastructural development.

The analysis of the questionnaires revealed that Uvwie local government in Delta State as perceived by the respondents, is at the high risk level of violence and so violence will occur in most cases.

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