

# Linear Regression of Insecurity in Nigeria from 2012 to 2021

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**Abstract:-** The insecurity in Nigeria is getting out of hand as this has been on increase on daily basis. People are being slaughtered on daily basis and properties are being wasted as well. The state of Nigeria insecurity is attributable to bad governance, leadership, poverty, poor service delivery and poor justice system. There is increased number of internally displaced persons, high inflow of arms, drugs and human trafficking, modern day slavery, stealing, robbery and other forms of criminality in Nigeria. We collected data on gross domestic products and causes of insecurity in Nigeria from 2012 to 2021 and analyzed them using linear regression model. Our finding revealed that the chief causes of insecurity in Nigeria are the unemployment among the youths and poverty. The study recommends that every government administration should embrace equal distribution of Nigeria resources and wealth.

**Keywords:-** Human Security, National Development, and Economic Development.

## I. INTRODUCTION

Many studies have been carried out on insecurity by many authors especially in Nigeria. Everybody's major concerns in Nigeria is insecurity and this has caused many uncertainties and fear in the country. Almost all part of the country is facing one insecurity challenge or the other (Mahmoud and Madori, 2013) which includes Boko haram activities that have claimed uncountable number of lives and high recorded kidnapping cases. In some years back especially 18 years ago, Nigeria Government spent not less than ten trillion naira for the nation's internal security and territorial integrity defense (Falana, 2010). Every state government in Nigeria also apportioned hundreds of billions of Naira on laws and orderliness in order to protect their state. Thus, every citizenship of the country and indigenes of some communities pay levy and salary able young women and men in order to protect their properties and lives. Despite large amount of money that are being allocated to security in the country, it is common to every citizens of the country that it has not yielded any effort or improvement as a lot of atrocities are happening on daily basis in the country which includes, violent crime, hostage taking, kidnapping, armed robbery, terrorism, extrajudicial killing, political assassination and a lot of others. The regular security forces deficiencies and shortage of personnel have made some citizens to go with private security outfit. Many of these security groups are being hired by oil companies, banks, hospitality business and educational institutions business to fortify corporate security arrangement. There is no need to

argue that the entire nation is facing gross challenge of security as insecurity is recorded on every part of the country on daily basis both in print and electronic media. Though, some of the occurrence of insecurity in some part of the country are being under-reported. The recent statistics of security from Nigeria Police Force which was collated by National Bureau of Statistics revealed that there is always increment in crime rate in Nigeria. The policemen kidnapping and attack cases in Nigeria is very fresh in the people's memory. The policemen we trusted during the time of crisis and conflicts are now kidnapping victims, a question everyone should answer is: who is safe in this country? Upon large budget allocation to security department and subsequent creations of different units in security departments in order to control criminal activities, child rape, ritual killings, food insecurity and armed banditry, all these are increasing on daily basis.

In this paper, we present linear regression analysis of insecurity in Nigeria from 2012 to 2021 using data of Gross Domestic Products and causes of insecurity we got from National Bureau of Statistics and other relevant Ministries, Departments, and Agencies (MDAs). Furthermore, we recommend that every government administration should embrace equal distribution of Nigeria resources and wealth.

### ➤ Basic Definitions

#### • Social Insecurity

It is an act of lacking confidence in someone's ability to succeed and do well social setting. In order words, social insecurity is a creation of anxiety of a person about what may happen in the future (Abdulsalam, 2021).

#### • Human Security

It is a national security that deals with promoting individual's welfare and well-being in the country together with harm and internal threats protection (Oluwarotimi, 2021).

#### • Terrorism

It is a dangerous or violent acts in human life that disobeys the state or federal law. Also, It is violent acts with aim of intimidating civilian population so as to influence government policy or to affect the conduct of a government by mass assassination, kidnapping or destruction (Bright, 2018).

- **Kidnap**  
Kidnap simply means to illegally take someone away by force so as to demand money in return for the release of the person. In other words, to detain and seize someone or carry away by unlawful force so as to demand for ransom is called kidnap (Oluwarotimi, 2021).
- **Economic Development**  
The act of improving human life quality through increasing per capita income, poverty reductions, and enhancing individual economic opportunities is called economic development (Soyinka, 2009).

- **Corruption**  
The act of abusing power entrusted because of personal gain is called corruption. The major root of Nigeria's general problems is corruption (Adigwe, 2015). Corruptions appears in different ways and influences every economic sectors and political institutions. It is a taboo to see government that was set up to develop a Nation and fight every kinds of corruptions to steal from her people.

**II. RESEARCH QUESTIONS**

- *The study was guided by the following research questions;*
  - *What are the causes of insecurity in Nigeria?*
  - *What are the best effective strategies for tackling insecurity in Nigeria?*

**III. CREATING DATABASE FOR SOCIAL INSECURITY IN NIGERIA FROM 2012 TO 2021**

- *Dependent Variable = National Development or Gross Domestic Product (GDP) = y variable*
- *Independent Variable = Insecurity (Causes of insecurity) = x variable*

Table 1 Database for Social Insecurity in Nigeria 2012 to 2021

Year	GDP (Billion of Naira) = y	Insecurity (Causes of insecurity) (x-variable)										Mean of these causes of insecurity = x
		Unemployment	Poverty (Million of people)	Kidnaping	Terrorism	Violence (Political and economic based)	Bribery and Corruption	Ethno-religious conflicts/communal clash	Python dance/ Extrajudicial killing	Organised criminal act	Assassination	
2012	72600	6,360,840	65,861,000	2,083	7,966	1,047	139	10,210	36,981	112,019	11,023	7240330.8
2013	81010	6,464,867	66,241,000	3,717	8,208	2,678	144	19,223	13,419	114,237	11,684	7287917.7
2014	90137	8,179,683	68,984,000	3,921	9,217	3,048	136	50,817	15,983	114,987	12,871	7737466.3
2015	95178	7,930,218	69,123,000	4,026	9,310	4,879	136	52,769	17,864	117,321	13,678	7727320.1
2016	102575	13,319,885	70,024,000	4,557	9,019	5,034	155	13,807	13,679	125,790	15,186	8353111.2
2017	114899	16,234,307	71,674,000	5,033	8,667	5,678	185	38,623	26,876	126,654	15,487	8813551
2018	129087	16,783,593	73,360,000	5,672	8,613	6,872	290	39,107	19,864	127,042	15,865	9036691.8
2019	145639	17,341,873	77,900,000	6,436	8,319	7,079	782	30,012	23,056	128,657	16,125	9546233.9
2020	154252	20,228,591	84,857,000	7,895	8,416	10,034	142	11,863	16,987	132,987	16,565	10529048
2021	176076	20,891,989	86,675,000	12,678	8,239	13,569	154	57,698	47,875	146,568	24,234	10787800.4
<b>TOTAL</b>	<b>1161453</b>	<b>133,735,846</b>	<b>734,699,000</b>	<b>56,018</b>	<b>85,974</b>	<b>59,918</b>	<b>2263</b>	<b>324,129</b>	<b>232,584</b>	<b>1,246,262</b>	<b>152,718</b>	<b>87059471.2</b>

- Data Source for Gross Domestic Product (GPD) are: Central Bank of Nigeria (CBN) Statistical Bulletin 2022, National Bureau of Statistics (NBS) Annual Report 2021, World Bank Annual Report 2021 and <https://www.macrotrends.net/countries/NGA/nigeria/gdp-gross-domestic-product>
- Data source for unemployment are: Central Bank of Nigeria (CBN) Statistical Bulletin 2022, National Bureau of Statistics (NBS) Annual Report 2021, World Health Organization (WHO) Annual Report 2021, United Nation Development Programmes (UNDP) Annual Report 2021 and <https://www.macrotrends.net/countries/NGA/nigeria/unemployment-rate>
- Data source for Poverty are: Central Bank of Nigeria (CBN) Statistical Bulletin 2022, National Bureau of Statistics (NBS) Annual Report 2021, National Bureau of Statistics (NBS) Statistical Bulletin 2022, World Health Organization (WHO) Annual Report 2021, United Nation Development Programmes (UNDP) Annual Report 2021, Poverty and Inequality in Nigeria Publication, 2022 and <https://www.macrotrends.net/countries/NGA/nigeria/poverty-rate>

- Data Source for Kidnapping cases are; Nigeria Police Force (NPF) Annual Report 2021, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022 and Nigeria Bureau of Statistics (NBS) Annual Report
- Data Source for Terrorism cases are; Nigeria Police Force (NPF) Annual Report 2021, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022, Nigeria Bureau of Statistics (NBS) Annual Report 2021, adapted data source from Achumba and Ighomereho, 2013 and <https://www.tradingeconomics.com/nigeria/terrorism-index>
- Data Source for Violence (Political and Economic based) cases are; Nigeria Police Force (NPF) Annual Report 2021, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022, Nigeria Bureau of Statistics (NBS) Annual Report 2021, Independent Corrupt Practices and Other Related Offences Commission (ICPC) Annual Report 2021, Defence Intelligence Agency (DIA) Annual Report 2021, State Security Service (SSS) Annual Report and adapted data source from Achumba and Ighomereho, 2013
- Data Source for Corruption cases are; Nigeria Police Force (NPF) Annual Report 2021, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022, Economic and Financial Crime Commission (EFCC) Annual Report 2021, Independent Corrupt Practices and Other Related Offences Commission (ICPC) Annual Report 2021, International Ant-Corruption Coordination Centre (IACCC) Annual Report 2021, Defence Intelligence Agency (DIA) Annual Report 2021, State Security Service (SSS) Annual Report 2021 and adapted data source from Achumba and Ighomereho, 2013
- Data Source for Ethno-religious conflicts/communal clash cases are; Nigeria Police Force (NPF) Annual Report 2021, National Bureau of Statistics (NBS) Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022, Defence Intelligence Agency (DIA) Annual Report 2021, State Security Service (SSS) Annual Report 2021 and adapted data source from Achumba and Ighomereho, 2013
- Data Source for Python dance/Extrajudicial killing cases are; Nigeria Police Force (NPF) Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022, Defence Intelligence Agency (DIA) Annual Report 2021, State Security Service (SSS) Annual Report 2021, National Bureau of Statistics (NBS) Annual Statistical Bulletin 2022 and adapted data source from Achumba and Ighomereho, 2013
- Data Source for Organised criminal act cases are; Nigeria Police Force (NPF) Annual Report 2021, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022, Economic and Financial Crime Commission (EFCC) Annual Report 2021, Independent Corrupt Practices and Other Related Offences Commission (ICPC) Annual Report 2021, International Ant-Corruption Coordination Centre (IACCC) Annual Report 2021, Defence Intelligence Agency (DIA) Annual Report 2021, State Security Service (SSS) Annual Report 2021 and adapted data source from Achumba and Ighomereho, 2013
- Data Source for Assassination cases are; Nigeria Police Force (NPF) Annual Report 2021, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2021, National Intelligence Agency (NIA) Annual Report 2021, Defence Intelligence Agency (DIA) Annual Report 2021, Nigeria Security Statistical Bulletin 2022 and Nigeria Bureau of Statistics (NBS) Annual Report.

#### IV. ANALYTICAL METHODS

Gross Domestic Product (GDP) and causes of insecurity in Nigeria which include Unemployment, Poverty, Kidnapping, Terrorism, Violence (Political and economic based), Bribery and Corruption, Ethno-religious conflicts/communal clash, Python dance/Extrajudicial killing, Organised criminal act and Assassination were carefully considered in this study, and data collected on their behalf for the period of study (from 2012 to 2021) were from National Bureau of Statistics (NBS) annual report 2021, Central Bank of Nigeria (CBN) annual report 2021, World Bank (WB) annual report 2021, Economic and Financial Crime Commission (EFCC) annual report 2021 and other relevant ministries, departments and agencies (MDA's). However, to identify, understand, quantify and manage this wide range of risks caused by social insecurity in Nigeria for the period of study (from 2012 to 2021), we create an actuarial modeling using Newton's method of interpolation (Forward difference). The **Dependent Variable** is National Development or Gross Domestic Product (GDP) which is y variable while The **Independent Variable** is Insecurity (Causes of insecurity) which is x variable

**V. RESEARCH RESULT**

Find the linear regression model on the causes of insecurity in Nigeria and Gross Domestic Product (G.D.P) in the table below.

Table 2 The Linear Regression Model on the Causes of Insecurity in Nigeria

Year	Causes of insecurity = x	GDP (Naira) = y
2012	7,240,330.8	72,600,000,000,000
2013	7,287,917.7	81,010,000,000,000
2014	7,737,466.3	90,137,000,000,000
2015	7,727,320.1	95,178,000,000,000
2016	8,353,111.2	102,575,000,000,000
2017	8,813,551	114,899,000,000,000
2018	9,036,691.8	129,087,000,000,000
2019	9,546,233.9	145,639,000,000,000
2020	10,529,048	154,252,000,000,000
2021	10,787,800.4	176,076,000,000,000

➤ *Solution*

Simple linear regression model is  $y = ax + b$

Where *a* and *b* are given by

$$a = \frac{n \sum_{i=1}^n x_i y_i - \sum_{i=1}^n x_i \sum_{i=1}^n y_i}{n \sum_{i=1}^n x_i^2 - (\sum_{i=1}^n x_i)^2}$$

$$b = \frac{1}{n} \left( \sum_{i=1}^n y_i - a \sum_{i=1}^n x_i \right)$$

Table 3 Gross Domestic Product (G.D.P)

Year	Causes of insecurity (x)	Gross domestic products GDP in millions (y)	Xy	x <sup>2</sup>	y <sup>2</sup>
2012	7.2403308 x 10 <sup>6</sup>	72,600,000 x 10 <sup>6</sup>	525,648,016.08 x 10 <sup>12</sup>	52.422390093428 x 10 <sup>12</sup>	5,270.76 x 10 <sup>24</sup>
2013	7.2879177 x 10 <sup>6</sup>	81,010,000 x 10 <sup>6</sup>	590,394,212.877 x 10 <sup>12</sup>	53.113744401973 x 10 <sup>12</sup>	6,562.6201 x 10 <sup>24</sup>
2014	7.7374663 x 10 <sup>6</sup>	90,137,000 x 10 <sup>6</sup>	697,431,999.8831 x 10 <sup>12</sup>	59.868384743635 x 10 <sup>12</sup>	8,124.678769 x 10 <sup>24</sup>
2015	7.7273201 x 10 <sup>6</sup>	95,178,00 x 10 <sup>6</sup>	735,470,872.4778 x 10 <sup>12</sup>	59.71147592786 x 10 <sup>12</sup>	9,058.851684 x 10 <sup>24</sup>
2016	8.3531112 x 10 <sup>6</sup>	102,573,000 x 10 <sup>6</sup>	856,803,675.1176 x 10 <sup>12</sup>	69.774466719565 x 10 <sup>12</sup>	10,521.220329 x 10 <sup>24</sup>
2017	8.813551 x 10 <sup>6</sup>	114,899,000 x 10 <sup>6</sup>	1,012,668,196.349 x 10 <sup>12</sup>	77.678681229601 x 10 <sup>12</sup>	13,201.780201 x 10 <sup>24</sup>
2018	9.0366918 x 10 <sup>6</sup>	129,087,00 x 10 <sup>6</sup>	1,166,519,434.3866 x 10 <sup>12</sup>	81.661798688187 x 10 <sup>12</sup>	16,663.453569 x 10 <sup>24</sup>
2019	9.5462339 x 10 <sup>6</sup>	145,639,000 x 10 <sup>6</sup>	1,390,303,958.9621 x 10 <sup>12</sup>	91.130581673509 x 10 <sup>12</sup>	21,210.718321 x 10 <sup>24</sup>
2020	10.529048 x 10 <sup>6</sup>	154,252,00 x 10 <sup>6</sup>	1,624,126,712.096 x 10 <sup>12</sup>	116.37663747024 x 10 <sup>12</sup>	23,793.679504 x 10 <sup>24</sup>
2021	10.7878004 x 10 <sup>6</sup>	176,076,00 x 10 <sup>6</sup>	1,899,472,743.2304 x 10 <sup>12</sup>	116.37663747024 x 10 <sup>12</sup>	31,002.757776 x 10 <sup>24</sup>
	$\sum x = 87.0594712 \times 10^6$	$\sum y = 1,161,451,000 \times 10^6$	$\sum xy = 9,871,151,021.4657 \times 10^{12}$	$\sum x^2 = 772.59901273100 \times 10^{12}$	$\sum y^2 = 145,410.520253 \times 10^{24}$

$$\sum x = 87.0594712 \times 10^6; \sum y = 1,161,451,000 \times 10^6; \sum xy = 9,871,151,021.4657 \times 10^{12}$$

$$\sum x^2 = 772.59901273100 \times 10^{12}; \sum y^2 = 145,410.520253 \times 10^{24}$$

$$(\sum x)^2 = 7,579.3515256236 \times 10^{12}; (\sum y)^2 = 1,348,968.425401 \times 10^{24}; n=10$$



Therefore,

$$\begin{aligned}
 a &= \frac{n \sum_{i=1}^n x_i y_i - \sum_{i=1}^n x_i \sum_{i=1}^n y_i}{n \sum_{i=1}^n x_i^2 - (\sum_{i=1}^n x_i)^2} = \frac{(10 \times 7579.3515256236 \times 10^{12}) - (87.0594712 \times 10^6 \times 1,161,451,000 \times 10^6)}{(772.59901273100 \times 10^{12}) - (87.0594712 \times 10^6)^2} \\
 &= \frac{(7579.3515256236 \times 10^{13}) - (1.011153099 \times 10^{11})}{(772.59901273100 \times 10^{12}) - (7.57935126 \times 10^{15})} \\
 &= \frac{7.579341413 \times 10^{16}}{-6.806752247 \times 10^{15}} \\
 &= -11.135
 \end{aligned}$$

$$\begin{aligned}
 b &= \frac{1}{n} \left( \sum_{i=1}^n y_i - a \sum_{i=1}^n x_i \right) = \frac{1}{10} (1,161,451,000 \times 10^6 - (-11.135)(87.0594712 \times 10^6)) \\
 &= \frac{1}{10} (1,161,451,000 \times 10^6 + 969,407,211.8) \\
 &= \frac{1}{10} (1.161451969 \times 10^{15}) = 1.161451969 \times 10^{14} \\
 &= 1.161451969 \times 10^{14}
 \end{aligned}$$

$$\text{But } y = ax + b = -11.135x + 1.161451969 \times 10^{14}$$

This the linear regression model of Gross Domestic Products and causes of insecurity from 2012 to 2021 is  $y = -11.135x + 1.161451969 \times 10^{14}$

## VI. CONCLUSION

This the linear regression model of Gross Domestic Products and causes of insecurity from 2012 to 2021 is  $y = -11.135x + 1.161451969 \times 10^{14}$  showing that insecurity in Nigeria is seriously affecting the development of the country as this affects business operations and put fear in the mind of investors.

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## RECOMMENDATION

We recommend that every government administration should embrace equal distribution of Nigeria resources and wealth.

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