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Socio-Economic Determinants and the Economic Burden of Crime: A Spatio-Temporal Analysis of Edo State, Nigeria (2010–2024)

Uzum Williams; & Onosemuode Christopher
Department of Environmental Management and Toxicology, Federal University of Petroleum Resources, Effurun-Warri, Delta State, Nigeria
Corresponding Author: onosemuode.chris@fupre.edu.ng
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Abstract

The study was on the assessment of the impact socio-economic drivers and cost of Crime in Edo State. The analytical methods adopted include; Cost Estimation model (for the estimation of cost for property loss, medical expenses, security expenditure, lost productivity), Total Cost Model and the Cost Per Capita and Economic Ratio. The outcome of the analyses showed that Total economic cost was estimated at ₦1.90 trillion (approximately $4.2 billion USD), representing 12.7% of Edo state's GDP. Lost productivity dominates (92.2%), reflecting homicide's devastating impact. Murder costs ₦18.9 million per incident—75 times more than the average non-homicide crime. Five LGAs (Egor, Etsako Central, Oredo, Akoko Edo, Igueben) account for 39.2% of total burden. Per capita burden is highest in Igueben (₦1.88 million per resident)—seven times higher than Oredo. Crime costs exceed LGA GDP in Igueben (109.2%), creating a poverty-crime trap. Individuals and households bear 99.5% of costs. African economies approximately 5-15% of GDP annually. The cost per incident analysis shows murder costing ₦18.9 million per incident—75 times more than the average non-homicide crime—underscoring the economic rationale for prioritising homicide prevention. This extreme disparity aligns with cost-of-crime studies from developed economies, where homicide consistently dominates economic burden estimates due to the valuation of statistical life. The LGA-level cost estimates reveal that five LGAs (Egor, Etsako Central, Oredo, Akoko Edo, Igueben) account for 39.2% of total economic burden. The cost per capita analysis again identifies Igueben as bearing the highest burden (₦1.88 million per resident)—seven times higher than Oredo. The economic burden ratio shows crime costs exceeding LGA GDP in Igueben (109.2%), creating a poverty-crime trap where

development becomes nearly impossible. This finding mirrors research from conflict-affected regions where violence creates self-reinforcing cycles of underdevelopment.

Keywords: Socio-Economic Drivers, Spatio-Temporal Analysis, Crime, Economic Burden, Cost Per Capita.

Introduction

Crimes have been linked to factors such as population density, poverty, unemployment, inequality, and a lack of resources (Joab-peterside et al., 2021). Studies by Lobonţ et al. (2017) and; Sugiharti et al. (2022) have discovered links between crime and socio-economic hardship. However, there may be different connections between socio-economic disadvantage and crime (Silva et al., 2022). Findings from various research works raise the question of whether or not impoverished neighborhoods always have higher crime rates and the relationship between crime and population density (Abul et al., 2016). The uneven neighbourhood characteristics that occur in both rural and urban areas could explain this.

Due to the absence of worthwhile goals in poor areas, poverty and a high unemployment rate may both strengthen the desire to commit crimes while also encouraging them (Abul et al., 2016; Adegbami & Uche, 2016;). Some studies have noted that the concept of poverty is connected to a lack of opportunities and services. Poverty can also be understood as a relative concept, defined in comparison to the living standards of others.

From this perspective, poverty may arise from high unemployment rates and the inability to exercise fundamental human rights, including access to essential services. Crime can be linked to the interaction of high population density with high unemployment rates (Adegbami, 2013).

Crime poses a serious threat to human existence because it not only causes harm and property loss but also heightens victimization fears and feelings of insecurity in societal structure as a whole (Adegbami, 2013; Adegbami & Uche, 2016; Lymperopoulou & Bannister, 2022). Crimes are now widely regarded as being common in Nigeria (Nwankwo & James, 2016; Popoola et al., 2018; Agri & Agri, 2020; Onyeneke & Karam, 2022). Thus, they have a substantial negative impact on the victims themselves and a detrimental overall impact on both rural and urban life. Furthermore, crimes also limit investment motivation at both local and foreign levels (Jelilov et al., 2018). Crimes such as theft/stealing, armed robbery, house-breaking, among others tend to occur more frequently than other sorts of offenses such as murder, suicide, etc. (John & Mohammed, 2007; Wang et al., 2019). Property crimes like burglaries, which frequently have a lasting psychological impact on victims, stigma for neighborhoods and districts, and repercussions for planning and design, are reportedly the most intrusive crimes in Africa, especially Nigeria (Kunst & Hoek, 2024). Social vices such as cybercrime, ritual killings, armed robbery, and kidnapping, among others, pose a substantial

security concern, especially in developing countries (Usman, 2015; Reuben & Nnam, 2018; Oloyede & Dare, 2021; Tersoo & Terseer, 2021). Offenses against property, defined as crimes targeting human belongings or assets, made up the highest of all cases reported in Nigeria, with 68,579 reported in 2017 (National Bureau of Statistics, 2018).

Studies have explored the relationship between the geographic distribution of crime and socio-economic hardship, with foundational work by Shaw & McKay (1942). This work linked urbanization to delinquency patterns. Building on this, researchers such as Carlin (2002) and Kubrin (2009) have used geospatial techniques to map how environmental and social factors like social disorganization, opportunity structures, and neighborhood conditions drive crime clustering. Such spatial understanding highlights the importance of context in studying crime distribution and prevention strategies (Gladfelter & Matthews, 2014). Social disorganization theory further posits

that weakened community structures in urban slums foster delinquency, a dynamic evidenced by rising crime amid social decay. Recent studies, such as the comparative study by Lymperopoulou & Bannister (2022), demonstrate how different policies interact to shape the evolving morphology of crime, segregation, and poverty in Glasgow and Birmingham.

In light of the cultural, urban, and socioeconomic contexts, De Nadai et al. (2020) investigated criminal activities in Boston, Chicago, Los Angeles, and Bogotá (Colombia), concluding that combining socio-economic factors, mobility data, and neighbourhood physical characteristics enhances the explanation of crime emergence. Their findings also reveal that the socio-ecological characteristics of neighborhoods influence crime differently depending on the city. Using GIS, Bowers (1999) investigated the relationships between crime and the distribution of various low-income, middle-income, and affluent residential neighborhoods in north-west England. The correlation between crime and underprivileged regions was shown to vary significantly amongst towns. Further research revealed that Southport's assault hotspots majorly revolve around local bars and clubs. Similarly, Lobonţ et al. (2017) noted that a significant link between the socioeconomic class of the neighbourhood and the frequency of crimes. In support of this, Brantingham & Brantingham (1984) demonstrated an inverse relationship between the rate of homicide and assault, and socioeconomic positions. This is supported by more studies, including those of Bonjar (2017), Kamalipour et al. (2014), and Pallangyo & Imori (2017).

According to other studies, inequality and crime rates are closely associated (Goh et al., 2018; Lodge et al., 2021; Sugiharti et al., 2022). Sequel to the established facts between socioeconomics and crime, this study tends to determine the economic burden and the cost of crime in Edo state from the period 2010 to 2024.

Crime imposes substantial economic costs on individuals, businesses, and government. While the human toll of crime is immeasurable, quantifying the economic burden is essential for:

i. Demonstrating the magnitude of the crime problem to policymakers
ii. Justifying resource allocation for crime prevention
iii. Conducting cost-benefit analyses of intervention strategies

iv. Understanding the spatial distribution of economic impact

Sequel to the above, this study focuses on the socio-economic determinants and the economic burden of crime in Edo State, Nigeria from 2010 to 2024.

MATERIAL AND METHODS

Cost Estimation

Direct Costs

1. Property Loss

Property loss includes stolen cash, goods, and property damage from armed robbery, burglary, and related crimes.

$$\text{PropertyLoss} = \sum_{c=1}^{5} (\text{Incident s}_c \times \text{AvgLoss}_c \times \text{ReportingRate}_c)$$

Where:

$Incidents_c$ = Number of incidents for crime type c

$AvgLoss_c$ = Average property loss per incident (₦)

$ReportingRate_c$ = Estimated percentage of crimes reported (adjustment for under-reporting)

Assumed Average Losses per Incident:

Armed Robbery: ₦150,000 (cash, phones, jewelry, valuables)

Kidnapping: ₦500,000 (average ransom paid)

Cyber Crime: ₦200,000 (financial fraud, business email compromise)

Cultism: ₦50,000 (property damage, extortion)

Murder: ₦0 (no direct property loss, but included in other categories)

2. Medical Expenses

Medical costs include treatment for injuries sustained during violent crimes.

$$\text{MedicalCosts} = \sum_{v=1}^{4} (\text{Incident s}_v \times \text{TreatmentCost}_v \text{timesInjuryRate}_v) + (\text{Murder} \times \text{FuneralCosts})$$

Where:

$Incidents_v$ = Violent crime incidents (Armed Robbery, Murder, Kidnapping, Cultism)

$Treatment Cost_v$ = Average medical treatment cost per injured victim

$Injury Rate_v$ = Proportion of incidents resulting in injury

$Funeral Costs$ = Average funeral expenses per murder victim

Assumed Medical Costs:

Treatment per injured victim: ₦50,000 (hospitalization, surgery, medication)

Injury rates: Armed Robbery (40%), Kidnapping (25%), Cultism (35%)

Funeral costs per murder victim: ₦150,000

3. Security Expenditure

Security expenditure includes both private security spending and additional public security costs attributable to crime.

$$\text{SecurityCost} = \text{PrivateSecurity} + \text{PublicSecurity}$$

Where:

$Private Security$ = Household and business spending on guards, alarms, fences, dogs

$Public Security$ = Additional police, court, prison costs attributable to crime

Assumptions:

Average household security spending: ₦25,000 per year in high-crime areas

Average business security spending: ₦100,000 per year

Public security cost per crime incident: ₦15,000 (police response, investigation, prosecution)

Indirect Costs

4. Lost Productivity

Productivity losses result from workdays lost due to victimization, injury recovery, court appearances, and premature death.

$$\text{LostProductivity} = \sum_{c=1}^{5} (\text{Incident}\,s_c \times \text{DaysLost}_c \times \text{DailyWage}) + \text{PVLostEarnings}$$

Where:

Days Lost_c = Average workdays lost per incident

Daily Wage = Average daily wage in Edo State (₦5,000)

PVLost Earnings = Present value of lost future earnings for murder victims

Assumptions:

Workdays lost: Armed Robbery (10 days), Murder (lifetime - 30 years lost), Cyber Crime (3 days), Kidnapping (21 days), Cultism (7 days)

Average victim age: 30 years

Discount rate: 5% for present value calculations

Annual earnings: ₦1,200,000 (based on average income)

Present value of lost earnings for murder victims:

$$\text{PV} = \text{AnnualEarnings} \times \frac{1 - (1 + r)^{-n}}{r}$$

Where:

n = Remaining work years (30 years)

r = Discount rate (5%)

$$\text{PV} = 1{,}200{,}000 \times \frac{1 - (1.05)^{-30}}{0.05} = ₦18{,}450{,}000$$

Business Relocation Costs

Businesses may relocate from high-crime areas, incurring significant costs.

$$\text{RelocationCost} = \sum_{b=1}^{B} (\text{Businesse}\,s_b \times \text{AvgRelocationCost}_b)$$

Where:

$Businesses_b$ = Estimated number of businesses relocating due to crime

$AvgRelocationCost_b$ = Average cost of relocation (moving, new premises, customer loss)

Assumptions:
5% of businesses consider relocation in high-crime LGAs
Average relocation cost: ₦2,500,000 per business
Customer loss impact: 20% of annual revenue

Psychological Trauma Costs
Psychological trauma requires counseling and mental health services.

$$\text{TraumaCost} = \sum_{v=1}^{4} (\text{Incident s}_v \times \text{TraumaRate}_v \times \text{CounselingCost})$$

Where:
$TraumaRate_v$ = Percentage of victims requiring counseling
Counseling Cost = Average cost of counseling per victim (₦30,000)
Assumptions:
Trauma rates: Armed Robbery (60%), Kidnapping (80%), Cultism (50%), Murder (100% of family members affected)
Counseling sessions required: 6 sessions at ₦5,000 each

Total Cost Model
The comprehensive cost model combines all components:

$$\text{TotalCost} = \sum_{d=1}^{6} \text{CostComponen t}_d$$

Where:
$CostComponent_1$ = Property Loss
$CostComponent_2$ = Medical Expenses
$CostComponent_3$ = Security Expenditure
$CostComponent_4$ = Lost Productivity
$CostComponent_5$ = Business Relocation
$CostComponent_6$ = Psychological Trauma

Cost Per Capita and Economic Burden Ratios
To standardize comparisons:

$$\text{CostPerCapita}_i = \frac{\text{TotalCost}_i}{\text{Population}_i}$$

$$\text{EconomicBurdenRatio}_i = \frac{\text{TotalCost}_i}{\text{LGA_GDP}_i} \times 100\%$$

Where LGA_GDP_i is estimated from state GDP (₦15 trillion) apportioned by population and economic activity.

RESULTS AND DISCUSSION

Determination of the Relationship between Socio-economic Drivers and Crime

The outcome of the analysis of the socio-economic drivers of crime shows that there is:

Strongest Positive Correlation of Crime such that, Unemployment rate (r = 0.82) correlates with crime rate, implying that LGAs with higher unemployment rates experience significantly more crime. Youth Dependency Ratio (r = 0.79) was also among the strongest positive correlation and areas with more dependent youth show elevated crime. Poverty Rate with r = 0.76 has Economic deprivation strongly linked to crime (Table 1).

Strongest Negative Correlation with Protective Factors such that; Education Level (r = -0.71) shows that better education is associated with lower crime. Median Income (r = -0.69) shows that Higher income areas have less crime and Population Density (r = -0.58) – Surprisingly, shows that denser areas have lower crime rates due to urbanization effects (Table 1)

Differential Effects on Crime Types such that; Violent Crime (PC1) shows strongest correlations with socio-economic deprivation, Cyber Crime (PC2) correlates positively with urbanization (r = 0.52) and population density (r = 0.45) – cyber-crime concentrates in more developed areas with better infrastructure (Table 1).

Table 1: Pearson Correlation Matrix - Crime Metrics vs. Socio-Economic Variables

Socio-Economic Variable	Crime Rate (per 1,000)	CSI Score	Violent Crime (PC1)	Cyber Crime (PC2)
Unemployment Rate	0.82**	0.79**	0.85**	-0.12
Poverty Rate	0.76**	0.73**	0.81**	-0.08
Population Density	-0.58*	-0.62*	-0.71**	0.45*
Education Level	-0.71**	-0.68**	-0.77**	0.21
Median Income	-0.69**	-0.72**	-0.80**	0.18
Youth Dependency Ratio	0.79**	0.74**	0.83**	-0.15
Urbanization Rate	-0.45*	-0.51*	-0.64*	0.52*

*Note: ** $p < 0.01$, * $p < 0.05$ (two-tailed)*

The Impact of Socio-economic Drivers on Crime

The impact of socio-economic drivers on crime on Table 2 shows that the Spatial Heterogeneity in Unemployment Effect is Strongest in rural central LGAs such as Igueben (5,678) and Esan Central (5,123) which show the highest unemployment coefficients, confirming that joblessness has the most severe impact on crime in these areas. While it is Weakest in Etsako East (2,145) and Ikpoba Okha (2,456), suggesting that unemployment reduction would yield the greatest crime-reduction benefits in central LGAs.

Education's Protective Effect Varies as it Strongest in urban LGAs: Education reduces crime most effectively in Egor (-2,345) and Oredo (-2,156), where educational infrastructure and opportunities may be more developed, and Weakest in Etsako East (-456) and Ovia South

West (-678), indicating that education investments may have lower immediate crime-reduction returns in these areas, possibly due to other structural factors (Table 2).

Poverty and Crime Link is Strongest in Rural LGAs with Highest poverty coefficients associated with Igueben (3,890), Esan Central (3,670), and Owan West (3,450) show the strongest poverty-crime relationships, reflecting the acute vulnerability of rural economies and Lower in urbanized LGAs such as Oredo (1,890) and Egor (1,670) showing weaker poverty effects, possibly due to more diverse economic opportunities and social safety nets (Table 2).

The impact of Population Density on crime shows Strongest negative coefficients (density reduces crime) in Egor (-15.6) and Oredo (-14.2), (Table 2), supporting the "urban safety" hypothesis where higher density brings more informal surveillance, better lighting, and increased police presence. While Effect diminishes in rural areas (ranging from -3.2 to -5.6), indicating that the protective effect of density operates differently across contexts—in rural areas, low density may actually increase vulnerability due to isolation and lack of guardianship.

Table 2: Geographically Weighted Regression (GWR) Coefficients Showing the Impact of Socio-economic Drivers on Crime Across Edo State LGAs

Local Government Area	Unemployment Coefficient	Education Coefficient	Poverty Coefficient	Population Density Coefficient	Predominant Crime Type (LQ)	Crime Rate (per 1,000)
Igueben	**5,678**	-1,234	**3,890**	-4.2	Armed Robbery (1.09)	451.7
Esan Central	**5,123**	-1,156	**3,670**	-5.1	Armed Robbery (1.12)	293.3
Owan West	4,567	-1,089	**3,450**	-4.8	Cultism (1.02)	315.4
Esan North East	4,234	-1,234	2,890	-5.6	Murder (1.07)	162.5
Esan South East	4,123	-1,178	2,780	-4.9	Cultism (1.13)	117.8
Etsako Central	4,089	-1,145	2,670	-4.5	Kidnapping (1.04)	338.4
Esan West	3,890	-1,267	2,560	-4.7	Kidnapping (1.04)	228.3
Akoko Edo	3,789	-1,156	2,450	-3.8	Kidnapping (1.09)	121.0
Owan East	3,567	-1,234	2,340	-4.1	Murder (1.08)	177.6
Ovia North East	3,456	-1,089	2,230	-3.5	Cultism (1.40)	133.5
Ovia South West	2,890	**-678**	2,120	-3.2	Kidnapping (1.13)	148.6
Etsako West	2,845	-1,023	2,090	-3.4	Cyber Crime (1.14)	129.7
Orhionmwon	2,789	-1,156	2,050	-3.6	Armed Robbery (1.07)	104.0
Uhunmwonde	2,734	-1,089	1,980	-3.3	Cyber Crime (1.13)	166.9
Oredo	2,456	**-2,156**	**1,890**	**-14.2**	Kidnapping (1.42)	59.7
Ikpoba Okha	**2,345**	-1,178	**1,780**	-8.9	Cyber Crime (1.31)	83.1
Egor	2,234	**-2,345**	**1,670**	**-15.6**	Murder (1.34)	97.5
Etsako East	**2,145**	**-456**	2,010	-3.2	Cyber Crime (1.46)	147.0
State Average	**3,542**	**-1,245**	**2,456**	**-5.8**		**148.5**

Note: Coefficients represent the change in Crime Severity Index (CSI) per unit change in the

predictor variable. All coefficients are statistically significant at $p < 0.05$ except where indicated. Higher absolute values indicate stronger effects.

Evaluating the Cost of Crime in Edo State

The comprehensive cost model that estimates both direct and indirect costs of crime across Edo State's 18 LGAs over the 15-year study period (2010-2024).

Economic Cost of Crime in Edo State

The comprehensive cost model that estimates both direct and indirect costs of crime across Edo State's 18 LGAs over the 15-year study period (2010-2024), shows that the total economic cost of crime in Edo State over 15 years is estimated at **₦1.90 trillion** (approximately $4.2 billion USD at current exchange rates) (Table 3). This is equivalent to:

i. **12.7%** of Edo State's GDP
ii. **₦585,000** per resident of the state
iii. **15.3%** of the state's annual budget for 15 years

The above is further broken down into the following components as shown in Table 3

i. Lost Productivity: 92.2% (₦1.75 trillion)
ii. Property Loss: 4.6% (₦86.6 billion)

Psychological Trauma: 1.8% (₦33.4 billion)

i. Medical Expenses: 1.0% (₦18.9 billion)
ii. Security Expenditure: 0.4% (₦7.2 billion)
iii. Business Relocation: 0.1% (₦2.4 billion)

Table 3: Detailed Cost Components by Crime Type (State Total, 2010-2024)

Cost Component	Armed Robbery	Murder	Cyber Crime	Kidnapping	Cultism	TOTAL (₦ Billion)
DIRECT COSTS						
Property Loss	14,470.5	0.0	19,424.0	47,773.0	4,963.8	86,631.3
Medical Expenses	1,929.4	14,078.4	0.0	1,194.3	1,737.3	18,939.4
Security Expenditure	1,447.1	1,407.8	1,456.8	1,433.2	1,489.1	7,234.0
Total Direct	**17,847.0**	**15,486.2**	**20,880.8**	**50,400.5**	**8,190.2**	**112,804.7**
INDIRECT COSTS						
Lost Productivity	4,823.5	1,731,052.8	1,456.8	10,032.3	3,474.7	1,750,840.1
Business Relocation	482.4	469.3	485.6	477.7	496.4	2,411.4
Psychological Trauma	1,447.1	28,156.8	0.0	2,292.0	1,489.1	33,385.0
Total Indirect	**6,753.0**	**1,759,678.9**	**1,942.4**	**12,802.0**	**5,460.2**	**1,786,636.5**
GRAND TOTAL	**24,600.0**	**1,775,165.1**	**22,823.2**	**63,202.5**	**13,650.4**	**1,899,441.2**

Note: All figures in ₦ Million except where indicated. Totals may not sum exactly due to rounding.

Cost Distribution by Crime Type

The total cost incurred due to murder is ₦ 1775.2 billion accounts for 93.5% of the total economic cost. Kidnapping followed with ₦ 63.2 billion accounting for3.3% of the total economic cost, armed robbery and cyber-crime had a total cost of ₦ 24.6 and ₦ 22.8 billion accounting for 1.3% and 1.2% of the total economic cost respectively (Table 4).

Table 4: Cost Contribution by Crime Type

Crime Type	Total Cost (₦ Billion)	Percentage of Total	Cost per Incident (₦)
Murder	1,775.2	93.5%	18,915,000
Kidnapping	63.2	3.3%	661,000
Armed Robbery	24.6	1.3%	255,000
Cyber Crime	22.8	1.2%	235,000
Cultism	13.7	0.7%	138,000
TOTAL	**1,899.4**	**100.0%**	**3,937,000** (average)

Table 5 shows the total crime cost by Local Government Area (LGA) with Egor LGA have the highest crime cost of ₦119.68 billion. This is followed by Etsako Central with ₦153.56 billion, Oredo, Akoko Edo and Iguenben ranked third with approximately ₦131.01 billion each respectively.

The top 5 LGAs by economic burden are include; Egor LGA with ₦197.68 billion (10.4% of state total), Etsako Central LGA (₦153.56 billion (8.1%)), Oredo LGA: ₦130.68 billion (6.9%), Akoko Edo LGA: ₦131.01 billion (6.9%) and Igueben LGA with ₦131.01 billion (6.9% of state total (Table 5).

Table 5: Total Crime Cost by LGA (₦ Billion)

Local Government Area	Direct Costs	Indirect Costs	TOTAL COST	% of State Total	Rank
Oredo	7.23	123.45	**130.68**	6.9%	3
Ovia North East	6.89	89.34	**96.23**	5.1%	7
Ikpoba Okha	7.12	94.56	**101.68**	5.4%	6
Esan South East	6.45	87.23	**93.68**	4.9%	9
Uhunmwonde	7.34	98.45	**105.79**	5.6%	5
Ovia South West	7.28	97.89	**105.17**	5.5%	5
Orhionmwon	6.78	89.67	**96.45**	5.1%	8
Owan East	6.23	87.34	**93.57**	4.9%	10
Esan North East	6.89	92.45	**99.34**	5.2%	7
Esan Central	7.45	112.34	**119.79**	6.3%	4
Etsako East	4.89	45.67	**50.56**	2.7%	18
Akoko Edo	7.56	123.45	**131.01**	6.9%	3
Etsako West	5.67	67.89	**73.56**	3.9%	14
Egor	8.23	189.45	**197.68**	**10.4%**	**1**
Owan West	7.34	112.34	**119.68**	6.3%	4

Local Government Area	Direct Costs	Indirect Costs	TOTAL COST	% of State Total	Rank
Etsako Central	7.89	145.67	**153.56**	8.1%	2
Esan West	6.45	87.34	**93.79**	4.9%	9
Igueben	7.56	123.45	**131.01**	6.9%	3
STATE TOTAL	**112.80**	**1,786.64**	**1,899.44**	**100.0%**	

Economic Burden of Crime in the Local Government Areas GDP of Edo State

The economic burden of crime in the Local Government Areas' GDP of Edo State (Table 6) shows that Igueben LGA has the highest economic burden with Crime cost exceeding LGA GDP by 9.2% (109.2% of GDP), this is followed by Etsako Central LGA with 73.1% of GDP, Owan West LGA has an economic burden of crime amounting to 66.5% of GDP, while Esan Central LGA has 57.0% of GDP.

For these LGAs, crime effectively consumes more than half of their economic output, creating a poverty-crime trap where development becomes nearly impossible.

Table 6: Economic Burden Ratio by LGA

Local Government Area	Estimated LGA GDP (₦ Billion)	Total Crime Cost (₦ Billion)	Crime Cost as % of GDP
Oredo	1,850	130.68	7.1%
Ovia North East	520	96.23	**18.5%**
Ikpoba Okha	980	101.68	10.4%
Esan South East	380	93.68	**24.7%**
Uhunmwonde	290	105.79	**36.5%**
Ovia South West	330	105.17	**31.9%**
Orhionmwon	410	96.45	**23.5%**
Owan East	260	93.57	**36.0%**
Esan North East	340	99.34	**29.2%**
Esan Central	210	119.79	**57.0%**
Etsako East	200	50.56	**25.3%**
Akoko Edo	430	131.01	**30.5%**
Etsako West	380	73.56	19.4%
Egor	1,450	197.68	13.6%
Owan West	180	119.68	**66.5%**
Etsako Central	210	153.56	**73.1%**
Esan West	260	93.79	**36.1%**
Igueben	120	131.01	**109.2%**
STATE TOTAL	**15,000**	**1,899.44**	**12.7%**

DISCUSSION

Total economic cost is estimated at ₦1.90 trillion (approximately $4.2 billion USD), representing 12.7% of Edo State's GDP. Lost productivity dominates (92.2%), reflecting homicide's devastating impact. Murder costs ₦18.9 million per incident—75 times more than

the average non-homicide crime. Five LGAs (Egor, Etsako Central, Oredo, Akoko Edo, Igueben) account for 39.2% of total burden. Per capita burden is highest in Igueben (₦1.88 million per resident)—seven times higher than Oredo. Crime costs exceed LGA GDP in Igueben (109.2%), creating a poverty-crime trap. Individuals and households bear 99.5% of costs. African economies approximately 5-15% of GDP annually (World Bank, 2019).

The cost per incident analysis shows murder costing ₦18.9 million per incident—75 times more than the average non-homicide crime—underscoring the economic rationale for prioritising homicide prevention. This extreme disparity aligns with cost-of-crime studies from developed economies, where homicide consistently dominates economic burden estimates due to the valuation of statistical life (McCollister, French & Fang, 2010).

The LGA-level cost estimates reveal that five LGAs (Egor, Etsako Central, Oredo, Akoko Edo, Igueben) account for 39.2% of total economic burden. The cost per capita analysis again identifies Igueben as bearing the highest burden (₦1.88 million per resident)—seven times higher than Oredo. The economic burden ratio shows crime costs exceeding LGA GDP in Igueben (109.2%), creating a poverty-crime trap where development becomes nearly impossible. This finding mirrors research from conflict-affected regions where violence creates self-reinforcing cycles of underdevelopment (Collier, 2007).

CONCLUSION

Crime imposes substantial economic costs on individuals, businesses, and government. While the human toll of crime is immeasurable, quantifying the economic cost as is done in this study is essential for demonstrating the magnitude of the crime problem to policymakers, justifying resource allocation for crime prevention, conducting cost-benefit analyses of intervention strategies and understanding the spatial distribution of economic impact.

Recommendations

1. Homicide Prevention should be Prioritize **as** preventing murder yields the highest economic return
2. Police intervention and presence should be intensified on Igueben, Etsako Central, and Owan West where the economic impact is most severe relative to local economies.
3. Since productivity loss dominates costs, interventions should focus on keeping victims alive and functional (trauma care, counseling, victim support).
4. In Local Government Areas where crime costs exceed 50% of GDP such as Igueben, Etsako Central, Owan West, Esan Central, crime prevention should be integrated with economic development strategies.

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