

Violent Crime and State Fragility in Nigeria: A Comparative Analysis of Levels and Population-Adjusted Rates (2000–2023)

By

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Abstract

This study provides a comparative analysis of violent crime measured in absolute levels and population-adjusted rates in Nigeria, and evaluates how this measurement approaches influence empirical results and the interpretation of insecurity and state fragility. Using annual time-series data from 2000 to 2023, the study applies descriptive statistics, trend analysis, correlation, and multiple regression techniques to examine the relationships between violent crime and key demographic and socio-economic variables. The findings reveal that trends in violent crime differ significantly depending on the measurement approach. While absolute violent deaths increase in later years, population-adjusted rates decline and stabilise, indicating divergent patterns between aggregate burden and individual risk. Regression results further show that population and urbanisation are significant predictors in both models, although their effects vary across measurement types, while GDP and poverty are not statistically significant. These results provide empirical support for the hypotheses that measurement choice affects trend interpretation, explanatory consistency, and the assessment of insecurity. The study demonstrates that absolute counts and population-adjusted rates capture distinct but complementary dimensions of violence, reflecting differences between scale and exposure to risk. This distinction has important implications for theory and policy, particularly in the evaluation of state fragility, where reliance on a single measure may lead to incomplete or misleading conclusions. The study contributes to the literature by highlighting the need for integrated measurement approaches in the analysis of violent crime in high-population and rapidly changing contexts.

Keywords: violent crime, measurement, population-adjusted rates, state fragility, Nigeria, time-series analysis

Introduction

Since the end of the Cold War, the nature of global security threats has shifted markedly from traditional interstate warfare to that of intra-state violence and state fragility. This transformation reflects the growing recognition that patterns of internal violence, including homicide, insurgency, and communal conflict, constitute significant challenges to both national stability and international peace. Globally, violence remains a major security concern. According to the United Nations Office on Drugs and Crime, there were approximately 458,000 victims of intentional homicide worldwide in 2021, corresponding to a global homicide rate of 5.8 per 100,000 population (UNODC, 2023). Notably, homicide alone accounted for more deaths than armed conflict and terrorism combined, reinforcing its centrality within contemporary security discourse. Complementing this, the World Bank estimates that one in six people globally is exposed to conflict, underscoring the scale at which violence intersects with global development and security challenges (World Bank, 2020).

Closely linked to this evolving security landscape is the concept of state fragility, which has become a focal point in both academic and policy debates. Fragile contexts are characterised by weak institutional capacity, limited ability to manage violence, and heightened vulnerability to instability. The Organisation for Economic Co-operation and Development identifies 61 contexts experiencing high or extreme fragility, accounting for approximately 25% of the global population but 72% of the world's extreme poor (OECD, 2025). Projections indicate that by 2040, up to 92% of the global extreme poor could be concentrated in such fragile environments, while the World Bank estimates that over half, and potentially up to two-thirds, of the world's extreme poor will reside in fragile and conflict-affected settings by 2030 (World Bank, 2020; OECD, 2025). These figures highlight the disproportionate concentration of vulnerability within fragile states and reinforce the importance of understanding the drivers and measurement of violence in such contexts.

Nigeria represents a critical empirical case within this framework. As the most populous country in Africa and a key regional actor, its internal security dynamics have significant implications for West African stability. Patterns of violence in Nigeria have been both persistent and substantial. Data from Nigeria Watch report 12,162 violent deaths in 2024, with a cumulative total of 208,998 deaths recorded between 2006 and 2024 (Nigeria Watch, 2024). Similarly, the Armed Conflict Location & Event Data Project documents 9,498 conflict-related fatalities in 2024 alone, across thousands of recorded incidents, and classifies Nigeria within the “extreme” conflict category in its global assessments (ACLED, 2025). At the regional level, Nigeria's importance is further underscored by evidence that it accounted for approximately 44.5% of conflict-related deaths in West Africa in early 2025, reflecting its central role in the regional security architecture (CDD West Africa, 2025). These patterns illustrate that violence in Nigeria is not merely a domestic issue but a phenomenon with significant regional and international implications.

A defining feature of the Nigerian context is its rapid demographic expansion, which complicates the measurement and interpretation of violence. According to the World Bank (2024), Nigeria's population reached 232,679,478 in 2024, growing at an annual rate of 2.1%. The United Nations Department of Economic and Social Affairs identifies Nigeria as one of the principal contributors

to future global population growth, further reinforcing its demographic significance (UN DESA, 2024). Urbanisation trends amplify these dynamics. World Bank data indicate that 54.3% of Nigeria's population resided in urban areas in 2024, with urban population growth outpacing overall population expansion (World Bank, 2024). This rapid urban growth places increasing pressure on infrastructure, governance systems, and security institutions, thereby creating conditions conducive to the concentration and escalation of violence.

These demographic pressures interact with persistent structural development challenges. Despite a reported GDP of \$252.26 billion and an economic growth rate of 4.1% in 2024 (World Bank, 2024), poverty remains widespread. The World Bank estimates that 61% of Nigerians lived below the national poverty line in 2024, rising to 63% in 2025 (World Bank, 2026). Similarly, the United Nations Development Programme reports that approximately 133 million Nigerians, representing 63% of the population, are multidimensionally poor (UNDP, 2022). These structural conditions reflect underlying socio-economic vulnerabilities that are often associated with heightened risks of violence and instability, reinforcing Nigeria's classification within broader fragility discourse.

A central issue emerging from this context is the measurement of violent crime. The distinction between absolute levels of violence and population-adjusted rates remains a critical yet underexplored dimension in both academic and policy analysis. Globally, the contrast between 458,000 total homicides and a rate of 5.8 per 100,000 population illustrates how aggregate burden differs from individual risk (UNODC, 2023). Cross-national comparisons further highlight this divergence. For instance, India recorded 41,330 homicides in 2021 but maintained a relatively moderate homicide rate of approximately 2.9 per 100,000, whereas Jamaica recorded only 1,474 homicides but exhibited a significantly higher rate exceeding 50 per 100,000 (United Nations, 2023; UNODC, 2024). These contrasts demonstrate that reliance on a single measure may lead to incomplete or misleading interpretations of violence and insecurity.

To the best of the present review, no verified academic study was identified that systematically compares absolute violent-death counts and population-adjusted rates in analysing violence trends in Nigeria. Existing Nigeria-focused studies, particularly those based on the Nigeria Watch dataset, are primarily oriented toward the use of aggregate fatality counts to examine patterns and trends in violence (Pérouse de Montclos, 2014). While some Nigeria Watch outputs occasionally report population-adjusted indicators such as fatalities per 100,000 inhabitants, these are typically presented for descriptive purposes rather than as part of a formal comparative measurement framework (Nigeria Watch, 2018). More broadly, cross-national crime research has tended to prioritise homicide rates as the standard metric for comparative analysis (Neapolitan, 1999), without systematically evaluating how alternative measures, such as absolute counts, may lead to different substantive interpretations. This suggests a gap in the literature regarding the methodological implications of measurement choice in the analysis of violent crime. This indicates a clear gap in the literature regarding the comparative interpretation of absolute and population-adjusted measures of violence. This limitation is particularly significant in high-population countries such as Nigeria, where rapid demographic growth may distort interpretations of violence depending on the chosen metric. The absence of such comparative analysis creates uncertainty in assessing the trajectory of insecurity and, by extension, the degree of state fragility.

This study addresses this gap by examining violent crime in Nigeria between 2000 and 2023 using both absolute levels and population-adjusted rates. Specifically, the study seeks to analyse trends in violent crime based on total deaths, to evaluate how these trends differ when adjusted for population size, and to assess the implications of these differences for understanding patterns of insecurity and state fragility. By integrating these perspectives, the study contributes to methodological debates on violence measurement while advancing the broader understanding of fragility within international relations.

2. Literature Review and Hypothesis Development

2.1 Measurement of Violence in Security Studies

The measurement of violence is central to security studies and international relations because it shapes how insecurity is conceptualised, compared, and addressed. Violence is typically operationalised using two principal approaches: absolute counts, which capture total fatalities, and population-adjusted rates, which standardise deaths per 100,000 population. These measures reflect different analytical priorities. The United Nations Office on Drugs and Crime reports both total homicides and homicide rates, recognising that counts reflect the overall burden of violence while rates capture relative risk (UNODC, 2019, 2023).

Measurement choices are not merely technical but have substantive implications. Pérouse de Montclos (2023) argues that indicators such as homicide rates and fatality counts play a critical role in shaping policy decisions, including humanitarian intervention thresholds and risk assessments. However, despite the coexistence of both measures, the literature has not systematically examined how the choice between counts and rates affects interpretations of violence.

2.2 Absolute Levels of Violence and Security Interpretation

Absolute counts of violent deaths remain a dominant indicator in the analysis of insecurity, particularly in country-level and regional studies, where fatality numbers are widely used to assess the severity and extent of conflict (Rodehau-Noack, 2024; UNODC, 2019). In international security practice, such counts serve as a key basis for identifying conflict intensity and prioritising policy responses. High total fatalities are therefore commonly interpreted as evidence of large-scale violence and are often associated with weak state capacity to ensure security and maintain order (Bakaki, 2020; Rodehau-Noack, 2024). In conflict analysis, aggregate deaths are frequently used to assess the scale of crises and to prioritise international responses (Raji & Abdulkadir-Imam, 2018). For example, the Armed Conflict Location & Event Data Project reports total fatalities as a key indicator of conflict severity in global assessments (ACLED, 2023).

However, absolute measures are sensitive to population size. Pérouse de Montclos (2023) highlights that analyses based solely on counts may fail to account for population differences across countries, thereby distorting comparative interpretations. Large states may appear disproportionately violent due to their demographic size, even when individual risk levels are comparatively moderate. This limitation reduces the reliability of absolute counts as a standalone indicator of insecurity.

2.3 Population-Adjusted Rates and Relative Risk

Population-adjusted rates provide a standardised measure of violence by accounting for population size, thereby capturing individual exposure to risk (Oberwittler, 2019; United Nations Office on Drugs and Crime [UNODC], 2019). These rates are widely used in comparative research because they enable meaningful cross-national comparisons, particularly as homicide rates are considered among the most reliable and comparable indicators of violence across countries (Neapolitan, 1999; Buil-Gil et al., 2026). Global analyses demonstrate substantial variation in homicide rates across countries, reflecting differences in institutional capacity, inequality, and socio-economic conditions (Oberwittler, 2019). As such, population-adjusted measures align closely with the concept of human security, which emphasises individual safety.

Despite these advantages, population-adjusted rates may obscure the total scale of violence in high-population contexts. A country may exhibit moderate rates while still accounting for a large number of deaths, thereby contributing significantly to regional or global insecurity. As emphasised by UNODC (2019), both counts and rates are necessary to fully understand the dynamics of violence. Reliance solely on rates may therefore understate the broader societal and political impact of violence in populous states.

2.4 Implications for State Fragility Assessment

The distinction between absolute counts and population-adjusted rates has important implications for assessing state fragility, as violence indicators play a central role in how fragility is conceptualised and measured in international policy frameworks (Organisation for Economic Co-operation and Development [OECD], 2015; World Bank, 2020). Fragility is inherently multidimensional, reflecting both the scale of insecurity and the level of risk experienced by individuals. As such, reliance on a single measure may provide an incomplete assessment, making it necessary to consider both aggregate levels of violence and population-adjusted indicators in evaluating fragile contexts (Oberwittler, 2019; OECD, 2015). International frameworks developed by the Organisation for Economic Co-operation and Development and the World Bank incorporate violence indicators in evaluating fragility (OECD, 2015; World Bank, 2020).

The interpretation of these indicators depends on how violence is measured. As ACLED (2023) notes, measurement choices influence how conflict severity is assessed and how policy responses are prioritised. Similarly, Ziaja et al. (2019) argue that fragility assessments often rely on aggregated indicators that may obscure important dimensions of state weakness. This suggests that different measurement approaches may lead to varying classifications of fragility. The absence of systematic comparison between counts and rates therefore limits understanding of how violence contributes to state fragility, particularly in high-population contexts.

2.5 Hypothesis Development

2.5.1 Measurement Divergence in Crime Trends

Differences between absolute crime counts and population-adjusted rates reflect distinct statistical properties of crime data. Time-series analysis shows that crime data may follow either stationary or non-stationary processes, each requiring different analytical approaches. As McDowall (2024)

explains, stationary and non-stationary series generate fundamentally different statistical behaviours, and analyses based on raw levels are more vulnerable to spurious relationships when underlying processes are non-stationary. This implies that trends derived from absolute counts may not accurately reflect underlying crime dynamics.

Furthermore, demographic structure has been shown to independently influence crime patterns over time. Taylor et al. (2015) demonstrate that population characteristics, including socioeconomic composition, shape crime trends and improve forecasting accuracy when incorporated into analytical models. Their findings indicate that failing to account for demographic factors leads to incomplete or distorted trend interpretations. Consequently, analysing crime using absolute counts without population adjustment is likely to produce different trend outcomes compared to population-adjusted measures, particularly in contexts characterised by rapid population growth such as Nigeria.

Based on this, the following hypothesis is formulated:

H1: Trends in violent crime measured in absolute levels differ significantly from trends measured using population-adjusted rates in Nigeria.

2.5.2 Population Adjustment and Consistency of Violence Trends

Population-adjusted rates provide a more analytically robust representation of violence trends because they reflect underlying probability processes rather than raw event accumulation. McDowall (2024) shows that rate-based measures allow for the identification of stable statistical properties, such as constant means and variances, which are essential for understanding long-term dynamics. In contrast, absolute counts are more susceptible to variability arising from structural changes, particularly population growth, which may obscure underlying patterns of violence.

Empirical evidence further supports the importance of demographic adjustment in explaining crime patterns. Taylor et al. (2015) find that models incorporating demographic variables outperform those based solely on crime counts in predicting long-term crime trends. This demonstrates that accounting for population structure enhances the consistency and predictive power of crime analysis. Since population-adjusted rates inherently incorporate demographic considerations, they are more likely to provide a stable and reliable representation of long-term violence trends compared to absolute levels.

Based on this, the following hypothesis is formulated:

H2: Population-adjusted violent crime rates provide a more consistent representation of long-term violence trends than absolute levels.

2.5.3 Measurement Sensitivity in State Fragility Assessment

The assessment of state fragility is sensitive to how violence is measured, as fragility frameworks rely on quantitative indicators of insecurity to evaluate state performance and vulnerability (Ziaja, Grävingholt, & Kreibaum, 2019; Carment, Prest, & Samy, 2010). In the academic literature, fragility is conceptualised as a multidimensional condition reflecting weaknesses in governance, institutional capacity, and the ability to manage violence and conflict. Accordingly, fragility

indices typically aggregate multiple indicators, including violence, governance quality, and institutional effectiveness, into composite measures designed to capture the complexity of state weakness (Carment et al., 2010; Ziaja et al., 2019). However, the selection, weighting, and aggregation of these indicators involve methodological choices that can significantly influence classification outcomes. As Ziaja et al. (2019) argue, conventional fragility indices often rely on composite indicators that obscure underlying dimensions of fragility, while Carment et al. (2010) demonstrate that different indicator configurations can lead to variation in how states are ranked and interpreted. This suggests that measurement decisions, particularly regarding how violence is operationalised, play a critical role in shaping fragility assessments.

Scherer (2015) provides direct empirical evidence that fragility classification is sensitive to measurement methodology. By replicating the OECD fragility index, the study demonstrates that variations in how indicators are constructed and aggregated can lead to substantial misclassification of countries. In particular, the use of violence indicators based on absolute measures, without proper adjustment or methodological transparency, can alter country rankings and inclusion within fragility categories.

Further evidence is provided by Asylbek Kyzy et al. (2025), who show that fragility indices are affected by measurement “noise” arising from sourcing issues, aggregation methods, and data limitations. This reinforces the argument that measurement choices play a critical role in shaping fragility assessments. Similarly, Ziaja et al. (2019) highlight that conventional fragility indices often rely on aggregated indicators that fail to fully capture the multidimensional nature of fragility. In addition, Commins (2018) confirms that contemporary fragility frameworks explicitly incorporate violence as a core dimension, further increasing the importance of how violence is measured.

Based on this, the following hypothesis is formulated:

H3: The assessment of state fragility varies depending on whether violent crime is measured in absolute levels or population-adjusted rates.

3. Theoretical Framework

This study is anchored in established criminological and international relations theories that explain the production, distribution, and interpretation of violence within societies. The theoretical foundation integrates insights from Social Disorganization Theory, Routine Activity Theory, and state fragility frameworks to provide a coherent explanation of how violent crime should be measured and interpreted. Social Disorganization Theory, originally developed by Shaw and McKay (1942), provides a structural explanation of crime by linking it to community-level conditions such as poverty, residential instability, and weakened social institutions. It has been shown that crime rates are associated with structural characteristics including socioeconomic disadvantage and breakdown of informal social control (Sampson & Groves, 1989). The theory posits that crime reflects broader social disorganization within communities rather than merely individual behaviour. This is in tune with the use of absolute counts of violence, as aggregate levels of violent crime capture the overall burden of structural instability within a society. High counts

of violent deaths therefore reflect systemic weaknesses in social organization and governance, making absolute measures theoretically relevant for assessing large-scale insecurity.

However, Social Disorganization Theory also recognises that crime is unevenly distributed across populations and communities. Structural conditions do not affect all individuals equally, which introduces the need to consider variations in exposure to violence. This limitation of aggregate measures necessitates complementary approaches that account for differences in population size and composition.

Routine Activity Theory, developed by Cohen and Felson (1979), provides a micro-level explanation of crime by focusing on the conditions under which criminal events occur. The theory posits that crime arises when a motivated offender, a suitable target, and the absence of capable guardianship converge in time and space. It emphasises that crime is shaped by patterns of everyday activities and exposure rather than solely by structural conditions (Cohen & Felson, 1979). This perspective is relevant for population-adjusted rates, which measure the likelihood of individuals being exposed to violence within a given population. Rates therefore capture the intensity of risk rather than the aggregate burden, consistent with the theoretical emphasis on exposure and opportunity.

While Social Disorganization Theory explains why violence occurs at scale, Routine Activity Theory explains how and to whom it occurs. This distinction corresponds to the difference between absolute counts and population-adjusted rates, with each measure capturing a different dimension of violence.

At the international level, the distinction between the structural scale of violence (captured by absolute counts) and individual exposure to risk (captured by population-adjusted rates) is further contextualised within state fragility frameworks developed by institutions such as the Organisation for Economic Co-operation and Development and the World Bank. These frameworks conceptualise fragility as the inability of a state to manage risks, provide security, and maintain effective governance (Organisation for Economic Co-operation and Development, 2015; World Bank, 2020). Within this perspective, violence is treated as a core indicator of fragility, reflecting both the overall magnitude of insecurity within a state and the capacity of state institutions to control the use of force. However, these frameworks do not prescribe a single method for measuring violence, thereby allowing for variation in the use of absolute counts or population-adjusted rates. As a result, the theoretical distinction between scale and risk becomes critical, as different measurement approaches may emphasise different dimensions of fragility and lead to divergent interpretations of state stability.

This leads to an important theoretical implication. The way violence is measured can shape how state fragility is interpreted. Measures based on absolute counts capture the overall scale of violence, reflecting the extent of insecurity and the pressure it places on state institutions and governance systems. In contrast, population-adjusted rates capture the level of risk faced by individuals, indicating how likely people within a society are to experience violence. Because state fragility involves both institutional weakness, reflected in large-scale violence, and human vulnerability, reflected in exposure to risk, relying on only one type of measure may produce a

partial or misleading assessment. A comprehensive understanding of fragility therefore requires consideration of both dimensions.

4. Methodology

This study adopts a quantitative time-series research design to examine how different measurement approaches to violent crime influence trend interpretation and fragility assessment in Nigeria. The analysis covers the period 2000 - 2023, using annual data to capture long-term dynamics in violent crime and its relationship with key demographic and socio-economic factors.

The study relies on secondary data obtained from credible and widely used sources. Data on violent deaths are drawn from the Global Violent Deaths (GVD) dataset, while socio-economic indicators including gross domestic product (GDP), population size, urbanisation, and poverty rates are sourced from the World Bank World Development Indicators. These datasets are commonly used in empirical research and provide reliable and consistent measurements across time.

The dependent variable, violent crime, is operationalised in two forms. First, it is measured in absolute levels, defined as the total number of violent deaths recorded annually. Second, it is measured as a population-adjusted rate, calculated as the number of violent deaths per 100,000 population. This dual operationalisation allows for direct comparison between the scale of violence and the level of risk, which is central to the objectives of the study.

The independent variables include GDP, population size, urbanisation, and poverty, which are incorporated to account for structural and demographic influences on violent crime. In addition, a lagged dependent variable ($Violence_{t-1}$) is included to capture the persistence of violence over time, reflecting the dynamic nature of crime patterns.

Data analysis is conducted using the IBM SPSS Statistics software package and focuses on a set of basic statistical techniques appropriate for the study objectives. First, descriptive statistics are used to summarise the key characteristics of the variables, including their means, standard deviations, and ranges. This provides an overview of the data and identifies general patterns.

Second, trend analysis is performed using line graphs to compare the trajectories of violent crime measured in absolute levels and population-adjusted rates over time. This allows for a visual assessment of whether the two measures exhibit similar or divergent trends, thereby addressing the first hypothesis.

Third, a correlation analysis is conducted using Pearson correlation coefficients to examine the relationships between violent crime and the explanatory variables. This provides initial insight into the direction and strength of associations between variables.

Fourth, multiple regression analysis is employed to examine the determinants of violent crime under both measurement approaches. Two separate regression models are estimated. The first model uses violent crime in absolute levels as the dependent variable, while the second model uses the population-adjusted rate. Both models include the same set of independent variables, including GDP, population, urbanisation, poverty, and the lagged dependent variable. This enables a direct comparison of explanatory power and consistency between the two measurement approaches.

Finally, the results of the two regression models are compared to assess how measurement choice influences the interpretation of violent crime and its implications for state fragility. Differences in coefficient significance, magnitude, and model fit are used to evaluate whether the choice between absolute counts and population-adjusted rates leads to different empirical conclusions.

5. Results and Analysis

5.1 Descriptive Statistics

Descriptive statistics were computed to summarise the key characteristics of the study variables over the period 2000–2023. Table 4.1 presents the descriptive statistics for all variables included in the study. As shown in Table 1, violent crime measured in absolute levels (Violence Deaths) records a mean value of 15,548.40 deaths, with a minimum of 13,460.79 and a maximum of 18,207.09. The relatively high standard deviation (SD = 1,491.77) indicates considerable variation in the total number of violent deaths across the study period. This suggests that the scale of violence has fluctuated significantly over time, reflecting changing security conditions.

Table 1: Descriptive Statistics of Study Variables (2000–2023)

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Violence_Deaths	24	13460.7863	18207.0948	15548.3974	1491.76537
GDP	24	1421.6799	2585.7336	2156.1614	343.03457
Population	24	126382494	227882945	175021100.9	31881279.25
Urban	24	43.2785	62.1747	52.8413	5.79093
Poverty	24	30.50	58.50	40.3483	7.19254
Lagged_Violence	23	13460.7863	18207.0948	15433.6488	1412.84770
Violence_Rate	24	7.73	12.89	9.1022	1.55692

In contrast, the population-adjusted measure (Violence_Rate) exhibits a mean of 9.10 per 100,000 population, with values ranging from 7.73 to 12.89. The lower standard deviation (SD = 1.56) indicates that the rate of violence is comparatively more stable than absolute counts. This difference highlights the effect of population adjustment in smoothing fluctuations and capturing underlying risk rather than aggregate burden.

Population shows substantial growth over the study period, with a mean of approximately 175,021,100 and a wide range between 126,382,494 and 227,882,945. The large standard deviation (SD = 31,881,279.25) reflects rapid demographic expansion, which is a critical factor influencing the divergence between absolute and rate-based measures of violence.

Economic performance, measured by GDP, has a mean value of 2,156.16 and a standard deviation of 343.03, indicating moderate variation over time. Urbanisation exhibits a mean of 52.84%, with values ranging from 43.28% to 62.17%, suggesting a steady increase in the proportion of the population living in urban areas. Poverty records a mean of 40.35%, with a relatively wider

dispersion (SD = 7.19), indicating fluctuations in socio-economic conditions across the study period.

The lagged violence variable (Lagged_Violence) has a mean of 15,433.65 and closely mirrors the distribution of violent deaths, confirming the persistence of violence over time. The similarity between the lagged and current violence measures suggests that past levels of violence may play a role in shaping current outcomes.

5.2 Trend Analysis

Trend analysis was conducted to compare the temporal behaviour of violent crime when measured in absolute levels and when measured as a population-adjusted rate. This provides an initial test of whether the two measurement approaches produce similar or divergent patterns over time.

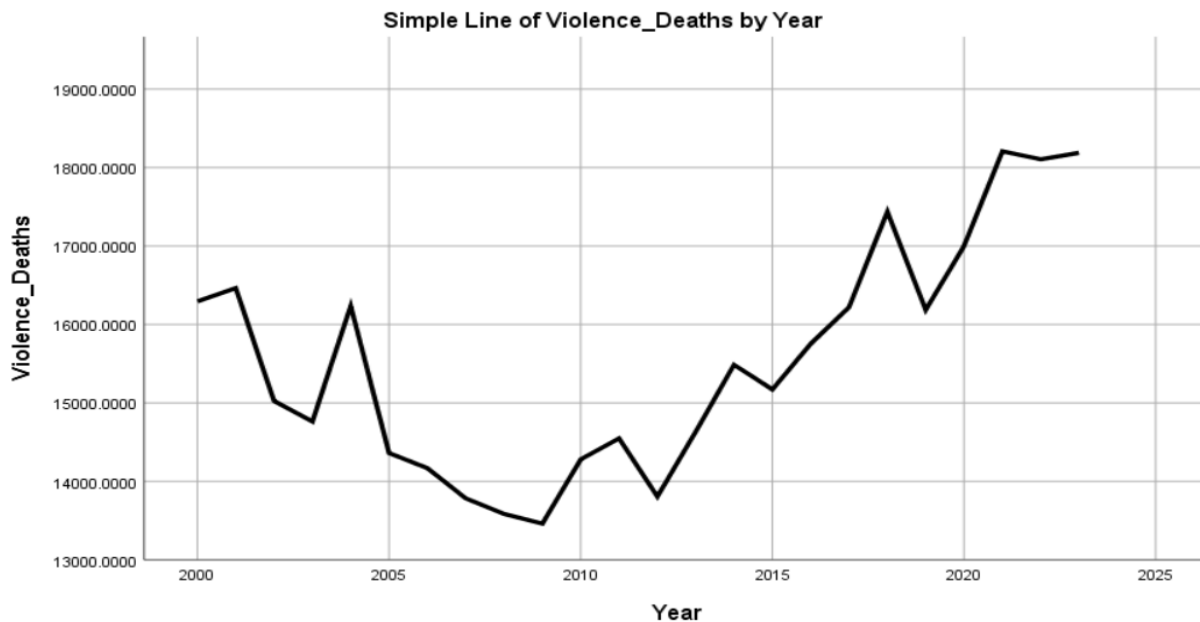


Figure 4.1. Trend of Violent Crime Measured in Absolute Levels (Violence_Deaths), 2000–2023

Figure 4.1 presents the annual trend in violent crime measured as total violent deaths between 2000 and 2023. The pattern shows that violent deaths were relatively high at the beginning of the study period, followed by a decline in the early to late 2000s. The lowest levels are observed around 2008–2009, after which the trend begins to reverse. From approximately 2010 onward, violent deaths show a generally upward trajectory, with some short-term fluctuations. The rise becomes more pronounced after 2015, and the series reaches its highest levels in the early 2020s. This pattern of absolute violence suggests that the aggregate burden of violent crime increased substantially in the later years of the study period.

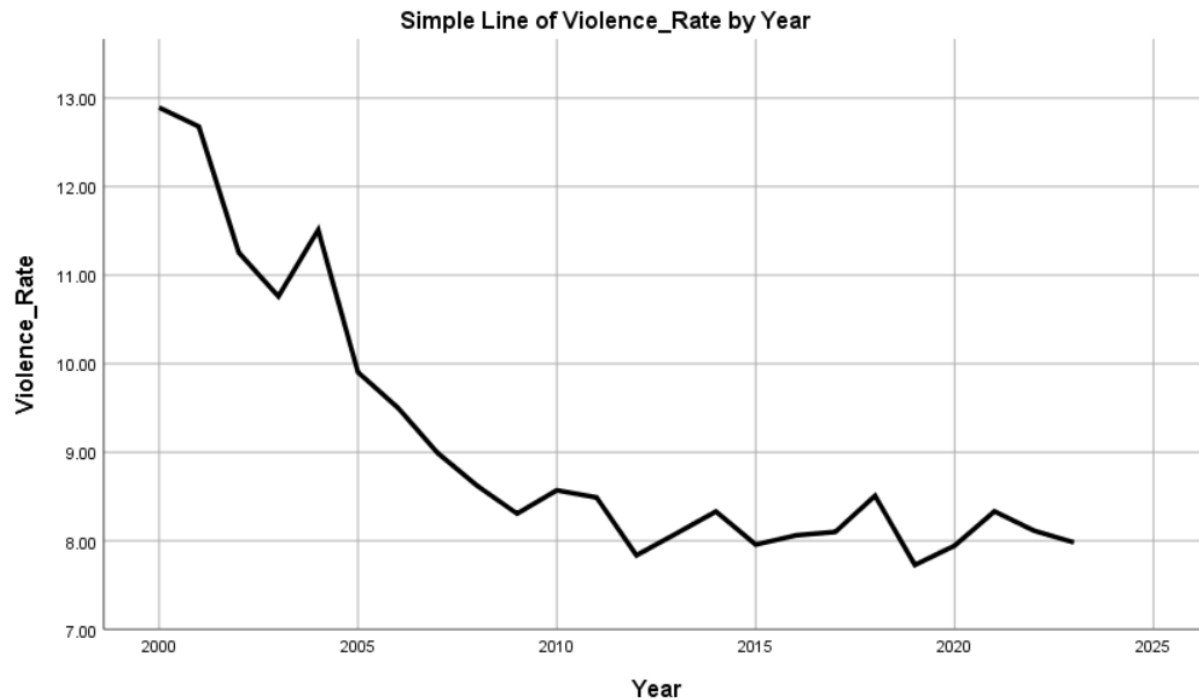


Figure 4.2. Trend of Violent Crime Measured as a Population-Adjusted Rate (*Violence_Rate*), 2000–2023

In contrast, Figure 4.2 presents the trend in violent crime measured as a rate per 100,000 population over the same period. Unlike the pattern observed for total violent deaths, the rate-based measure shows a more sustained decline from 2000 to about 2012. After this period, the trend becomes relatively stable, fluctuating within a narrower range. Although there are minor increases in some years, the violence rate does not display the sharp upward movement observed in the absolute series. By the end of the study period, the rate remains considerably lower than its value at the beginning of the period.

The trends in Figures 4.1 and 4.2 diverge noticeably, with absolute violence increasing in recent years, while the rate of violence declines and then levels off. This indicates that the rise in total deaths is largely driven by population growth rather than a proportional increase in individual risk. The implication is that relying solely on absolute counts suggests worsening insecurity, particularly after 2010, whereas rate-based measures present a more stable long-term pattern. Thus, measurement choice shapes both the statistical representation and interpretation of violence. These findings provide preliminary support for H1, as the two measures exhibit distinct trends and lead to different conclusions, with absolute counts reflecting the overall burden of violence and rates capturing relative exposure.

5.3 Correlation Analysis

Correlation analysis was conducted to examine the strength and direction of relationships between violent crime and the selected socio-economic variables. This provides preliminary insight into how the variables are associated before proceeding to regression analysis.

Table 3: Pearson Correlation Matrix

Variable	Violence_Deaths	GDP	Population Urban	Poverty Lagged_Violence	Violence_Rate		
Violence_Deaths	1	.041	.600**	.564**	.589**	.828**	-.011
GDP	.041	1	.764**	.788**	.545**	-.070	-.928**
Population	.600**	.764**	1	.999**	.895**	.532**	-.804**
Urban	.564**	.788**	.999**	1	.894**	.500*	-.831**
Poverty	.589**	.545**	.895**	.894**	1	.570**	-.684**
Lagged_Violence	.828**	-.070	.532**	.500*	.570**	1	-.009
Violence_Rate	-.011	-.928**	-.804**	-.831**	-.684**	-.009	1

Note: $p < .01$, $*p < .05$

Table 3 presents the Pearson correlation coefficients for all variables included in the study. Violent crime measured in absolute levels (Violence_Deaths) shows statistically significant positive relationships with population ($r = .600$, $p < .01$), urbanisation ($r = .564$, $p < .01$), poverty ($r = .589$, $p < .01$), and lagged violence ($r = .828$, $p < .01$). These results indicate that increases in population size, urban development, and poverty are associated with higher total violent deaths, while the strong correlation with lagged violence confirms the persistence of violent crime over time.

GDP, however, shows no significant relationship with violent deaths ($r = .041$), suggesting that economic growth alone may not directly influence the aggregate level of violence. The strong positive association between violent deaths and structural variables supports the view that absolute measures of violence are closely linked to demographic and socio-economic conditions.

In contrast, violent crime measured as a population-adjusted rate (Violence_Rate) exhibits a markedly different pattern. The results show strong and statistically significant negative relationships with GDP ($r = -.928$, $p < .01$), population ($r = -.804$, $p < .01$), urbanisation ($r = -.831$, $p < .01$), and poverty ($r = -.684$, $p < .01$). This indicates that increases in these variables are associated with lower levels of individual exposure to violence. Notably, the relationship between violent deaths and the violence rate is negligible and not statistically significant ($r = -.011$), further reinforcing the distinction between the two measures.

5.4 Regression Analysis

To examine the determinants of violent crime measured in absolute terms, a multiple regression analysis was conducted with Violence_Deaths as the dependent variable. The model includes GDP, population, urbanisation, poverty, and lagged violence as explanatory variables.

Table 4 presents the regression results. The model demonstrates strong explanatory power, with an R^2 of .884 and an adjusted R^2 of .850, indicating that approximately 88.4% of the variation in violent deaths is explained by the included variables. The overall model is statistically significant

($F = 25.944$, $p < .001$), suggesting that the predictors jointly explain variations in violent crime at the aggregate level.

Table 4: Regression Results

Model Summary

R	R²	Adjusted R²	Std. Error
.940	.884	.850	587.27

ANOVA

Source	SS	df	MS	F	Sig.
Regression	44,738,723.44	5	8,947,744.69	25.944	.000
Residual	5,862,979.60	17	344,881.15		
Total	50,601,703.04	22			

Coefficients

Variable	B	Beta	t	Sig.
Constant	76896.00		2.949	.009
GDP	-2.021	-.416	-1.460	.162
Population	.001	12.003	2.902	.010
Urban	-3004.30	-10.980	-2.537	.021
Poverty	-1.803	-.030	-.030	.976
Lagged_Violence	-.096	-.089	-.439	.666

The results show that population and urbanisation are statistically significant predictors of violent deaths. Population has a positive and significant effect ($\beta = 12.003$, $p = .010$), indicating that increases in population are associated with higher total violent deaths. This is consistent with the expectation that larger populations generate higher aggregate counts of violence.

Urbanisation, on the other hand, has a significant negative effect ($\beta = -10.980$, $p = .021$), suggesting that increases in urbanisation are associated with a reduction in violent deaths at the

aggregate level. This may reflect improved access to infrastructure, security, and institutional presence in more urbanised settings.

GDP and poverty do not exhibit statistically significant effects in this model, indicating that their influence on total violent deaths may be limited when controlling for other variables. Similarly, the lagged violence variable is not significant, suggesting that once structural factors are accounted for, past violence does not independently explain current levels of violent deaths.

To further examine the determinants of violent crime, a second regression model was estimated using *Violence_Rate* as the dependent variable. This model allows for an assessment of how socio-economic and demographic factors influence individual exposure to violence, as opposed to aggregate counts. The model as shown in table 5 demonstrates very strong explanatory power, with an R^2 of .945 and an adjusted R^2 of .929, indicating that approximately 94.5% of the variation in violence rates is explained by the independent variables. The overall model is statistically significant ($F = 58.550$, $p < .001$), confirming that the predictors jointly explain variations in the population-adjusted measure of violence.

Table 5: Regression Results for Population-Adjusted Violence

Model Summary

R	R^2	Adjusted R^2	Std. Error
.972	.945	.929	0.363

ANOVA	SS	Df	MS	F	Sig.
Regression	38.517	5	7.703	58.550	.000
Residual	2.237	17	.132		
Total	40.754	22			

Coefficients	B	Beta	t	Sig.
Constant	73.590		4.570	.000
GDP	-0.001	-0.262	-1.337	.199
Population	4.439E-7	10.178	3.576	.002
Urban	-2.648	-10.785	-3.620	.002
Poverty	0.009	0.046	0.241	.813

Coefficients	B	Beta	t	Sig.
Lagged_Violence	-6.94E-5	-0.072	-0.514	.614

The results indicate that population and urbanisation remain statistically significant predictors, but their interpretation differs in the context of population-adjusted rates. Population has a positive and significant effect ($\beta = 10.178$, $p = .002$), suggesting that demographic expansion continues to influence violence even after adjustment, although the magnitude reflects its effect on per capita exposure rather than total counts.

Urbanisation retains a significant negative effect ($\beta = -10.785$, $p = .002$), indicating that higher levels of urbanisation are associated with lower rates of violence. This finding is consistent with the argument that urban development may enhance institutional capacity, access to services, and security infrastructure, thereby reducing individual risk.

GDP and poverty remain statistically insignificant, indicating that their effects on violence rates are not robust within this model. Similarly, the lagged violence variable is not significant, suggesting that persistence effects are less pronounced when violence is measured in rate terms.

Importantly, the population-adjusted model exhibits a higher explanatory power compared to the absolute model ($R^2 = .945$ vs $.884$), indicating greater model fit and consistency. The coefficients are also more stable and theoretically coherent in reflecting exposure to violence rather than aggregate burden.

These results provide strong support for H2, which posits that population-adjusted violent crime rates offer a more consistent representation of long-term violence trends than absolute levels. The findings suggest that rate-based measures better capture the underlying dynamics of violence, particularly in contexts characterised by rapid population growth.

5.6 Hypothesis Testing

The first hypothesis states that trends in violent crime measured in absolute levels differ significantly from trends measured using population-adjusted rates in Nigeria. The result indicates that while absolute violent deaths show a noticeable increase in the later years, particularly after 2010, the population-adjusted rate declines over time and subsequently stabilises. These divergent trajectories indicate that the two measures do not move in parallel and capture different aspects of violence. Therefore, H1 is supported.

The second hypothesis posits that population-adjusted violent crime rates provide a more consistent representation of long-term violence trends than absolute levels. The model using the population-adjusted rate as the dependent variable demonstrates higher explanatory power ($R^2 = .945$) compared to the model based on absolute levels ($R^2 = .884$). In addition, the rate-based model exhibits greater stability in coefficient estimates and stronger statistical significance for key predictors, particularly population and urbanisation. These findings indicate that population-

adjusted measures offer a more reliable and consistent representation of violence dynamics over time. Consequently, H2 is supported.

The third hypothesis states that the assessment of state fragility varies depending on whether violent crime is measured in absolute levels or population-adjusted rates. The results support this hypothesis through the observed differences in interpretation between the two models. The absolute model suggests that violent crime has increased substantially in recent years, implying a worsening security environment. In contrast, the population-adjusted model indicates a more stable pattern of violence, suggesting that individual exposure to risk has not increased at the same rate as total deaths. This divergence demonstrates that conclusions about insecurity and state fragility are sensitive to the choice of measurement. As such, H3 is also supported.

6. Discussion

The findings demonstrate that the measurement of violent crime significantly shapes both empirical outcomes and the interpretation of insecurity in Nigeria. The divergence seen between absolute counts and population-adjusted rates, where total violent deaths increase in later years, while the rate declines and stabilises, indicates that the observed rise in violence is largely driven by population growth rather than a proportional increase in individual risk.

This result is consistent with global evidence distinguishing between the aggregate burden of violence and relative exposure to risk (UNODC, 2019, 2023). Comparative criminology studies similarly show that homicide rates are more appropriate for assessing risk, while absolute counts reflect the scale of violence in large populations (Neapolitan, 1999; Oberwittler, 2019). This study extends this literature by demonstrating that the divergence between these measures is particularly pronounced in high-population contexts.

The findings also align with Social Disorganisation Theory, which links higher levels of violent crime to structural pressures such as population growth and urban expansion that strain social control mechanisms. At the same time, the relative stability of population-adjusted violence rates is consistent with Routine Activity Theory, which focuses on patterns of exposure to risk rather than aggregate outcomes.

The regression results further support this interpretation by demonstrating consistent patterns across both models. Population and urbanisation are significant predictors in each case, although their effects differ depending on how violence is measured. In the absolute model, population growth increases total violent deaths, reflecting its influence on the overall scale of violence. This finding is consistent with cross-national studies which show that larger populations tend to record higher aggregate levels of crime due to scale effects (UNODC, 2019; Neapolitan, 1999). In contrast, in the rate-based model, population captures changes in individual exposure rather than aggregate levels, aligning with criminological evidence that population-adjusted measures provide a more accurate reflection of victimisation risk (Oberwittler, 2019).

Urbanisation shows a consistent negative relationship with violence in both models, indicating that higher levels of urban development may enhance institutional capacity and reduce vulnerability to violence. This finding contrasts with traditional assumptions that urbanisation increases crime, but

is supported by more recent empirical studies which suggest that urban growth, when accompanied by improved governance, infrastructure, and service delivery, can reduce violence and strengthen social control (Glaeser & Sacerdote, 1999; UN-Habitat, 2020). Overall, these results are consistent with the broader literature which emphasises that demographic and structural factors shape both the scale and distribution of violence, but that their effects depend critically on how violence is measured.

GDP and poverty are not statistically significant in either model. This suggests that macroeconomic indicators do not directly explain variations in violent crime when structural and demographic factors are considered. This finding is consistent with the broader empirical literature, which shows that the relationship between economic conditions and violent crime is often weak or inconsistent across contexts. Cross-national evidence indicates that aggregate economic measures such as GDP have limited explanatory power for crime outcomes when institutional quality, inequality, and social factors are taken into account (Fajnzylber, Lederman, & Loayza, 2002; Nivette, 2011). Similarly, studies have shown that poverty alone does not consistently predict violent crime, as its effects are mediated by governance, social cohesion, and inequality (UNODC, 2019). These findings suggest that macroeconomic indicators are insufficient to explain violent crime in isolation and must be interpreted within a broader structural and institutional context.

7. Conclusion

This study concludes that the measurement of violent crime is not merely a technical exercise but a substantive issue that directly shapes how insecurity is understood and interpreted. The choice between absolute levels and population-adjusted rates reflects two distinct analytical perspectives: one that captures the scale of violence and another that captures individual exposure to risk. Neither measure is sufficient on its own. A comprehensive assessment of violence requires the integration of both approaches in order to reflect the full complexity of insecurity.

The study advances the understanding of violent crime by demonstrating that measurement influences not only empirical representation but also theoretical interpretation. It reinforces the need to distinguish between aggregate burden and relative risk, particularly in contexts characterised by rapid demographic change. By situating this distinction within broader debates on crime and state fragility, the study highlights the importance of aligning measurement strategies with the conceptual dimensions of insecurity being examined.

From a policy perspective, the study underscores the need for greater methodological clarity in the assessment of violence. Policymakers and international organisations should adopt dual measurement frameworks that incorporate both absolute counts and population-adjusted rates. This approach will improve the accuracy of security assessments and ensure that policy responses are grounded in a more balanced understanding of violence.

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