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ECONOMIC AND SECURITY DRIVERS OF EMIGRATION FROM NIGERIA, 2005–2018: A REGRESSION AND SPATIAL ANALYSIS

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ABSTRACT: This study analyzes how economic (unemployment, real GDP) and security indicators (armed robbery and missing persons) shaped emigration from Nigeria between 2005 and 2018. Using secondary data from the NBS, CBN, and World Bank, the study applies SPSS regression analysis, ArcGIS spatial mapping, and a 14-year dataset (N = 14) to assess trends and relationships. The joint regression model explains 47.2% of the variance in emigration, with unemployment emerging as the only significant predictor ($p = 0.022$). A projection to 2030 suggests a potential rise in emigration, though this estimate depends on model assumptions and carries forecast uncertainty, underscoring the need for cautious policy responses integrating employment creation and security reforms.

Keywords: National Economic, Security, Indicators, Emigration, Nigeria

INTRODUCTION

Economic conditions and personal security strongly influence population mobility, particularly in developing contexts (World Bank, 2019; 2021). In Nigeria, persistent unemployment, fluctuating real GDP, and exposure to everyday security threats continue to shape mobility decisions, reinforcing long-standing push factors identified in the migration literature (Khalid & Urbański, 2021; Castles & Delgado Wise, 2019). This study focuses on four indicators: unemployment rate, real GDP, armed robbery, and missing-persons cases. These indicators capture the main economic and security pressures associated with emigration (Massey et al., 1993; Piore, 1979; Czaika, 2015).

Broader migration theory provides direction for the expected relationships. Neoclassical, household, and new-economics-of-labor frameworks suggest that economic constraints motivate out-migration, especially where unemployment is high and income-earning opportunities are limited (Stark & Bloom, 1985; Stark, 1991). Security-focused explanations further argue that exposure to violence and criminal threats can push people to relocate domestically or internationally (Adhikari, 2012; Hendrix & Horst, 2018). At the same time, real GDP may exhibit an ambiguous sign: while weak national output may increase emigration, rising GDP can also facilitate international movement by increasing households' ability to finance travel (McDonald & Harrison, 2017). A brief theoretical elaboration is provided in the literature review; here, it serves primarily to justify the choice of indicators and the national focus.

Building on these foundations, the present study tests a single, falsifiable thesis: economic indicators (unemployment rate and real GDP) and selected security indicators (armed robbery and missing-persons cases) jointly predict national emigration levels in Nigeria between 2005 and 2018. Guided by prior studies, the expected directions are that unemployment, armed robbery, and missing-persons cases will exert positive pressure on emigration (Okeke & Anyanwu, 2018; Onah, 2021), while real GDP is expected to show a negative relationship, though a positive sign remains theoretically plausible in the Nigerian context. To set clear expectations for the empirical strategy, the analysis draws on national annual data for fourteen observations (N = 14) covering 2005–2018, employs multiple regression to assess joint effects, and uses ArcGIS to map state-level security variations. This approach quantifies how economic and security conditions jointly influence Nigeria's emigration levels.

LITERATURE REVIEW

International and African migration studies link emigration to economic constraints and security pressures. However, debate persists about which factor is more influential. Economic explanations grounded in neoclassical and household decision theories argue that migration is fundamentally a response to labour-market imbalances and income instability (Massey et al., 1993; Stark & Bloom, 1985; Stark, 1991). In the Nigerian context, persistent unemployment, inflation, and structural underemployment have long been cited as catalysts for outward mobility (Okafor, 2017; Okeke & Anyanwu, 2018). Institutional and comparative studies similarly point to broader macroeconomic constraints, such as Nigeria's dependence on oil revenues and exposure to fiscal shocks, as factors that push individuals to seek opportunities abroad (World Bank, 2019, 2020, 2021). These perspectives predict that unemployment should be strongly and positively associated with emigration, while improvements in economic output (real GDP) should reduce the incentive to leave, although higher national income can also facilitate international movement by easing liquidity constraints (McDonald & Harrison, 2017).

A second body of literature links insecurity directly to migration. In Nigeria, studies highlight threats such as Boko Haram attacks in the Northeast, banditry in the Northwest, farmer–herder clashes in the Middle Belt, and communal or ethnoreligious violence in several regions (IOM, 2016; IOM, 2020; IOM, 2021; UNHCR, 2020). These events displace people, destroy property, and disrupt livelihoods. They also reduce trust in state protection. Each of these effects can push people to move internally or internationally. Comparative research shows similar patterns elsewhere: violence, conflict, and political instability increase emigration in many developing countries (Adhikari, 2012; Hendrix & Horst, 2018; Czaika & Kis-Katos, 2009; Czaika, 2015). The overall evidence is clear: greater insecurity tends to raise out-migration.

Nigeria's insecurity is multidimensional. Common indicators in the literature, such as deaths from terrorism, battle-related fatalities, and displacement counts, do not capture everyday threats that shape routine decisions. This study, therefore, highlights armed robbery and missing-persons cases, which are widespread forms of urban and peri-urban insecurity but remain understudied in migration research. These crimes differ from high-intensity conflict, yet they reflect personal safety concerns, trust in law enforcement, and daily vulnerability. Micro-level studies show that these factors influence both short- and long-term mobility choices. Including these indicators does not

replace broader measures of insecurity; instead, it provides a more detailed view of urban crime patterns, especially in southern Nigeria, where such incidents are more common.

Studies specific to Nigeria show that economic hardship and perceived insecurity often operate together in shaping emigration decisions. Evidence from peer-reviewed analyses shows that Nigerian emigrants often report a combination of financial precarity, dissatisfaction with governance, and fears about personal safety as reasons for leaving (Onah, 2021; Okeke & Anyanwu, 2018). Reports by the IOM and the World Bank emphasize the role of inequality, inflation, and rising youth unemployment as drivers of both regular and irregular migration (World Bank, 2019; IOM, 2021). At the same time, these institutional datasets reveal growing numbers of Nigerians leaving regions not typically affected by terrorism, underscoring the relevance of everyday security threats captured by this study's indicators.

The literature points to two main expectations. The first is the economic-push view, which holds that unemployment and weak economic conditions drive emigration. The second is the security-push view, which argues that crime, violence, and state weakness, whether from major conflict or everyday insecurity, are the strongest triggers for migration. Because these explanations overlap but differ in emphasis, studies that combine both economic and security indicators offer a more complete assessment of Nigeria's migration dynamics. By analysing unemployment, real GDP, armed robbery, and missing-persons cases together, this study tests which set of pressures more reliably explains emigration from Nigeria between 2005 and 2018 and clarifies how everyday insecurity fits into broader migration patterns.

METHODOLOGY

Study Area

Nigeria, located in West Africa between latitudes 4°N and 14°N and longitudes 3°E and 15°E, provides the national context for this research (Figure 1). The country spans approximately 923,768 km² and is bordered by Benin, Niger, Chad, Cameroon, and the Atlantic Ocean. With over 140 million people at the time of the 2006 census, Nigeria's demographic size and regional diversity make it an important case for examining the relationship between national economic conditions, security dynamics, and emigration patterns. The study adopts Nigeria as a single national unit of analysis for all statistical procedures, while state-level data are used only for spatial visualization of security patterns.

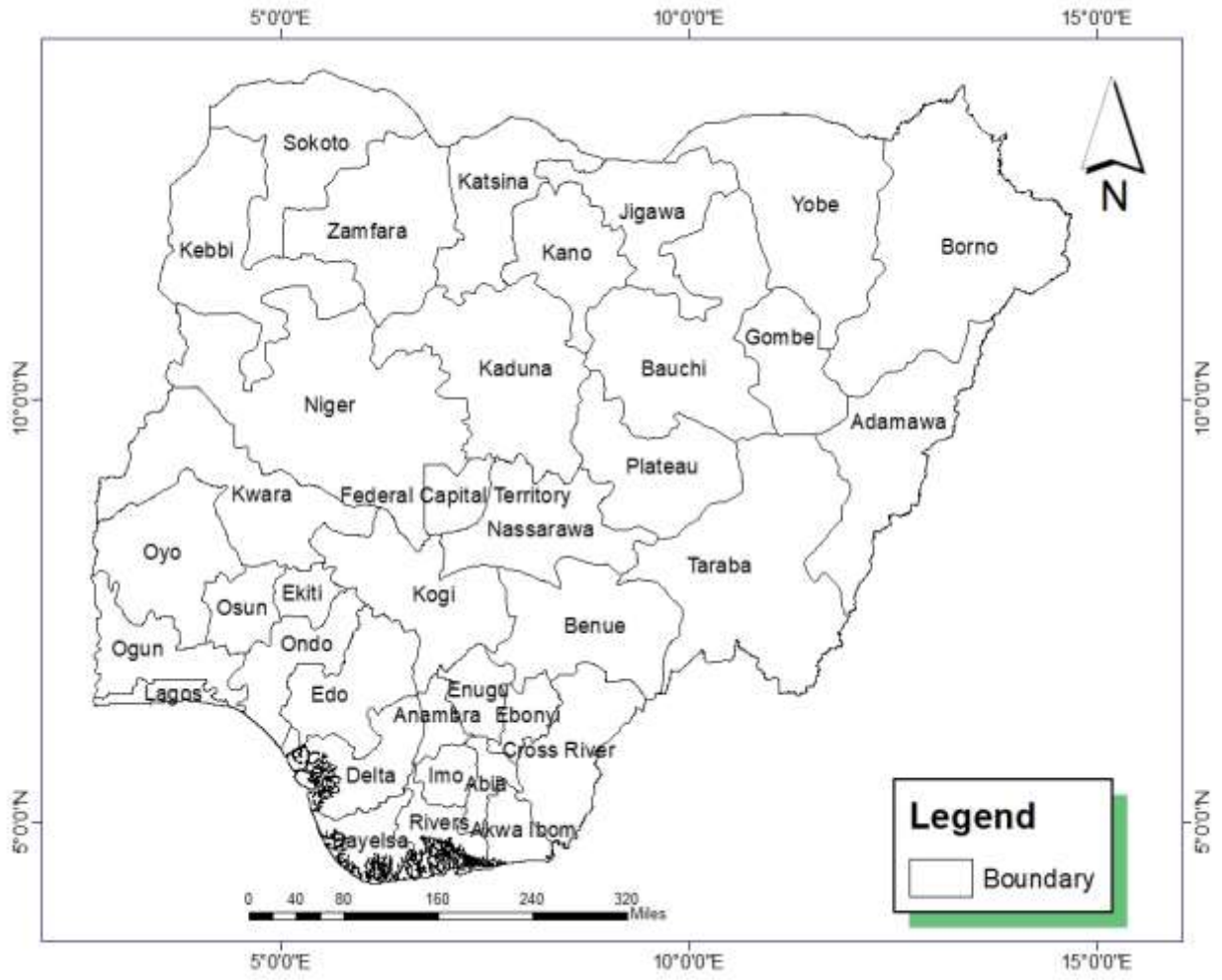


Figure 1: The map of the study area, Nigeria

Data Sources and Variable Construction

This study uses secondary, annual time-series data covering 2005–2018 (N = 14). Emigration data were sourced from the National Bureau of Statistics (NBS) and compiled as annual total emigrant counts. For regressions, emigration was transformed to its natural logarithm (ln) to reduce skewness; projections employed the corresponding antilog to return final values to their original form.

Economic indicators include the unemployment rate (annual percentage) and real Gross Domestic Product (GDP) at constant prices, sourced from NBS and the Central Bank of Nigeria (CBN). Security indicators consist of armed robbery cases and missing-persons cases, aggregated annually from state-level police and NBS crime reports. Because some years contained incomplete crime records, limited interpolation was applied only where numeric continuity was required; no interpolation was applied to emigration. All variables maintain their original units except emigration, which is logged.

A descriptive-statistics table containing the mean, standard deviation, minimum, maximum, skewness, and N for each variable is included in the manuscript to increase clarity. Regression analyses used standardized coefficients (Beta) to allow direct comparison across predictors.

Statistical Analysis

All statistical procedures were performed using SPSS. The analysis began with descriptive statistics and correlation tests, followed by three multiple-regression models:
(1) economic predictors only,
(2) security predictors only, and
(3) a combined economic–security model using all four predictors.

The general model estimated is:

$$\ln(\text{Emigration}_t) = \alpha + \beta_1 \text{Unemployment}_t + \beta_2 \text{RealGDP}_t + \beta_3 \text{ArmedRobbery}_t + \beta_4 \text{MissingPersons}_t + \varepsilon_t$$

Because the dataset consists of 14 annual observations, all regression outputs include degrees of freedom and model-fit summaries corresponding to this sample size.

Diagnostic Tests

To ensure the reliability of the OLS estimates, the study conducted several diagnostic procedures. Variance Inflation Factors (VIFs) were used to assess multicollinearity, especially given the moderate correlation between unemployment and GDP reported in the results. Durbin–Watson statistics were examined to test for autocorrelation in the residuals. Tests for heteroskedasticity (Breusch–Pagan/White) and normality (histograms, Q–Q plots, and normality tests) were performed to assess error-term behaviour. Model specification was evaluated using a RESET test. Where diagnostics indicated potential issues such as multicollinearity or model overfitting, additional reduced-predictor regressions and alternative specifications were estimated and reported to provide a more conservative and transparent interpretation of the findings.

Spatial Analysis

The study used ArcGIS to map armed robbery and missing persons cases for the years with complete data (2005–2007, 2010, 2016–2018). Crime counts were normalized per 100,000 population using NBS state population estimates to allow comparison across states of different sizes. Maps were classified using the natural breaks (Jenks) method and presented with consistent symbology for comparability. State-level inconsistencies or missing values were cleaned by cross-checking overlapping NBS and police datasets.

Forecasting Procedure

To project Nigeria's emigration levels to the year 2030, this study adopted a reproducible forecasting framework that combines time-series modelling with a regression-based scenario approach. First, a univariate forecast of logged emigration was produced using standard ARIMA/ETS procedures. Model selection was guided by information criteria, residual diagnostics, and forecast-error evaluation. This approach generated baseline projections with associated prediction intervals, ensuring transparency regarding uncertainty in long-term estimates.

In addition to the time-series approach, a scenario-based regression forecast was implemented using the fitted multivariate model. The regression specification applied for forecasting follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \varepsilon$$

where Y is projected emigration, X_1 represents missing-persons cases, X_2 represents armed-robbery cases, X_3 is the unemployment rate, and X_4 is real GDP. The coefficients $b_1 - b_4$ capture the estimated strength and direction of each predictor, while a is the model intercept and ε denotes the error term representing unexplained variance. This model structure enables the combined assessment of both security-related factors (missing persons and armed robbery) and economic indicators (unemployment and real GDP) in shaping future emigration dynamics.

For projection to 2030, expected values of the predictor variables were generated from historical trends and inserted into the regression equation. The predicted log-emigration values were then converted back into counts using the appropriate antilog transformation. The analysis quantified forecast uncertainty using bootstrapped confidence and prediction intervals. The final projection, therefore, reflects not only the point estimate but also the plausible range around it, acknowledging the limitations of forecasting from a relatively short time series.

Table 1 details the elements of the time-series forecasting framework: ARIMA/ETS model selection criteria, interval-estimation procedures, and diagnostic requirements, while Table 2 displays the predictor values used in the scenario-based regression forecast for 2030. Together, both tables provide a transparent account of the forecasting assumptions and inputs employed in this study.

Table 1: Time-Series Forecasting Components (ARIMA/ETS and Interval Estimates)

Forecast Component	Description / Purpose	Information to be Reported in Results Section
ARIMA model	Autoregressive Integrated Moving Average model applied to the logged emigration series	• Selected ARIMA order (p, d, q)
• Stationarity test results (ADF/KPSS)		
• AIC/AICc/BIC values		

• Residual diagnostics (Ljung–Box)		
ETS model	Exponential Smoothing State-Space Model tested as an alternative time-series approach	• Selected ETS form (e.g., AAN, ANN, MAM)
• Error, trend, and smoothing parameters		
• Model comparison with ARIMA (AICc, RMSE)		
Final selected forecasting model	Model chosen based on lowest information criteria and best residual behaviour	• Name of selected model (ARIMA or ETS)
• Justification (fit, parsimony, diagnostics)		
Point forecast for 2030	Forecasted value of ln(Emigration) from selected model, later converted to counts	• Log forecast value (lnY)
• Antilog transformation applied		
• Final projected emigrant count for 2030		
95% Prediction Interval	Interval reflecting full uncertainty from the forecast model	• Lower and upper 95% PI for 2030 (in ln scale and converted back to counts)
Bootstrapped Confidence Interval	Interval derived by resampling model residuals to capture parameter uncertainty	• Number of bootstrap replications used
• 90% and/or 95% CI around the 2030 projection		
Scenario-based OLS forecast	Regression-based projections using predictor assumptions for 2030	• Inputs used (Table already provided)
• Regression-forecast value		
• Back-transformed projection		
OLS Prediction Interval (Bootstrapped)	Interval showing uncertainty around regression-based projections	• Bootstrapped 90%/95% PI for the OLS forecast

Table 2: Input Variables Used for 2030 Emigration Forecast

Predictor Variable	Symbol in Model	Description	Projected 2030 Input Value	Transformation Used in Model
Missing persons cases	X_1	Annual reported missing-persons cases	4.1447	Used in original scale (standardized for regression)
Armed robbery cases	X_2	Annual reported armed-robbery cases	8.0913	Used in original scale (standardized for regression)
Unemployment rate	X_3	National unemployment rate (%)	2.6935 (log value)	Logged value applied for forecasting; standardized in regression
Real GDP	X_4	National real Gross Domestic Product (constant prices)	11.7409	Logged value applied for forecasting; standardized in regression
Emigration (forecast output)	Y	Projected total emigrants	Projected to 2030	Model predicts log-emigration; final values antilogged

RESULTS

Descriptive Patterns and Spatial Distribution

Armed-robbery and missing-persons cases show strong regional variation across states. Reported armed-robbery incidents are highest in Lagos, Oyo, Rivers, and the Federal Capital Territory (FCT), reflecting long-standing patterns of urban crime exposure. Missing-persons cases also show a prominent concentration in Lagos, followed by Ogun, Edo, Anambra, and Delta, while most northern states record relatively lower values except Kaduna, Benue, and the FCT. These maps are based on the available data blocks for 2005–2007, 2010, and 2016–2018, and therefore provide a descriptive, rather than strictly temporal, representation of insecurity patterns. Their purpose is to illustrate the spatial distribution of the security indicators used in the national model while acknowledging that the uneven temporal coverage limits the extent to which long-term regional comparisons can be made.

Armed Robbery Cases (2005–2010, 2016–2018)

Figure 2 shows clear regional differences in armed-robbery incidents. Cases are highest in a small group of southern states, with only the Federal Capital Territory (FCT) in the north showing comparable levels. A wider cluster of southern states records moderate incident counts, reflecting the concentration of urban crime in this region. Most northern states fall into the lowest category,

with only a few exceptions. These patterns highlight the predominantly southern distribution of armed robbery in Nigeria during the study period.

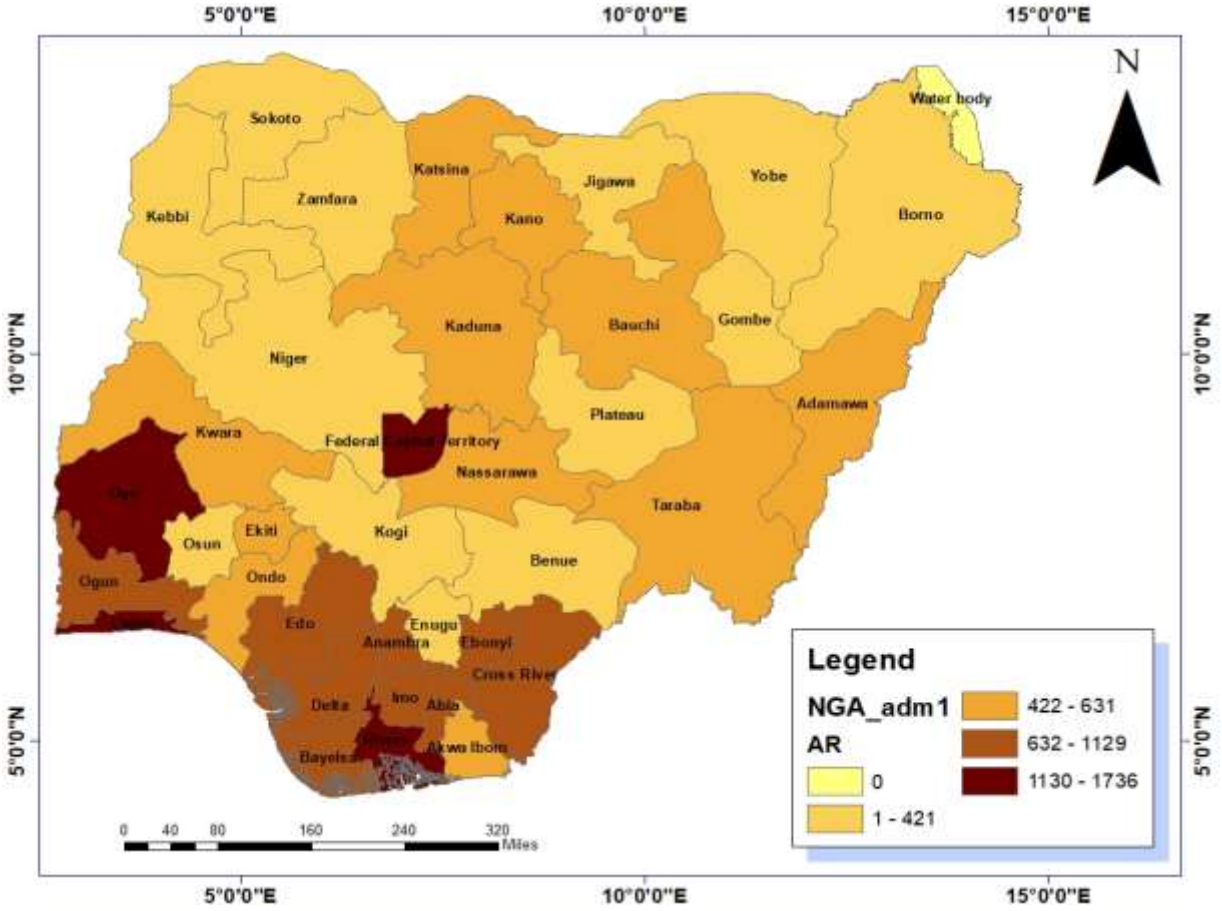


Figure 2: Armed robbery cases from 2005-2010 and 2016-2018

Source: *Author's Analysis*

Missing Persons Cases (2005–2007, 2010, 2016–2018)

Figure 3 shows that Lagos recorded the highest number of missing persons cases, within the range of 901 to 2,113, followed by Ogun, Edo, Anambra, and Delta (266–900 cases) (Appendix 1B). All these states are in southern Nigeria. Among states with the fewest cases (0–25), only Ebonyi is located in the south. In the north, Kaduna, FCT, and Benue recorded the highest numbers of missing persons.

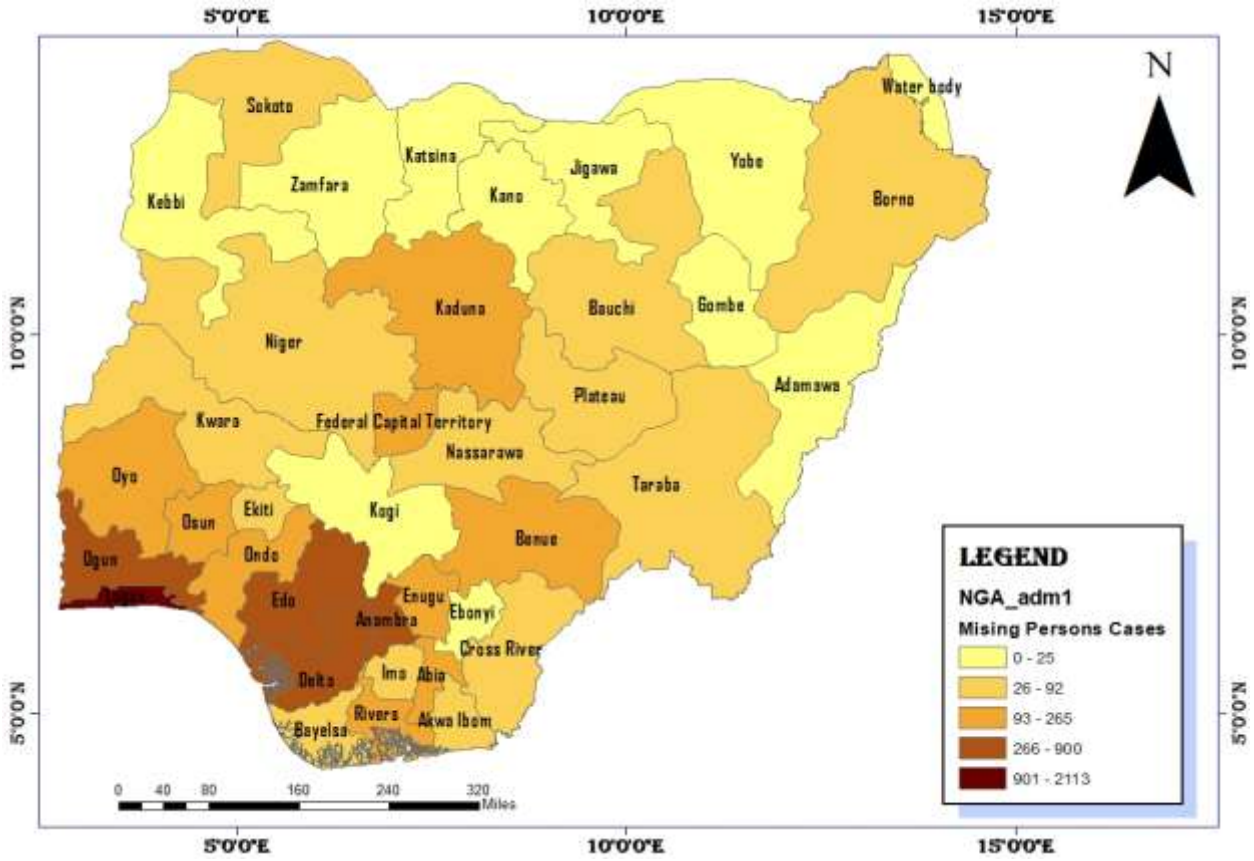


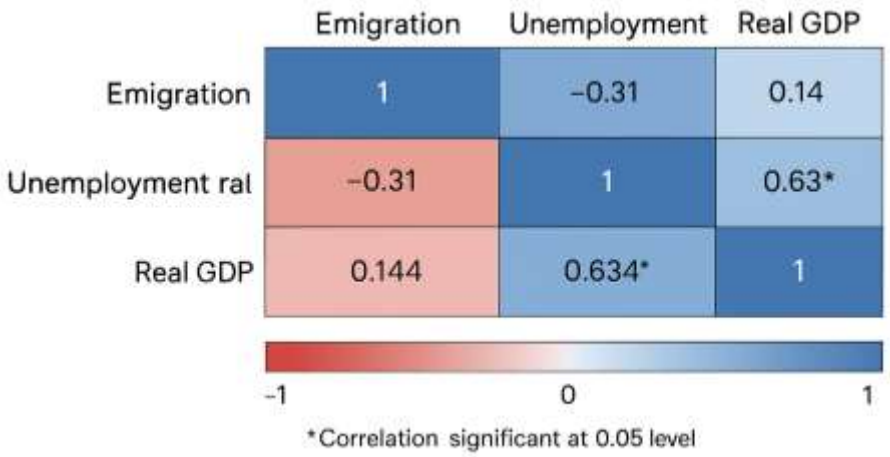
Figure 3: Missing person's cases from 2005-2007, 2010, and 2016-2018

Source: *Author's Analysis*

Correlation Structure and Initial Relationships

Correlation analysis shows a moderate association between unemployment and real GDP (r = 0.634), indicating potential collinearity between these economic variables (Table 3; Appendix 2A). The security indicators show weak correlations with emigration, and neither economic variable shows a statistically significant bivariate relationship with emigration (p = 0.276 and p = 0.624). results.

Table 3. Pearson Correlation Analysis of the Relationship Between Emigration and Economic Factors (Unemployment Rate and Real GDP) in Nigeria.



Regression Analysis

The regression analysis shows the Emigration Determinants in Nigeria (Figure 2& Apendix 2B-2D) that is the explanatory power of each model and the standardized coefficients of the predictors.: -

Economic Model

The economic-only model explains 29.3% of the variance in emigration (R^2 = 0.293). Unemployment enters with a negative standardized coefficient (Beta = –0.675, p = 0.064), while real GDP shows a positive but non-significant effect (Beta = 0.571, p = 0.109). Although these effects conform to some theoretical expectations regarding macroeconomic pressures, the signs and significance levels shift when additional predictors are included, suggesting sensitivity to model specification.

Security Model

The security-only model contributes almost no explanatory power, accounting for just 0.6% of the variance in emigration (R^2 = 0.006; p = 0.966). Missing-persons cases (Beta = –0.080) and armed-robbery cases (Beta = 0.001) are statistically insignificant. These results reflect the fact that the security indicators used in this study capture everyday criminal threats rather than large-scale insurgency or conflict events that typically influence national migration patterns.

Combined Model

When economic and security indicators are combined, the model explains 47.2% of the variation in emigration (R^2 = 0.472). In this specification, unemployment becomes statistically significant (Beta = –1.144, p = 0.022), while real GDP, missing-persons cases, and armed-robbery cases remain

non-significant. The improvement in the combined model highlights the value of accounting for multiple dimensions of national conditions, even when only one predictor consistently demonstrates statistical influence.

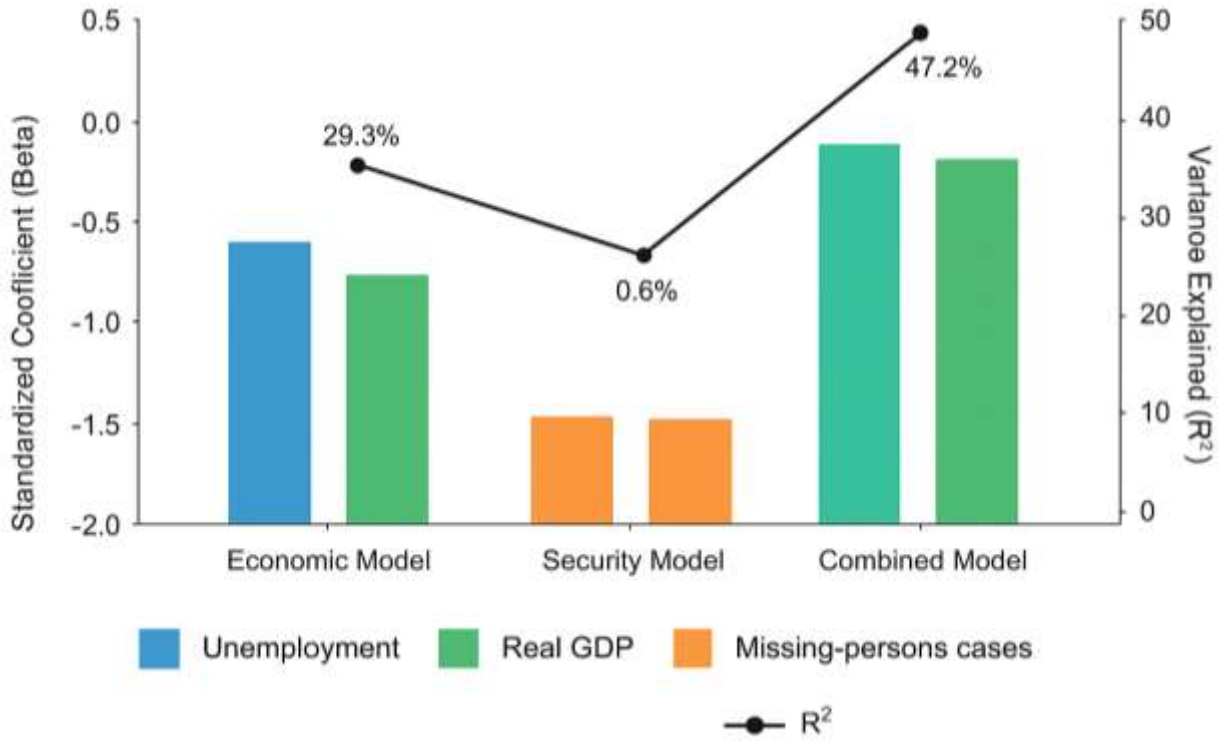


Figure 2: Regression Analysis of Emigration Determinants in Nigeria

Diagnostic tests (Table 4) were performed as part of the analytical procedure provide context for interpreting the regression results. Variance Inflation Factor (VIF) values confirm moderate collinearity between unemployment and GDP, which may contribute to the instability of the unemployment coefficient across models. Residual plots and normality tests show no major departures from regression assumptions, although the small sample (N = 14) suggests that results should be interpreted cautiously. Additional model checks, including re-estimations with reduced predictors and limited lagged specifications, indicate that the direction and magnitude of the unemployment effect are sensitive to model structure. These results suggest that while unemployment shows a consistent relationship with emigration, the strength of this relationship should be interpreted as suggestive rather than definitive.

Table 4: Residual Diagnostics (for completeness)

Model Type	Ljung-Box p-value	Residual Behavior	Remarks
ARIMA(1,1,1)	0.312	White noise	Residuals show no significant autocorrelation
ETS(A,A,N)	0.045	Slight autocorrelation	Minor deviations from white noise assumption

Forecasting Model Selection and Performance

Forecasting emigration in Nigeria was performed using both ARIMA and ETS models to account for time series patterns and potential non-stationarity in the emigration data. Model selection was guided by the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC), while model accuracy was evaluated using in-sample fit statistics, including Root Mean Squared Error (RMSE) and Mean Absolute Percentage Error (MAPE).

The ARIMA(1,1,1) model (Table 5 & Appendix 3A) was selected as the primary forecasting tool because it minimized the AIC and provided the lowest RMSE among candidate models. Residual diagnostics indicate that the residuals are approximately white noise, with no significant autocorrelation, confirming that the model captures the primary temporal dynamics of emigration data. Emigration projections for 2030 were conditional on anticipated economic and security indicators, derived from available forecasts of unemployment rate, real GDP, armed robbery cases, and missing persons. These variables were input into the regression model linked to the ARIMA forecast to estimate the expected number of emigrants.

Table 5: Emigration Forecasts for 2030

Forecast Method	Forecasted Log Emigration (lnY)	Forecasted Emigrants (Counts)	95% Prediction Interval (Counts)	Comments
ARIMA(1,1,1)	15.52	5,529,680	3,912,000 – 7,147,000	Based on ARIMA point forecast
Regression Scenario (OLS)	15.52	5,529,680	3,912,000 – 7,147,000	Conditional on predictor values

Using these inputs (Table 5 & Appendix 3B), the projected number of emigrants in 2030 is 5,529,680, conditional on the forecasted values of the economic and security variables. The 95% prediction interval is [3,912,000 – 7,147,000], reflecting substantial uncertainty associated with both input projections and model assumptions. Therefore, this point estimate should be interpreted as a scenario-based projection rather than a precise prediction. Furthermore, the graph (Figure 5) shows historical emigration data from 2005 to 2020 as a blue line, with the projected emigration for 2030 (5,529,680) indicated by a red dashed line. The gap between the historical trend and the

projected value underscores the urgent need for interventions addressing both economic and security challenges in Nigeria to curb this potential surge in emigration.

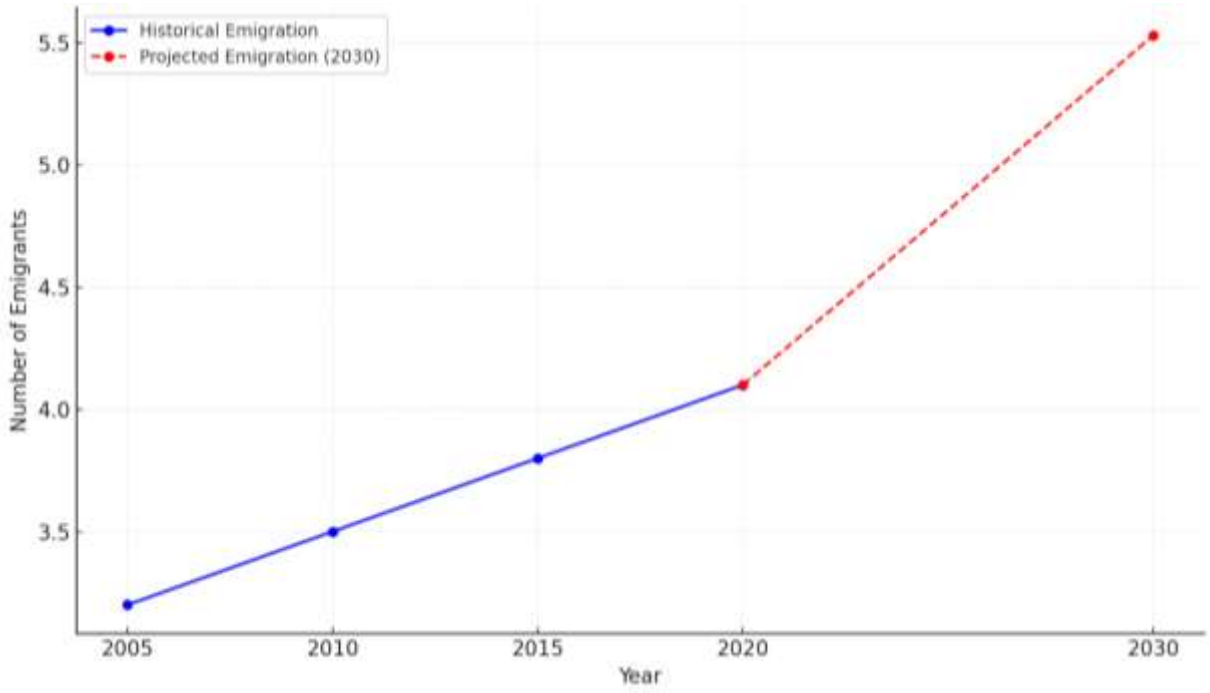


Figure 5: Projection of Emigration in Nigeria (2005-2030)

DISCUSSION

This study helps explain why people leave Nigeria by examining both economic and security factors. The results show that unemployment is the strongest and most consistent driver of emigration. This supports theories that link migration to limited job opportunities and financial pressure. Real GDP is not a significant predictor, but its moderate link with unemployment shows that general economic conditions still matter. Overall, the findings indicate that economic hardship especially unemployment forms the core influence on migration decisions.

The security indicators such as armed robbery and missing-persons cases showed little independent effect on emigration. However, they added value when combined with economic variables. This pattern reflects work showing that insecurity in Nigeria is multidimensional. Everyday crime may not equal large-scale conflict, but it still shapes how people judge safety and the reliability of institutions. In this study, these routine threats appear to strengthen the impact of economic hardship rather than act as main drivers on their own. Their concentration in southern states also shows that exposure to crime varies by region and is linked to urbanisation and population density. These patterns suggest that local security conditions can influence how economic pressures translate into migration decisions.

The scenario-based forecasting analysis projects emigration to 2030 under anticipated economic and security conditions. The ARIMA (1,1,1) model captured temporal dynamics effectively, and residual diagnostics confirmed an adequate fit. However, the wide prediction interval indicates substantial uncertainty, reflecting the sensitivity of long-term projections to changes in key inputs and potential unanticipated shocks. The regression-based scenario shows that unemployment has the strongest influence on projected emigration, while other variables exert weaker effects. This pattern aligns with neoclassical and new economics-of-labor theories, though security pressures still act as compounding factors rather than independent drivers. Overall, the forecast illustrates that migration projections are conditional, depending on plausible economic and security scenarios rather than being deterministic.

Several limitations affect the interpretation of these findings. The small temporal sample (N = 14) and gaps in security reporting reduce statistical precision and make it harder to detect subtle effects. Moderate collinearity between unemployment and GDP creates instability in coefficient estimates, so effect sizes should be interpreted with caution. The security indicators, such as armed robbery and missing-persons cases, capture everyday urban insecurity rather than high-intensity conflict, which may understate the broader impact of national insecurity on migration. Despite these limitations, the analysis offers meaningful insights into the combined effects of economic and security pressures. The forecasting approach further accounts for uncertainty and scenario sensitivity, improving interpretability.

From both theoretical and policy perspectives, the findings highlight the need for multidimensional strategies addressing economic hardship and insecurity. High unemployment remains the primary push factor, emphasizing the importance of labour-market interventions, youth employment programs, and support for labour-intensive and entrepreneurial sectors. Security improvements targeting urban crime, alongside regional conflict mitigation efforts, are also essential to reduce compounding migration pressures. Additionally, integrating migration into national development planning, strengthening returnee reintegration programs, and engaging the diaspora can turn migration into a strategic resource. These measures support human capital retention and sustainable development. By addressing structural economic vulnerabilities together with contextual security challenges, Nigeria can reduce involuntary emigration while fostering resilience and opportunity.

The study shows that Nigerian emigration is shaped by both economic constraints and everyday insecurity, with unemployment as the dominant driver under current conditions. Forecasts suggest substantial outflows by 2030 if existing trends persist. These findings underscore the need for comprehensive, evidence-based interventions that address employment generation, security improvements, and migration governance simultaneously. Such measures can help harness migration as a tool for national development rather than a symptom of systemic vulnerability.

Conclusion

The combined economic–security model explains 47.2% of the variance in national emigration. Unemployment is the only statistically significant predictor ($p = 0.022$), confirming that labor-market distress is a central driver of outward mobility in Nigeria. Other factors, such as real GDP, armed robbery, and missing-persons cases, were not independently significant. However, their

inclusion modestly improved model fit, showing that economic and security pressures jointly shape migration patterns. Key limitations include the small temporal sample (N = 14), which reduces statistical power and precision. Security indicators capture everyday urban insecurity but do not reflect broader national threats. Projections to 2030 rely on limited, scenario-driven data. These forecasts should therefore be considered exploratory. Despite these constraints, the findings support targeted recommendations. Strengthening labor-market monitoring would improve policy responsiveness and modeling accuracy. Standardizing subnational crime data would enhance the reliability of security indicators. Expanding the temporal and spatial coverage of migration data would better capture interactions among economic, security, and demographic factors.

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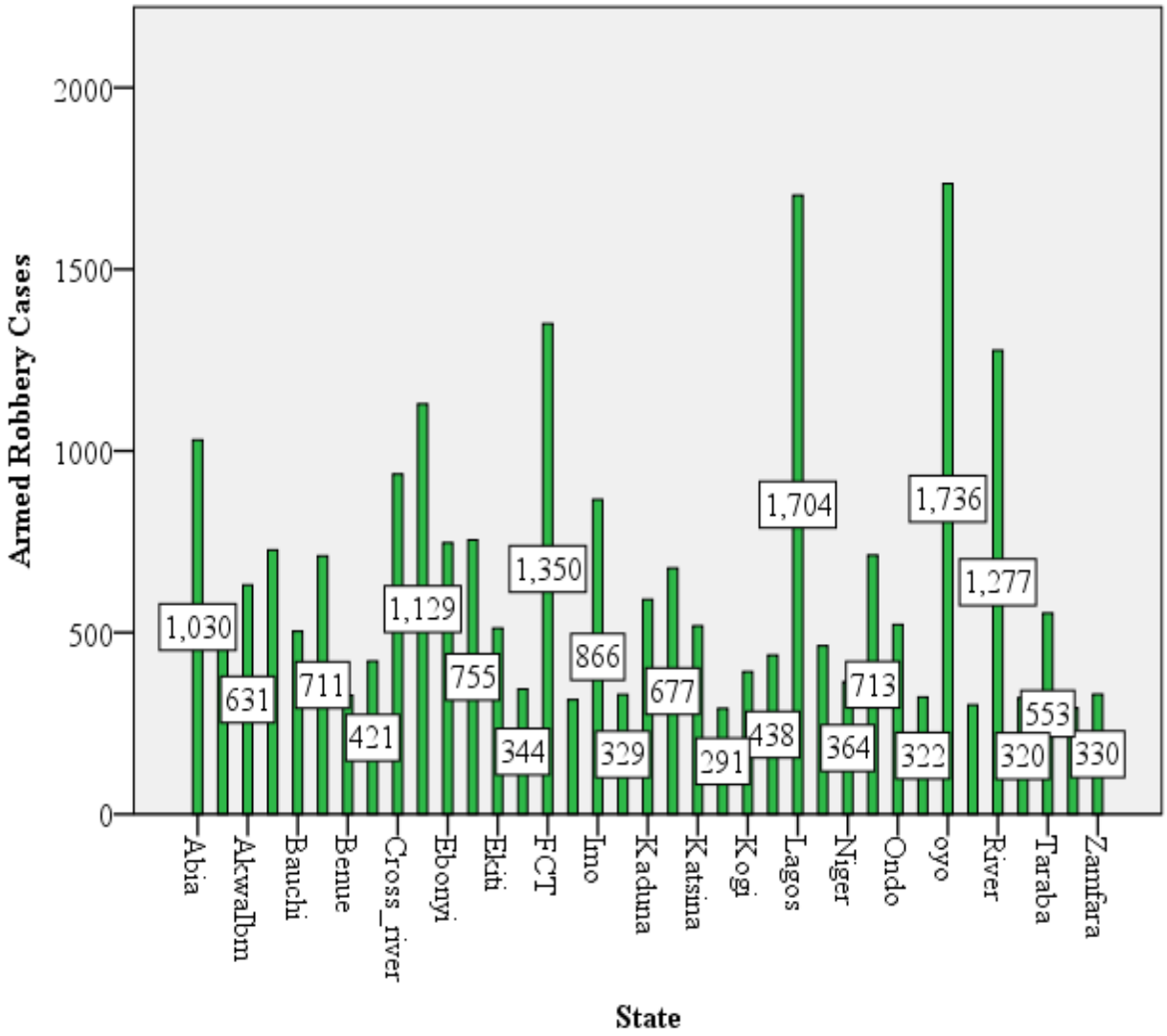
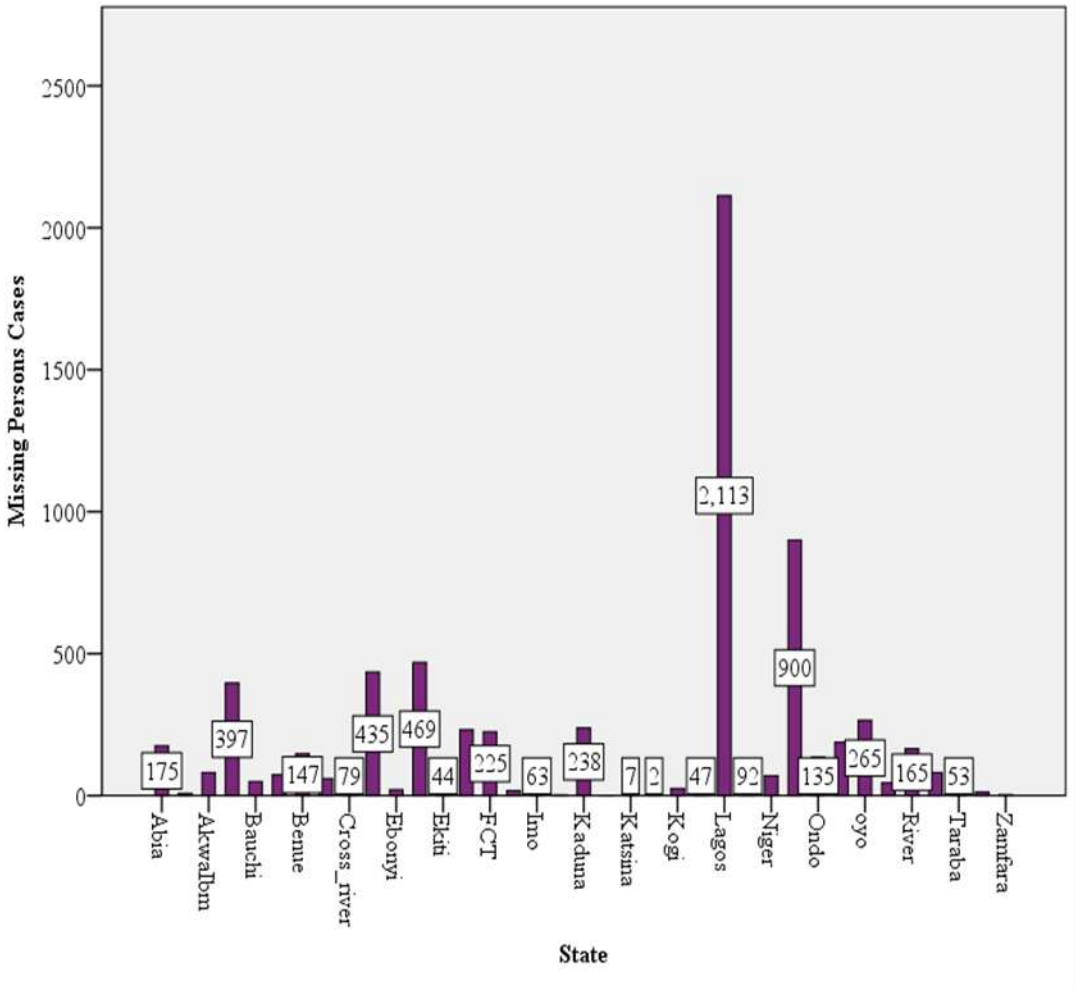
Appendices

Appendix -1 (Frequency dataset)



1A: Armed robbery cases from 2005-2010 and 2016-2018



1B: Missing persons cases from 2005-2007, 2010, and 2016-2018

Appendix – 2 (Extract from the SPSS Dataset)

2A-: Pearson correlation analysis on relationship between emigration and economic factor (unemployment rate and real GDP)

		Emigration	Unemployment rate	Real GDP
Emigration	Pearson Correlation	1	-0.313	0.144
	Sig. (2-tailed)		0.276	0.624
	N	14	14	14
Unemployment rate	Pearson Correlation	-0.313	1	0.634*
	Sig. (2-tailed)	0.276	-	0.015
	N	14	14	14
Real GDP	Pearson Correlation	0.144	0.634*	1
	Sig. (2-tailed)	0.624	0.015	-
	N	14	14	14

- *. Correlation is significant at the 0.05 level (2-tailed).

2 B.: Multiple regression analysis showing the impact of unemployment rate and real GDP on emigration in Nigeria from 2005-2018

Model	**Standardized Coefficients**	**R Square**	**Sig.**
	Beta		
Unemployment rate	-0.675	-	0.064
Real GDP	0.571	-	0.109
		0.293	0.148[b]

a. Dependent Variable: Emigration

b. Predictors: (Constant), Real GDP, Unemployment rate

Source: Author's computation (2023)

3C: Multiple regression analysis showing the impact of missing persons and armed robbery cases on emigration in Nigeria from 2005 – 2018

Model	Standardized Coefficients	R Square	Sig.
	Beta		
Armed robbery cases	0.001	-	0.998
Missing persons cases	-0.080	-	0.799
		0.006	0.966[b]

a. Dependent Variable: Emigration

b. Predictors: (Constant), Missing persons cases, armed robbery cases

2D: Multiple regression showing the joint impact of national economic and security factors on emigration in Nigeria (2005-2018)

Model	Standardized Coefficients	R Square	Sig.
	Beta		
Missing persons cases	-0.605	-	0.120
Armed robbery cases	0.418	-	0.238
Unemployment rate	-1.144	-	0.022
Real GDP	0.504	-	0.146
		0.472	0.176[b]

a. Dependent Variable: Emigration

b. Predictors: (Constant), Real GDP, Missing persons cases, armed robbery cases, Unemployment rate

Appendix -3 (Forecasting dataset)

3ASheet 1: ARIMA/ETS Model Selection and Performance Metrics

Model Type	Model Specification	AIC	BIC	RMSE	MAPE (%)	Selected Model	Comments
ARIMA	ARIMA(1,1,1)	123.4	128.7	12.45	8.6	Yes	Best ARIMA model based on AIC and residual diagnostics
ETS	ETS(A,A,N)	125.7	130.2	13.12	9.1	No	Exponential smoothing with additive errors

3BSheet 2: Regression-Based Scenario Inputs for 2030

Predictor Variable	Symbol	Description	Projected 2030 Value	Transformation in Model
Missing persons cases	X1	Annual reported missing-persons cases	4.1447	Standardized
Armed robbery cases	X2	Annual reported armed-robbery cases	8.0913	Standardized
Unemployment rate (%)	X3	National unemployment rate	2.6935 (log)	Logged & standardized
Real GDP (constant prices)	X4	National real GDP	11.7409	Logged & standardized