

Department of Economics Discussion Papers

ISSN 1473-3307

Work Under Attack: Terrorism and Local Labor Markets

Olayinka Oyekola

Paper number 26/07

Disclaimer: The views expressed in this discussion paper are those of the author(s) and do not necessarily reflect those of the University of Exeter, its Business School, or the Department of Economics. Discussion Papers are circulated for discussion and comment purposes and have not been peer reviewed.

Work Under Attack: Terrorism and Local Labor Markets

Olayinka Oyekola*

June 2026

Abstract

How does terrorism affect labor markets in developing countries? We combine geo-referenced data on terrorist incidents with nationally representative employment data from Nigeria to examine this question. Exploiting within-location variation in exposure to terrorist attacks over time, we show that terrorism reduces employment. A one standard deviation increase in exposure lowers the probability of employment by 0.7 percentage points, or roughly 1 percent of average employment, with substantially larger effects for women. Beyond reducing employment, terrorism shifts workers away from regular and cash-paying jobs and lowers employment in sales, services, and unskilled manual occupations. The findings identify labor market disruption as an important economic cost of insecurity in developing countries.

JEL codes: D74, J21, J22, J23, J46, O12

Keywords: Terrorism; Employment; Labor Markets; Gender; Nigeria

*Department of Economics, University of Exeter Business School, UK. Email: o.oyekola@exeter.ac.uk

1 Introduction

Terrorism imposes substantial human and economic costs on affected societies. Over the past two decades, terrorist violence has increased markedly across many parts of Africa, imposing substantial costs on affected populations. A large body of literature shows that terrorism affects investment, migration, housing markets, subjective well-being, and economic activity (Abadie and Gardeazabal, 2003, 2008; Besley and Mueller, 2012; Dreher et al., 2011; Elster et al., 2017; Clark et al., 2020). Yet, despite the central role of labor markets in shaping household welfare and economic development, relatively little is known about how terrorism affects employment and the allocation of workers across jobs, particularly in developing countries. Understanding these effects is especially important because labor income constitutes the primary source of livelihood for most households and because labor market disruptions may represent an important channel through which insecurity generates persistent economic losses.

These considerations lead us to ask the following question: How does terrorism shape local labor markets? To answer this question, this paper studies the effect of terrorism on employment in Nigeria, which provides a useful setting. Since the early 2000s, the country has experienced a substantial increase in terrorist violence, particularly following the rise of Boko Haram and other insurgent groups. At the same time, Nigeria is Africa’s most populous country and one of its largest labor markets. The combination of substantial spatial and temporal variation in terrorist activity and rich, nationally representative individual-level employment data creates an opportunity to examine how exposure to violence shapes labor market outcomes at the local level.

The effect of terrorism on employment is theoretically ambiguous because many channels are at work. On the demand side, terrorist attacks may reduce local economic activity by increasing uncertainty, disrupting production, weakening consumer demand, and discouraging investment. Exposure to terrorism tends to create distortions in the business environment to which firms may respond by reducing hiring or contracting employment (Abadie and Gardeazabal, 2003, 2008; Brodeur, 2018). On the supply side, insecurity may alter labor force participation by increasing the costs of work, limiting mobility, changing household labor allocation decisions, or discouraging engagement in economic activities that require interaction with markets. These responses may affect not only whether individuals work but also the types of jobs they hold and the conditions under which they work. More generally, terrorism may operate as a localized shock that generates labor market adjustments similar to those documented in the literature on local labor demand shocks and regional adjustment (Autor et al., 2013; Amior and Manning, 2018; Dix-Carneiro and Kovak, 2019; Notowidigdo, 2020).

Estimating the labor market effects of terrorism is challenging because terrorist attacks are not randomly distributed across locations and times. Areas exposed to terrorism may differ systematically from areas that are not, while economic conditions may themselves influence the incidence of violence. Moreover, detailed labor market data are often unavailable at the individual level, particularly for developing countries. To address these concerns, we combine georeferenced information on terrorist incidents from the Global Terrorism Database (GTD) with nationally representative individual-level employment data from four rounds of the Nigeria Demographic and Health Surveys (DHS). We exploit variation in exposure to

terrorist attacks across survey clusters over time, comparing labor market outcomes within locations as exposure changes while controlling for common shocks across survey years. Our baseline measure captures the cumulative number of terrorist attacks occurring within 10 km of a survey cluster during the preceding three years.

Our analysis yields three main findings. First, exposure to terrorism significantly reduces employment. A one standard deviation increase in exposure to terrorism lowers the probability of employment by approximately 0.7 percentage points, or roughly 1 percent of average employment. The effect is robust to alternative specifications, alternative measures of exposure, alternative distance thresholds, sample restrictions, and inference procedures. Placebo timing exercises further support a causal interpretation of the estimates. Second, terrorism alters both the composition and quality of work among those who remain employed. Exposure to terrorism reduces the likelihood of holding regular and cash-paying jobs and disproportionately lowers employment in market-facing occupations, including sales, services, and unskilled manual work. Third, the adverse employment effects are not evenly distributed across the population. Women experience substantially larger employment losses than men, suggesting that insecurity may widen the existing gender disparity in the labor market.

We next investigate the channels through which terrorism affects labor market outcomes. The evidence is consistent with terrorism operating through both labor demand and labor supply adjustment mechanisms. The observed employment effects are accompanied by changes in occupational allocation, remuneration, and employment intensity that suggest disruptions to local economic activity. We also examine a range of alternative explanations. The results provide limited support for selective migration, preexisting socioeconomic disadvantage, household demographic adjustment, and health-related constraints as primary drivers of the findings. However, the evidence is consistent with the possibility that disruptions to market access and local economic interactions contribute to the observed employment effects.

This paper contributes to three related literatures. First, it contributes to the literature on local labor market adjustment. Existing research shows that localized shocks can have persistent effects on employment when labor reallocation is limited ([Autor et al., 2013](#); [Amior and Manning, 2018](#); [Dix-Carneiro and Kovak, 2019](#); [Notowidigdo, 2020](#)). We contribute by studying terrorism as a localized shock that reshapes labor market outcomes through changes in employment, employment quality, and occupational allocation. Second, it contributes to the literature on the economic consequences of terrorism. Existing work documents the effects of terrorism on a variety of economic outcomes (see [Basuchoudhary and Schulze \(2026\)](#), [Meierrieks \(2026\)](#), or [Sandler and Gaibullov \(2026\)](#) for recent overviews), while [Brodeur \(2018\)](#) provides evidence that terrorist attacks reduce employment and earnings in targeted areas. We extend this literature by providing evidence from a developing country setting and by examining worker-level effects of how terrorism reshapes the composition and quality of employment. Finally, the paper contributes to the broader literature on conflict, violence, and development ([Krueger and Malečková, 2002](#); [Bertoni et al., 2019](#); [Alfano and Görlach, 2023](#); [Fetzer and Kyburz, 2024](#)). We identify labor market disruption as an important economic consequence of insecurity and provide evidence of a mechanism through which terrorism may affect welfare and economic development.

The remainder of the paper is structured as follows. Section 2 provides background on

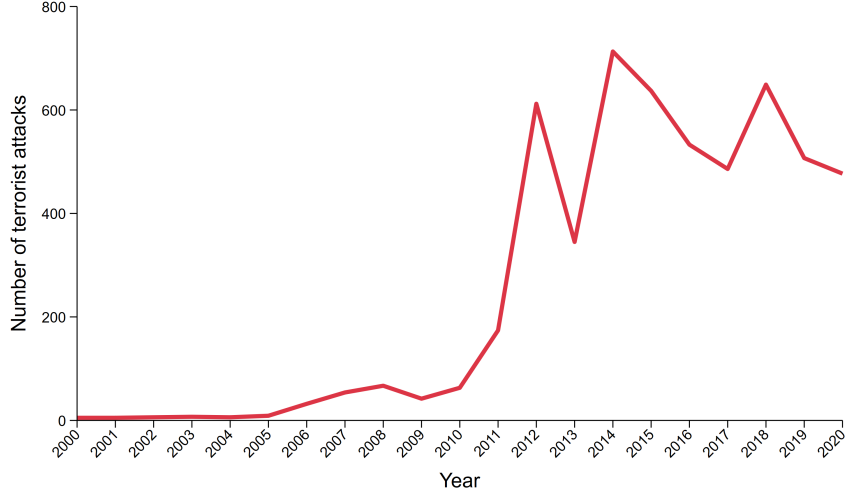


Figure 1: Terrorist Activity in Nigeria, 2000–2020.

Notes: The figure plots the annual number of terrorist attacks recorded in Nigeria between 2000 and 2020. *Source:* Authors’ calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>).

terrorism and labor markets in Nigeria. Section 3 describes the data. Section 4 outlines the empirical strategy. Section 5 presents the results. Section 6 examines mechanisms and alternative explanations. Section 7 concludes.

2 Background

2.1 Terrorism and Employment in Nigeria

Nigeria, the most populous country in Africa, returned to civilian rule in 1999 with a population of approximately 123 million.¹ Despite substantial natural resource wealth, particularly oil, with proven reserves of roughly 38 billion barrels (OPEC, 2025), economic activity remains highly concentrated, formal industrial development is limited, and wage employment opportunities are scarce (Sala-i Martin and Subramanian, 2013; Lewis, 2009; Fenske and Zurimendi, 2017; World Bank, 2022). As a result, Nigerian labor markets are characterized by high informality, strong dependence on local economic conditions, and limited opportunities for sectoral or geographic mobility (ILO, 2020, 2024).

Nigeria has long experienced localized insecurity and substantial regional disparities in economic development and state capacity (Falola and Heaton, 2008; Fenske and Zurimendi, 2017; Bertoni et al., 2019; Fetzer and Kyburz, 2024). While terrorist activity was relatively limited before 2000, attacks increased sharply thereafter, both in frequency and severity (figure 1). Much of this escalation was driven by the emergence and subsequent radicalization of Boko Haram in the North-East, which accounts for more than half of all terrorist incidents recorded during our sample period (table A1). In addition to insurgent violence, conflicts

¹World Development Indicators database: <https://data.worldbank.org/indicator>.

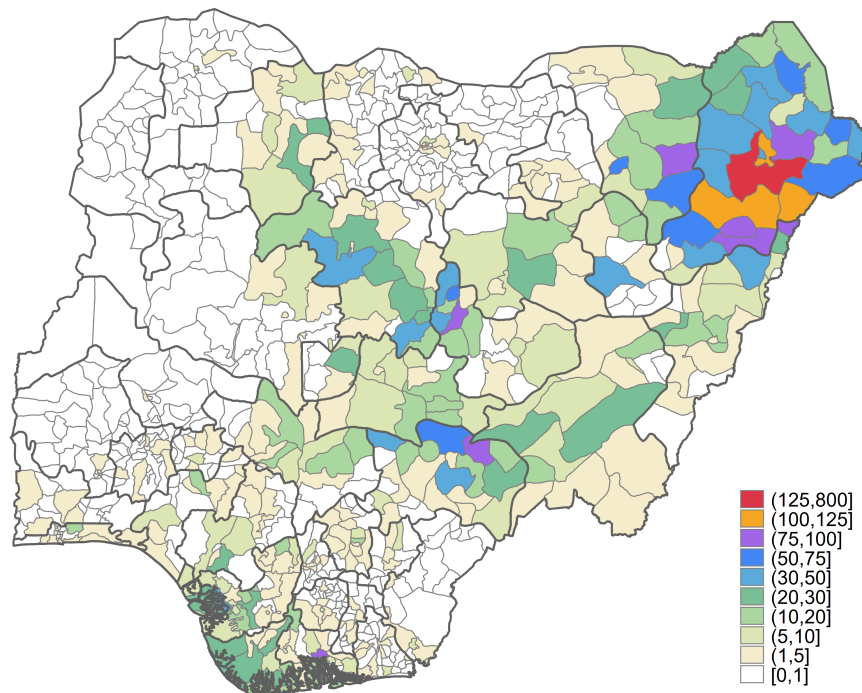


Figure 2: Spatial Distribution of Terrorist Attacks in Nigeria.

Notes: The figure maps the cumulative number of terrorist attacks recorded between 2000 and 2020 across Nigeria’s Local Government Areas (LGAs). *Source:* Authors’ calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>) and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

involving farmers and pastoralists became an increasingly important source of insecurity in several regions.

Terrorist incidents are geographically widespread across states and local government areas (LGAs), as shown in figure 2. Exposure varies substantially across locations in both intensity and consequences, with attacks carried out primarily through armed assaults and bombings targeting civilians, businesses, government institutions, and security forces.² This spatially uneven exposure to violence provides a useful setting for studying how terrorism affects local labor market outcomes.

The geographic concentration of terrorism coincides with substantial heterogeneity in local labor market conditions (figure 3 and table A3). Labor market outcomes vary considerably across states. Employment rates exceed 80 percent in states such as Benue, Ebonyi, Ogun, and Oyo, but remain below 60 percent in several northern states, including Borno, Gombe, Sokoto, and Yobe. Employment is concentrated in relatively low-skill and low-entry-barrier sectors, particularly agriculture and sales, while professional and clerical occupations account for a much smaller share of employment (table A4). Work arrangements similarly reflect the predominantly informal nature of the labor market, with unpaid work, seasonal employment, and non-cash compensation remaining common in many parts of the country

²A detailed presentation of the characteristics of terrorist incidents in Nigeria, together with descriptive statistics and supporting figures, is provided in the online appendix, table A1 and figures A1-A3.

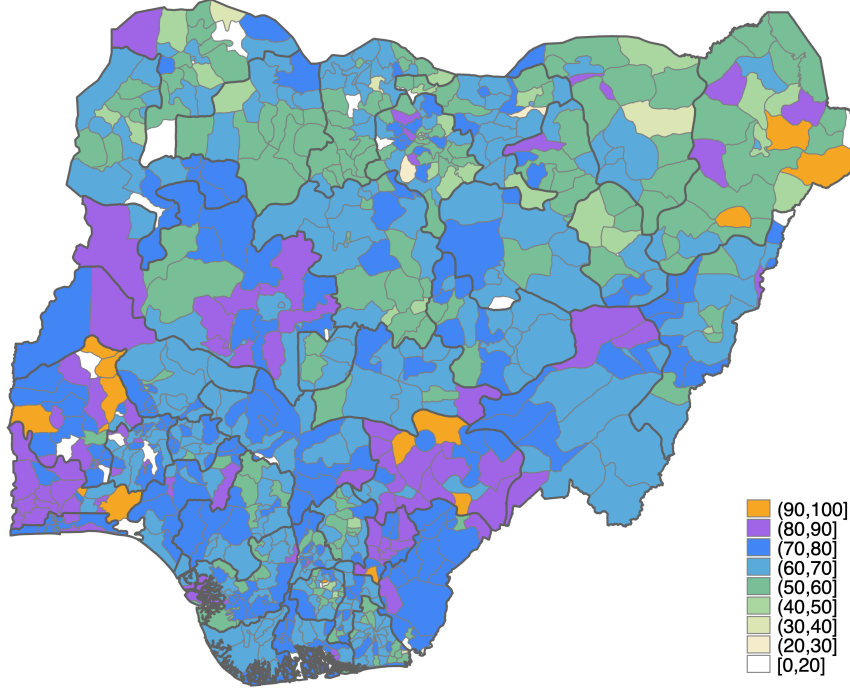


Figure 3: Spatial Distribution of Employment Rates in Nigeria.

Notes: The figure maps average employment rates across Nigeria’s Local Government Areas (LGAs) using pooled DHS data. Employment is measured as an indicator equal to one if an individual is employed and is aggregated to the LGA level using DHS sample weights. *Source:* Authors’ calculations based on the Demographic and Health Surveys (DHS; <https://dhsprogram.com/data/>) and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

(table A5). Together, these features suggest that local labor markets may be particularly sensitive to disruptions generated by terrorist activity.

2.2 Channels of Labor Market Adjustment

This paper examines how local exposure to terrorism affects employment outcomes and the composition of work in Nigeria. Our objective is not only to estimate the overall employment response but also to understand the mechanisms through which terrorism reshapes local labor markets. We organize these mechanisms into two broad categories: labor supply and labor demand channels. This distinction is consistent with a large literature in applied economics that emphasizes the role of intermediate behavioral and economic responses in transmitting shocks to socioeconomic outcomes (Burke et al., 2015a,b; Abadie and Gardeazabal, 2003, 2008; Brodeur, 2018; Meierrieks, 2026).

On the labor supply side, terrorism can reduce labor force participation, particularly among women and other vulnerable groups (Brodeur, 2018; Basuchoudhary and Schulze, 2026). Violence may also limit individuals’ ability to travel for work, shifting employment toward home-based, irregular, or informal activities. Conflict-induced migration and displacement can further alter local labor supply conditions (Dreher et al., 2011). In Nigeria,

violence associated with Boko Haram has generated substantial internal displacement, particularly in the North-East (Bertoni et al., 2019). Households may also respond through labor reallocation, including greater reliance on self-employment, unpaid family work, or agricultural activities as coping strategies. These adjustments imply that terrorism can affect not only whether individuals work but also the type of work they undertake, the regularity of employment, and the terms under which labor is supplied.

On the labor demand side, terrorist attacks and counterterrorism responses can destroy productive assets, damage infrastructure, disrupt trade flows, and reduce business activity in affected areas. Existing evidence suggests that terrorism imposes substantial economic costs by altering behavior following violent events and reducing investment and economic activity (Abadie and Gardeazabal, 2003, 2008; Brodeur, 2018; Basuchoudhary and Schulze, 2026). In the United States, for example, Brodeur (2018) shows that successful attacks reduce employment and earnings in targeted counties. In Nigeria, where local economies depend heavily on informal trade, small enterprises, and agriculture, similar disruptions may reduce labor demand by lowering business activity, investment, and market access, thereby reducing local employment opportunities.

More broadly, the mechanisms discussed above relate to a large literature examining how local labor markets adjust to geographically concentrated shocks. Evidence from trade liberalization, regional economic change, and local labor demand disturbances suggests that adjustment may operate through employment, labor force participation, migration, and occupational reallocation, particularly when mobility is limited and labor markets are characterized by substantial frictions (Topalova, 2010; Autor et al., 2013; Amior and Manning, 2018; Dix-Carneiro and Kovak, 2019; Notowidigdo, 2020).

3 Data

This section describes the main data sources and the construction of our key variables. The main analysis uses georeferenced household survey data that we spatio-temporally match with measures of exposure to terrorism. Additional variable definitions are discussed where relevant in the analysis, with a more detailed discussion of data sources, variable definitions, and complete descriptive statistics provided in the online appendix.

3.1 Data Sources

Our individual-level data come from four waves of the Nigeria Demographic and Health Surveys (DHS), conducted in 2003, 2008, 2013, and 2018.³ The DHS provides nationally representative repeated cross-sections at country and state levels using a two-stage stratified sampling design. Each respondent is linked to a georeferenced survey cluster, allowing us to match individuals to local terrorist events using geographic coordinates. We use the standard DHS individual recode files for women aged 15–49 and men aged 15–59 to construct employment outcomes and individual characteristics. The occupation questions generally refer to the previous 12 months, so the surveys capture the labor market outcomes for 2002,

³The DHS data are available at <https://dhsprogram.com/data/>.

2007, 2012, and 2017. We use these reference years to align labor market outcomes with measures of exposure to terrorism.

Our data for the measurement of terrorism come from the Global Terrorism Database (GTD), maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland.⁴ The GTD records geocoded terrorist incidents and detailed information on timing, location, perpetrators, casualties, and attack characteristics for Nigeria, covering the years 1976 to 2020. The GTD is particularly well suited to our setting because it provides precise geocoded information on the timing and location of terrorist incidents (Brodeur, 2018; Trebbi and Weese, 2019; Alfano and Görlach, 2023).

3.2 Outcome, Exposure, and Mechanism Variables

Our main outcome of interest is individual employment status, Employed, defined as a binary indicator equal to 1 if a respondent is currently working and 0 otherwise. To capture a wider adjustment of the labor market, we examine the composition of employment and job quality, including the type of occupation, the sector of employment, the remuneration structure, and the regularity of work. To investigate potential mechanisms, we examine variables capturing migration, household socioeconomic conditions, demographic adjustment, health constraints, information access, and infrastructure access. These include years of residence, household assets, sanitation, fertility and dependency measures, health indicators, media exposure, and access to health facilities. We use these variables to examine the labor supply and labor demand channels discussed above and to evaluate alternative explanations for the observed employment effects.

Our main explanatory variable is local exposure to terrorism. For individuals residing in cluster v in year t , we define this as follows:

$$\text{Exposure to terrorism}_{v,t} = \sum_{j: d_{v,j} \leq r} \sum_{s=t-3}^{t-1} T_{j,s} \quad (1)$$

where $T_{j,s}$ denotes the total number of terrorist attacks that occur in location j in year s , and $d_{v,j}$ is the distance between the survey cluster v and the location of the terrorist event j . In the baseline specification, we select a radius of $r = 10$ km and construct the exposure over the three years preceding each survey. This choice reflects the local nature of labor market adjustment and the geographic displacement of DHS coordinates, which can be as large as 10 km. We also examine alternative radii, lag structures, annular distance bands, and analogous measures based on casualties, deaths, injuries, and hostages as robustness checks.

⁴GTD data are available at <https://www.start.umd.edu/gtd/>.

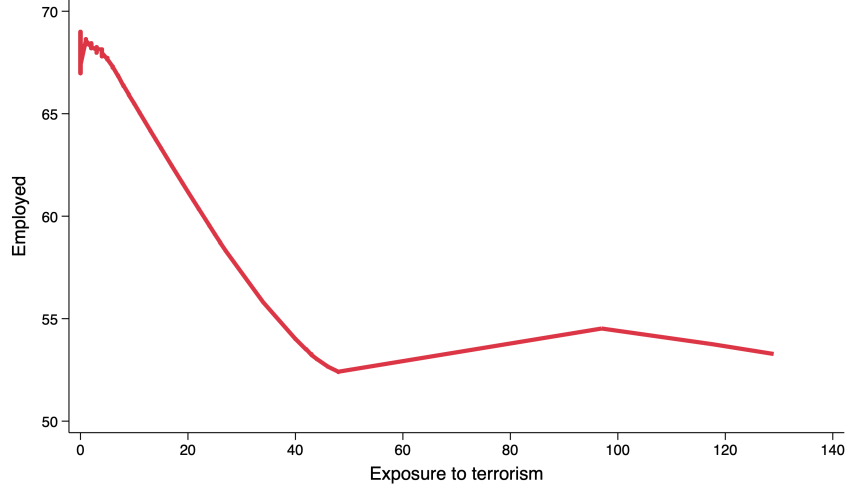


Figure 4: Descriptive Relationship Between Employment and Exposure to Terrorism.

Notes: The figure plots the unconditional LOWESS relationship between employment and exposure to terrorism. Employment is measured as an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the cumulative number of terrorist attacks occurring within 10 km of the respondent’s DHS survey cluster during the preceding three years. *Source:* Authors’ calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>) and the Demographic and Health Surveys (DHS; <https://dhsprogram.com/data/>).

3.3 Summary Statistics

Merging the DHS and GTD data by survey cluster and lagged survey year yields an analysis sample of 168,807 individuals residing in 1,395 clusters across Nigeria.⁵ Table 1 presents the summary statistics separately for individuals in areas exposed to terrorism (defined as locations within 10 km of a terrorist attack) and those in non-exposed areas. While average employment rates are similar across the two groups, notable differences emerge in the composition and quality of employment. Individuals in exposed locations are substantially less likely to work in agriculture and more likely to be employed in non-agricultural activities, particularly in occupations associated with cash remuneration and year-round employment. Exposed areas also differ systematically in observable characteristics: residents are, on average, more educated and considerably more likely to reside in urban areas.

Figures 2 and 3 suggest substantial geographic overlap between areas with high exposure to terrorism and areas with relatively low employment, particularly in the North-East. Consistent with this pattern, figure 4 shows a negative unconditional relationship between employment and exposure to terrorism based on a non-parametric LOWESS smoother.

⁵Tables A6-A8 report the sample distribution by region, state, and year.

Table 1: Summary Statistics by Exposure to Terrorism

Variable	Mean			Difference [(2)-(3)] (4)	SD (5)	Observations (6)
	Full Sample (1)	Exposed to Terrorism (2)	Not Exposed to Terrorism (3)			
Panel A. Outcomes						
Employed	67.339	67.204	67.393	-0.189	46.995	168,807
Services	6.008	8.221	5.064	3.157***	23.042	158,928
Professional	6.312	9.287	5.121	4.165***	23.922	168,807
Clerical	1.061	1.721	0.796	0.925***	10.011	168,807
Sales	27.519	27.811	27.402	0.409	43.886	168,807
Agriculture	18.498	10.170	21.833	-11.663***	40.537	168,807
Domestic	0.286	0.426	0.214	0.212***	5.572	65,494
Skilled manual	9.171	10.360	8.695	1.665***	28.369	168,807
Unskilled manual	1.267	1.297	1.255	0.042	11.149	168,807
Cash	49.714	55.248	47.498	7.750***	49.952	168,807
Cash & kind	8.092	6.063	8.904	-2.841***	27.722	168,807
In kind	1.303	0.891	1.468	-0.577***	11.533	168,807
Not paid	10.734	7.061	12.204	-5.143***	32.628	168,807
Worked last 12 month	70.013	69.447	70.239	-0.792**	45.905	168,807
Worked all year	51.794	57.310	49.585	7.725***	50.000	168,807
Worked seasonally	13.841	8.303	16.059	-7.756***	35.890	168,807
Worked occasionally	3.211	3.432	3.123	0.309***	18.081	168,807
Panel B. Controls						
Age	29.457	29.366	29.493	-0.127*	10.186	168,807
Female	0.715	0.704	0.720	-0.016***	0.451	168,807
Urban	0.414	0.687	0.305	0.382***	0.485	168,807
Education	1.291	1.717	1.121	0.595***	1.032	168,807
Panel C. Exposure						
Exposure to terrorism	1.891	6.613	0.000	6.613***	7.916	168,807

Notes: The table reports descriptive statistics for the main variables. Column (1) reports full-sample means. Columns (2) and (3) report means for individuals exposed and not exposed to terrorism, respectively, where exposure is defined as having at least one terrorist attack within 10 km of the survey cluster. Column (4) reports weighted differences in means, column (5) reports standard deviations, and column (6) reports the number of observations. All statistics are weighted using DHS sampling weights. Occupational, remuneration, and employment outcomes are indicator variables expressed in percentage points. The smaller number of observations for *Domestic* and *Services* reflects survey-specific availability. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

4 Empirical Strategy

To estimate the effect of terrorism on labor market outcomes, we use a spatial-temporal estimation strategy (Angrist and Kugler, 2008; Aragón and Rud, 2016; Bertoni et al., 2019; Alfano and Görlach, 2023) that exploits localized variation in exposure to terrorist attacks across survey clusters and over time. Our baseline estimating equation is:

$$Y_{i,v,t} = \alpha + \beta \cdot \text{Exposure to terrorism}_{v,t} + \gamma' \cdot X_{i,v,t} + \varepsilon_{i,v,t} \quad (2)$$

where $Y_{i,v,t}$ is an indicator for whether individual i in cluster v is employed in the survey referenced year t , $\text{Exposure to terrorism}_{v,t}$ is the cumulative number of terrorist attacks occurring within a 10 km radius of the cluster centroid during the preceding three years, and $X_{i,v,t}$ is a vector of controls including age, gender, education, urban residence, cluster fixed effects, and year fixed effects. Standard errors are clustered at the DHS cluster level, which corresponds to the level of variation in the treatment variable (Bertrand et al., 2004; Besley and Burgess, 2004).

The coefficient of interest, β , captures the effect of local exposure to terrorism on employment outcomes. Identification comes from changes in exposure to terrorism experienced by the same survey cluster across DHS waves rather than from cross-sectional differences between locations. Consequently, the empirical design compares employment outcomes within a cluster as local exposure to terrorism rises or falls over time.

Identification is complicated by the non-random distribution of violence, as areas exposed to terrorism may differ systematically from less-exposed areas in ways that also affect labor market outcomes (Krueger and Malečková, 2002; Alfano and Görlach, 2023; Hussain and Yoon, 2025). To address this concern, we exploit within-cluster variation in exposure to terrorism over time. Cluster fixed effects absorb all time-invariant local characteristics, including geography, historical exposure to conflict, institutional quality, and persistent socioeconomic conditions, while year fixed effects account for aggregate shocks common to all locations, such as macroeconomic fluctuations, political cycles, and nationwide changes in security conditions or counterterrorism responses. Our identifying assumption is that, conditional on fixed effects and observed controls, changes in local exposure to terrorism are uncorrelated with unobserved shocks to individual labor market outcomes. We further mitigate this concern by measuring exposure using lagged attack windows, thereby reducing the scope for contemporaneous feedback between labor market conditions and observed exposure to terrorism.

A remaining concern is selective survey coverage and migration. Violence may prevent survey enumeration in highly insecure areas or induce displacement of affected households. To the extent that the most severely affected individuals or communities are underrepresented in the survey, the estimated effects are likely to understate the full labor market consequences of terrorism. Accordingly, our estimates should be interpreted as conservative measures of the impact of terrorism on local employment outcomes.

Figure 5 illustrates the spatial and temporal variation underlying the empirical strategy. Panel a plots DHS survey clusters, the locations of terrorist attacks, and the 10 km exposure radius used in the baseline analysis. Although terrorist activity is observed throughout Nigeria, exposed clusters are concentrated in the North-East, North-Central, and South-South

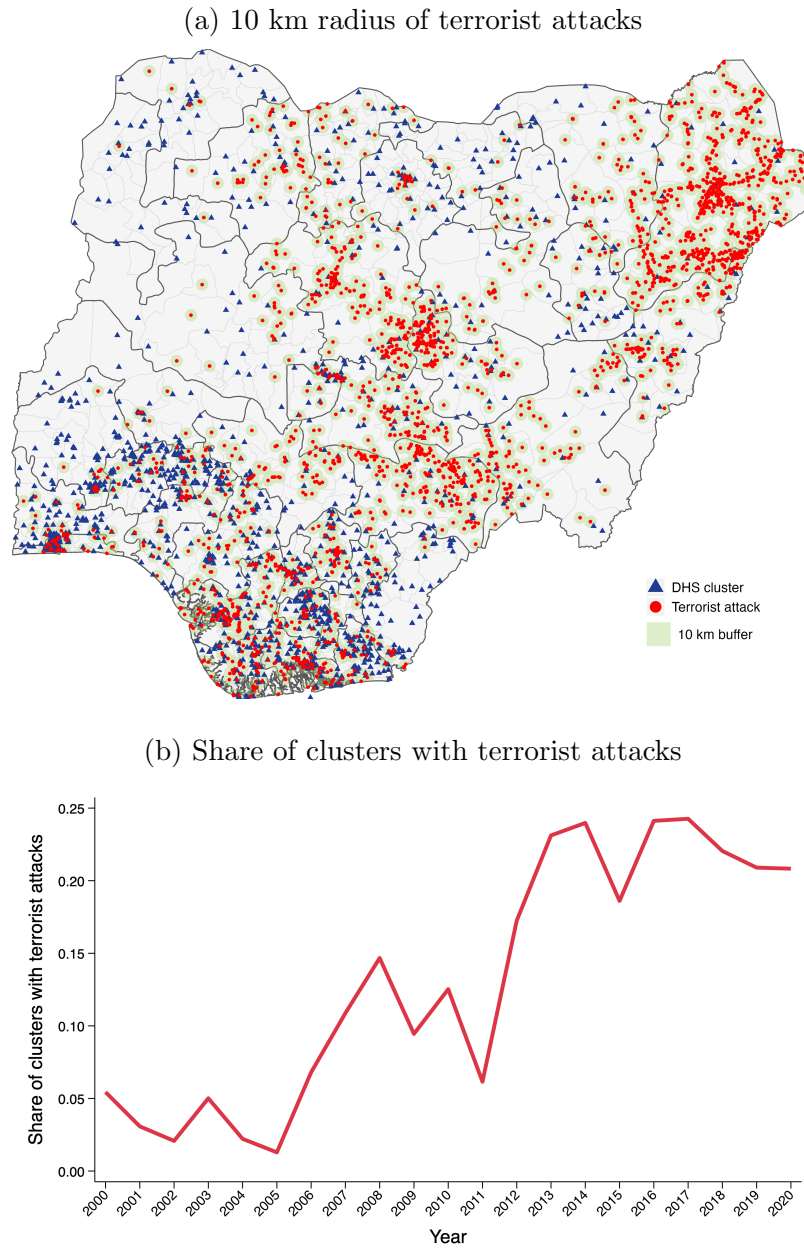


Figure 5: Spatial and Temporal Variation in Exposure to Terrorism.

Notes: The figure illustrates the spatial and temporal variation in exposure to terrorism used in the empirical analysis. Panel (a) maps DHS survey clusters, recorded terrorist attacks, and the 10 km exposure radius used in the baseline specification. Panel (b) reports the annual share of DHS survey clusters exposed to at least one terrorist attack within 10 km. *Source:* Authors' calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>), the Demographic and Health Surveys (DHS; <https://dhsprogram.com/data/>), and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

regions.⁶ Panel b reports the share of clusters exposed to terrorism over time, illustrating substantial temporal variation in exposure across locations.

5 Results

5.1 Main Results

The descriptive evidence presented above suggests a negative relationship between exposure to terrorism and employment. We now examine whether this relationship persists after accounting for observable characteristics, location-specific heterogeneity, and common time shocks. Table 2 reports the baseline estimates. Panel A measures exposure as the cumulative number of terrorist attacks occurring within 10 km of a survey cluster during the preceding three years. Across all specifications, greater exposure to terrorism is associated with lower employment. The estimated coefficient remains stable as additional controls and fixed effects are introduced, suggesting that the relationship is not driven by observable differences across individuals or by time-invariant differences across locations.

In our preferred specification, which includes individual controls as well as cluster and year fixed effects, an additional terrorist attack reduces employment by 0.142 percentage points. Evaluated at the sample mean, a one standard deviation increase in exposure to terrorism, equivalent to approximately eight additional attacks over the preceding three years, reduces employment by about 0.7 percentage points, or roughly 1 percent of average employment. Although modest in magnitude, the estimate reflects the cumulative effect of repeated exposure to localized violence and implies economically meaningful reductions in local employment in areas experiencing persistent terrorist activity.

Panel B examines the temporal structure of the relationship using a distributed-lag specification. The estimates indicate that the employment effects of terrorism are concentrated in the short run. An additional attack in period $t-1$ reduces employment by 0.571 percentage points. A one standard deviation increase in attacks during the previous year corresponds to a decline in employment of approximately 1.5 percentage points, or 2.23 percent of the sample mean. By contrast, the coefficients on longer lags are smaller and imprecisely estimated, suggesting that the adverse labor market consequences of terrorism are driven primarily by recent exposure.

These findings are consistent with the broader literature examining how localized shocks affect labor market outcomes (Topalova, 2010; Autor et al., 2013; Amior and Manning, 2018). In our setting, terrorism acts as a geographically concentrated shock that disrupts local economic activity and employment opportunities. Although the estimated effects are smaller than those associated with some of the largest localized economic shocks documented in the literature (Hjort and Poulsen, 2019; Mensah, 2024), they are comparable to documented employment losses following terrorist attacks in other settings (Brodeur, 2018). Taken together, the results indicate that terrorism generates economically meaningful reductions in local employment, with effects concentrated in areas experiencing recent attacks.

⁶Figure A4 provides analogous evidence by geo-political region, while figure A5 presents the corresponding maps for alternative exposure radii.

Table 2: Exposure to terrorism and employment

	Employed			
	(1)	(2)	(3)	(4)
Panel A: Cumulative Lag Exposure to Terrorism				
Exposure to terrorism	-0.188*** (0.036)	-0.191*** (0.037)	-0.168*** (0.039)	-0.142*** (0.040)
Controls	No	No	No	Yes
Cluster FE	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes
Mean of DV	67.34	67.34	67.34	67.34
Clusters	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807
R-squared	0.001	0.005	0.043	0.208
Panel B: Distributed Lag Exposure to Terrorism				
Exposure to terrorism, $t-1$	-0.784*** (0.146)	-0.842*** (0.134)	-0.625*** (0.137)	-0.571*** (0.131)
Exposure to terrorism, $t-2$	0.118 (0.088)	0.108 (0.085)	0.137 (0.110)	0.158 (0.112)
Exposure to terrorism, $t-3$	-0.081 (0.072)	-0.030 (0.074)	-0.199* (0.118)	-0.193* (0.115)
Controls	No	No	No	Yes
Cluster FE	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes
Mean of DV	67.34	67.34	67.34	67.34
Clusters	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807
R-squared	0.003	0.006	0.044	0.208

Notes: The table reports estimates of the effect of exposure to terrorism on employment. *Employed* is an indicator equal to one if the respondent is employed. The unit of observation is the individual respondent. Exposure to terrorism is measured as the number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster. Panel A measures exposure as the cumulative number of attacks during the preceding three years. Panel B reports distributed-lag estimates for attacks occurring in years $t-1$, $t-2$, and $t-3$. Individual controls include age, gender, education, and urban residence. All specifications are estimated using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 3: Exposure to Terrorism and Employment: Alternative Exposure Definitions

	Employed						
	Logarithmic transformation (1)	Inverse hyperbolic sine (2)	Binary				
			1 if ≥ 1 (3)	1 if ≥ 5 (4)	1 if ≥ 10 (5)	1 if ≥ 25 (6)	1 if ≥ 50 (7)
Exposure to terrorism	-1.730*** (0.484)	-1.359*** (0.396)	-1.266 (0.863)	-3.178** (1.522)	-7.307*** (1.757)	-12.211*** (2.609)	-12.797** (5.038)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean of DV	67.34	67.34	67.34	67.34	67.34	67.34	67.34
Clusters	1,395	1,395	1,395	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807	168,807	168,807	168,807
R-squared	0.208	0.208	0.208	0.208	0.208	0.208	0.208

Notes: The table reports robustness estimates using alternative definitions of exposure to terrorism. *Employed* is an indicator equal to one if the respondent is employed. Columns (1) and (2) use logarithmic and inverse hyperbolic sine transformations of the number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster. Columns (3)–(7) use binary indicators equal to one if cumulative exposure exceeds the stated threshold and zero otherwise. All specifications include baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects, and are weighted using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

5.2 Robustness Checks

This subsection examines the robustness of the baseline results to alternative measures of exposure to terrorism, alternative specifications and inference procedures, spatial definitions of exposure, and sample composition. Across all exercises, the estimated effects remain negative and statistically significant, providing support for the stability of the baseline findings.

We begin by examining alternative measures of exposure to terrorism. In the baseline specification, exposure to terrorism is measured as the cumulative number of terrorist attacks. Because the distribution of attacks is highly skewed, table 3 considers logarithmic and inverse hyperbolic sine transformations of the exposure variable. We also construct binary indicators using alternative thresholds (1, 5, 10, 25, and 50 attacks) to distinguish between the extensive and intensive margins of exposure. The estimated effects remain negative and statistically significant across all specifications. Moreover, the binary measures reveal larger employment declines at higher exposure thresholds, suggesting that the adverse labor market effects of terrorism increase with the intensity of exposure.

We next consider alternative measures of terrorism intensity. Table 4 replaces the number of attacks with measures based on casualties, deaths, injuries, and hostages within the same spatial and temporal window. The estimated effects remain negative and statistically significant across all measures, indicating that the findings are not driven by a particular definition of exposure to terrorism. Instead, the results suggest that both the frequency and severity of terrorist activity contribute to lower local employment. The comparatively larger estimates for hostage incidents are consistent with the possibility that particularly disruptive forms of terrorist activity impose larger labor market costs.

Table 5 examines the sensitivity of the results to alternative specifications. Replacing cluster fixed effects with region, state, or LGA fixed effects leaves the estimated coefficients largely unchanged. Similarly, allowing for differential linear and quadratic trends across exposed and non-exposed areas produces nearly identical estimates, indicating that long-term location-specific trends are unlikely to explain the findings. Adding further individual controls, including religion and marital status, similarly has little effect on the estimated coefficient. Taken together, these findings suggest that the baseline results are not driven by a particular specification choice.

We next examine the sensitivity of the results to alternative spatial definitions of exposure. Figure 6 reports results using alternative exposure radii. Although the estimated effects attenuate with distance, they remain negative and statistically significant across a wide range of radii, supporting both the stability of the findings and the choice of a 10 km radius in the baseline specification. Figure 7 further explores spatial variation using annular distance bands relative to a 100–120 km reference group. The estimates indicate that the employment effects are highly localized: exposure within 10 km significantly reduces employment, whereas coefficients at greater distances are generally small and statistically insignificant. This pattern suggests that the employment effects of terrorism are highly localized and attenuate rapidly with distance from attacks.

Finally, tables A9-A11 and figure A6 in the online appendix address inference, identification, and sample composition. The estimated effects remain negative and statistically significant when using alternative clustering levels, two-way clustering, and spatially corrected standard errors (Conley, 1999). Extending the baseline specification to include leads

Table 4: Exposure to Terrorism and Employment: Alternative Measures of Exposure

	Employed			
	Casualties (1)	Deaths (2)	Injuries (3)	Hostages (4)
Exposure to terrorism	-0.008*** (0.002)	-0.014*** (0.005)	-0.015*** (0.004)	-0.187*** (0.034)
Controls	Yes	Yes	Yes	Yes
Cluster FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Mean of DV	67.34	67.34	67.34	67.34
Clusters	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807
R-squared	0.208	0.208	0.208	0.208

Notes: The table reports robustness estimates using alternative measures of terrorism intensity. *Employed* is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured within 10 km of the respondent’s DHS survey cluster during the preceding three years using the cumulative number of casualties, deaths, injuries, and hostages associated with terrorist attacks. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects, and are weighted using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

and lags of exposure to terrorism reveals effects concentrated in period $t-1$. By contrast, coefficients on future exposure are small and statistically insignificant, providing no evidence of pre-trends. The results are also robust to the exclusion of sampling weights. Lastly, leave-one-out exercises that sequentially omit regions, states, LGAs, and survey years produce highly stable estimates, indicating that the findings are not driven by outliers or particular subsamples.

5.3 Heterogenous Effects

We next examine whether the employment effects of terrorism differ across individuals with varying degrees of labor market attachment and exposure to local economic disruption. Specifically, we estimate heterogeneous treatment effects by interacting exposure to terrorism with observable individual characteristics:

$$Y_{i,v,t} = \alpha + \sum_g \beta_g \cdot \text{Exposure to terrorism}_{v,t} \cdot \mathbf{C}_g + \gamma' \cdot X_{i,v,t} + \varepsilon_{i,v,t} \quad (3)$$

where $\mathbf{C}_g$ denotes the categories g of the individual characteristic under consideration, and all other variables and parameters are defined as in section 4. Equation 3 is equivalent

Table 5: Exposure to Terrorism and Employment: Alternative Specifications

	Employed					
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure to terrorism	-0.109*** (0.029)	-0.073** (0.035)	-0.076* (0.045)	-0.147*** (0.040)	-0.150*** (0.039)	-0.143*** (0.040)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Cluster FE	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	No	No	No	No	No
State FE	No	Yes	No	No	No	No
LGA FE	No	No	Yes	No	No	No
Location LT	No	No	No	Yes	Yes	No
Location QT	No	No	No	No	Yes	No
Additional controls	No	No	No	No	No	Yes
Mean of DV	67.34	67.34	67.34	67.34	67.34	67.34
Clusters	1,395	1,395	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807	168,807	167,978
R-squared	0.186	0.195	0.214	0.208	0.208	0.215

Notes: The table reports robustness estimates under alternative specifications. *Employed* is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster during the preceding three years. All specifications include the baseline controls reported in table 2 and survey-year fixed effects. Columns (1)–(3) replace DHS cluster fixed effects with region, state, and LGA fixed effects, respectively. Columns (4) and (5) additionally allow for differential linear and quadratic time trends across DHS clusters. Column (6) additionally includes marital status and religion controls. LT and QT denote linear and quadratic time trends, respectively. Estimates are weighted using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

to replacing the aggregate exposure measure in equation 2 with mutually exclusive group-specific exposure measures.⁷

We focus on four dimensions of heterogeneity: gender, education, age, and urban residence. These characteristics capture differences in labor market attachment, occupational flexibility, mobility constraints, and exposure to local economic disruption. Gender is of particular interest because terrorism may affect employment through mobility restrictions, safety concerns, and household responsibilities. Education captures the ability to adjust to local shocks, while age proxies for labor market experience and attachment. Finally, urban-rural differences may reflect distinct channels through which terrorism affects local economies, including agricultural production, market access, commerce, and wage employment.

⁷For example, the gender specification interacts exposure to terrorism separately with indicators for women and men, allowing us to estimate group-specific effects and test whether they differ statistically.

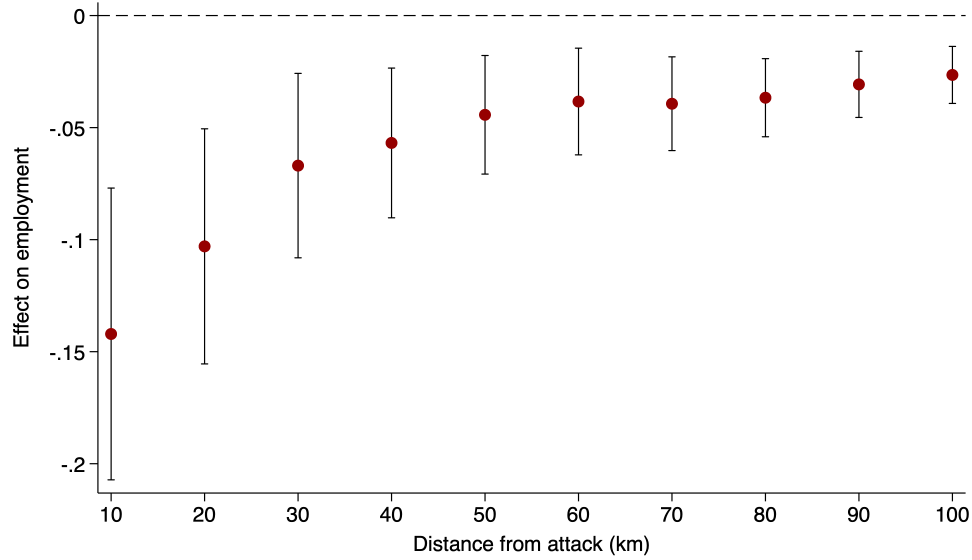


Figure 6: The Effect of Exposure to Terrorism on Employment: Alternative Exposure Radii.

Notes: The figure reports robustness estimates using alternative spatial definitions of exposure to terrorism. Each point reports the estimated coefficient on exposure to terrorism, where exposure is measured as the cumulative number of recorded terrorist attacks occurring within the indicated radius (10–100 km) of the respondent’s DHS survey cluster during the preceding three years. The 10 km radius corresponds to the baseline specification. *Employed* is an indicator equal to one if the respondent is employed. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Vertical bars show 95 percent confidence intervals based on standard errors clustered at the DHS cluster level. The horizontal dashed line marks zero.

Figure 8 summarizes the results. The main finding is that the employment effects of exposure to terrorism are concentrated among women. The estimated coefficient for women is negative and statistically significant, whereas the coefficient for men is close to zero. Moreover, the equality test rejects the null hypothesis of equal effects across genders. By contrast, the remaining splits provide little evidence of meaningful differences across groups. Although the point estimates are negative for both education groups, both age groups, and urban and rural respondents, the corresponding equality tests fail to reject common effects. Therefore, we interpret the results as indicating that exposure to terrorism reduces employment broadly across the population while disproportionately affecting women.

6 Mechanisms

The results presented above establish that exposure to terrorism reduces employment, with the effects concentrated primarily among women. We now examine the mechanisms underlying this relationship by investigating changes in local labor supply, labor demand, and a range of alternative explanations.

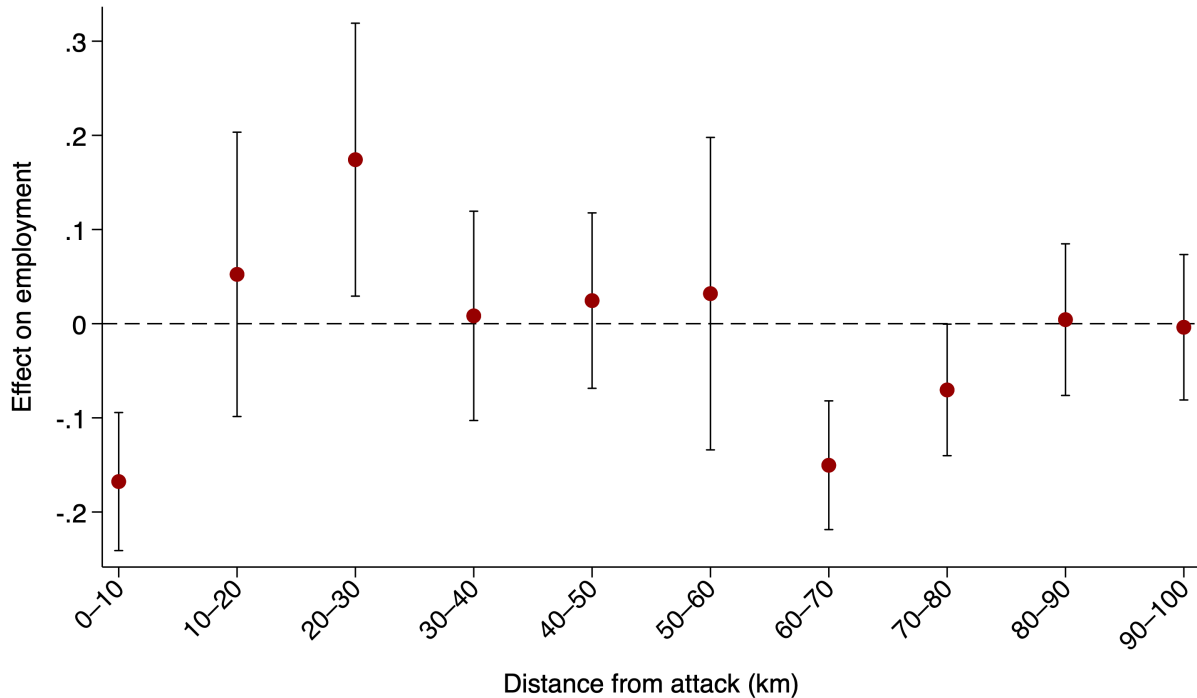


Figure 7: The Effect of Exposure to Terrorism on Employment Across Distance Bands.

Notes: The figure reports estimates from a distance-band specification of exposure to terrorism. Each point reports the estimated coefficient for terrorist attacks occurring within the indicated 10 km distance band relative to the omitted 100–120 km reference band. Exposure is measured using the cumulative number of recorded terrorist attacks during the preceding three years. *Employed* is an indicator equal to one if the respondent is employed. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Vertical bars show 95 percent confidence intervals based on standard errors clustered at the DHS cluster level. The horizontal dashed line marks zero.

6.1 Local Supply and Demand Adjustment Channels

Using our preferred specification in table 2, we examine the effect of exposure to terrorism on a range of individual-level labor market outcomes observed in the DHS, including remuneration type, employment participation, work regularity, and occupational composition. Although these outcomes do not permit a clean separation of labor supply and labor demand responses, they are informative about the margins through which workers and local labor markets adjust to terrorism.

It is important to distinguish between channels that are directly observed and those that are inferred from employment patterns. The DHS provides relatively direct evidence on labor supply adjustment through employment participation, work intensity, and movement into occasional employment. It also provides direct information on employment composition and job quality through occupation and remuneration type. By contrast, labor demand effects are necessarily inferred because the DHS does not observe firms, vacancies, wages, or business activity. Consequently, the evidence on labor demand should be interpreted as

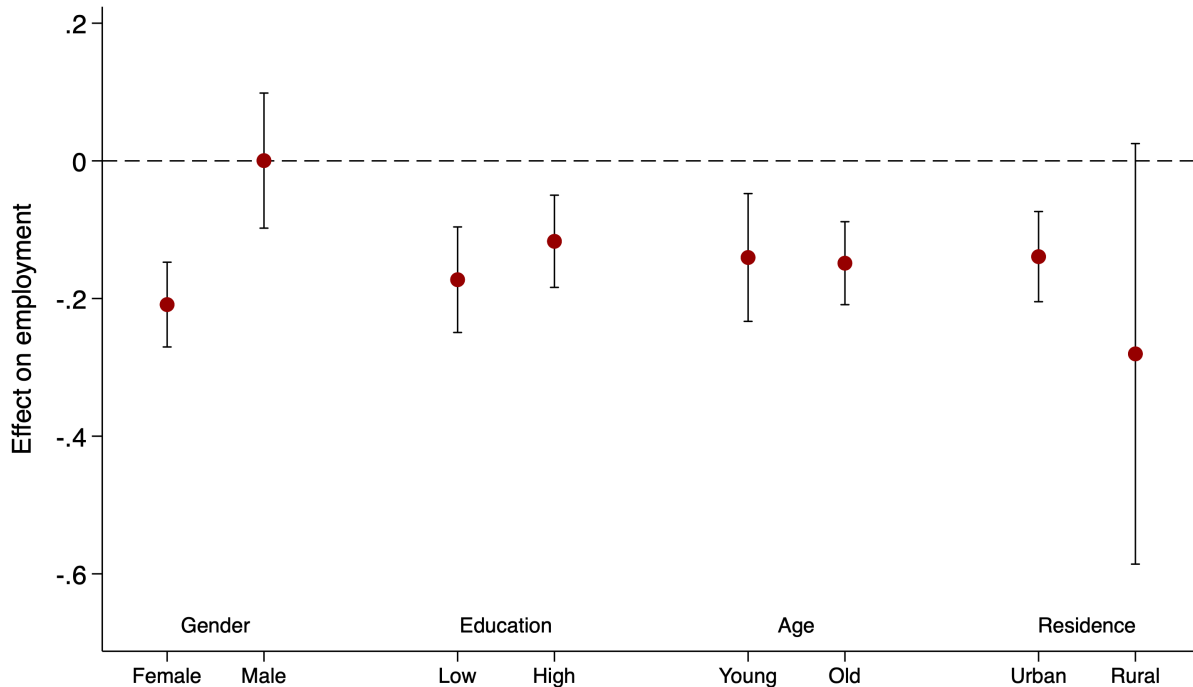


Figure 8: Heterogeneous Employment Effects of Exposure to Terrorism.

Notes: The figure reports subgroup-specific estimates of the effect of exposure to terrorism on employment. Each point reports the estimated coefficient on the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster during the preceding three years. Estimates are reported separately by gender, education, age, and urban residence. *Employed* is an indicator equal to one if the respondent is employed. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Vertical bars show 95 percent confidence intervals based on standard errors clustered at the DHS cluster level. The horizontal dashed line marks zero.

suggestive rather than definitive. Consistent with the framework outlined in section 2, the results should therefore be viewed as evidence of observable labor market responses rather than a structural decomposition of underlying channels.

The first set of results points to a deterioration in remuneration and employment stability. Figure 9 shows that exposure to terrorism reduces the probability of cash-paid and cash-and-kind employment while providing some evidence of substitution toward in-kind remuneration. Exposure to terrorism also decreases the probability of having worked during the previous twelve months and reduces all-year employment while increasing the likelihood of occasional work. These patterns are consistent with labor market disruptions that reduce the ability and/or willingness of individuals to participate regularly in economic activity, potentially because insecurity increases uncertainty or shifts workers toward more localized and irregular economic activities (Brodeur, 2018). More broadly, the results suggest that terrorism weakens individuals' attachment to the labor market and shifts employment toward more precarious and less monetized forms of work.

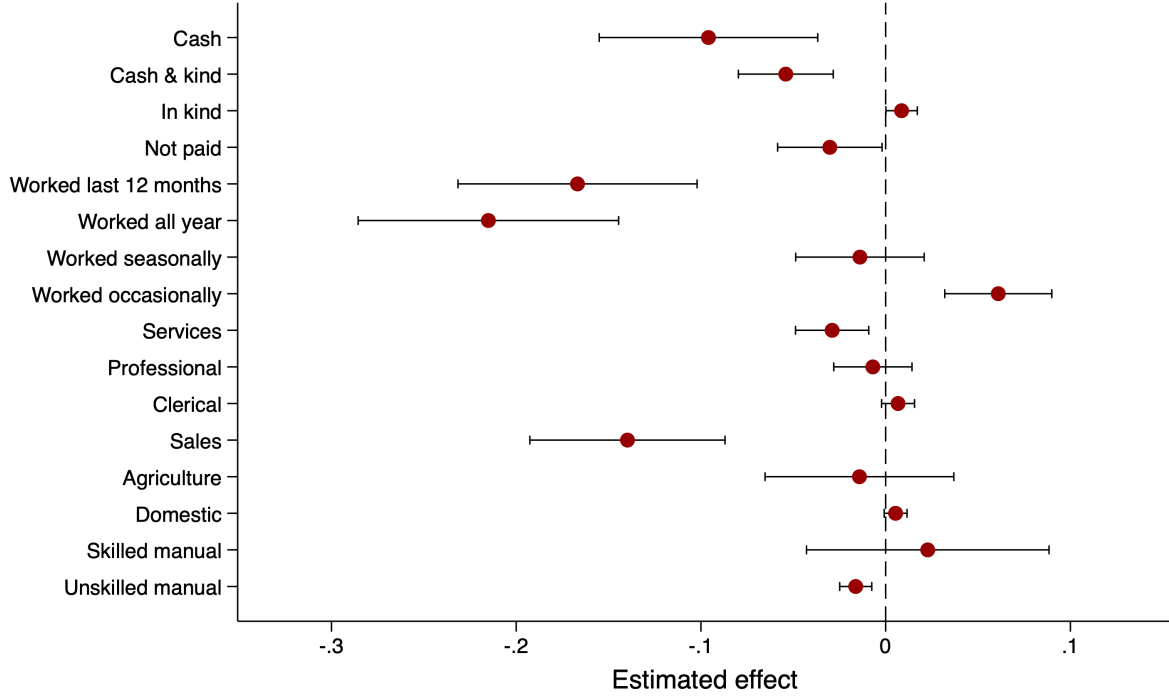


Figure 9: Labor Market Adjustment Following Exposure to Terrorism.

Notes: The figure reports estimates for alternative labor market outcomes. Each point reports the estimated coefficient on the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster during the preceding three years, estimated separately for each outcome shown. Outcomes capture remuneration type, employment stability, and occupational composition. Occupational categories are based on the International Labour Organization (ILO) classification. All dependent variables are binary indicators. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Horizontal bars show 95 percent confidence intervals based on standard errors clustered at the DHS cluster level. The vertical dashed line marks zero.

The occupational results in figure 9 point to a complementary labor demand channel. The largest and most precisely estimated declines are concentrated in sales, services, and unskilled manual work—activities that depend heavily on local demand, customer interactions, commuting, and the functioning of local markets. This pattern is intuitive in the Nigerian context, where many of these activities are concentrated in small enterprises and informal-sector employment. The decline in unskilled manual work is similarly consistent with a contraction in lower-skill labor demand. By contrast, professional, clerical, agricultural, domestic, and skilled manual occupations exhibit weaker or less systematic responses. Higher-skill occupations may be less exposed to localized market disruptions and are therefore less affected by the types of economic dislocations generated by terrorist activity, which is consistent with evidence that much of Nigeria's formal employment is concentrated in public administration, education, and finance (World Bank, 2022). Taken together, the evidence suggests that terrorism affects not only whether individuals work but also the quality, reg-

ularity, and composition of available employment opportunities. More generally, the results indicate that local labor markets adjust along multiple margins following terrorist attacks, affecting both employment levels and the nature of employment itself.

6.2 Alternative Mechanisms

The preceding evidence is consistent with labor supply and labor demand adjustments in response to terrorism. However, a natural concern is that the estimated employment effects could instead reflect other changes correlated with exposure to terrorism. We therefore examine five alternative explanations that could account for the estimated employment effects.

Selective migration. Terrorism may induce selective migration or compositional sorting, altering who remains in exposed locations rather than changing employment behavior itself. To assess this possibility, we examine indicators of recent migration and years of residence in the current location.

Preexisting underdevelopment. Exposed areas may be poorer or less developed even in the absence of terrorism. To capture pre-existing socioeconomic conditions, we examine asset ownership and access to improved water, improved sanitation, and clean cooking fuel.

Household demographic adjustment. Terrorism may alter household structure and labor allocation through fertility, childcare burdens, or other demographic responses.⁸ We therefore examine the number of children under five, the dependency ratio, female headship, pregnancy, recent births, and measures of female decision-making power.

Health-related constraints. Employment may decline because terrorism worsens health or human capital, rather than through direct labor market disruption. To examine this possibility, we use BMI, obesity, and recent child illness.

Market access. Exposure to terrorism may also proxy for weaker information connectivity and reduced access to services. Thus, we examine media exposure, telephone ownership, and whether distance to a health facility is reported as a major problem.

Figure 10 reports the estimated relationship between exposure to terrorism and these outcomes using our preferred specification from table 2. Overall, the evidence provides little support for these alternative explanations. Exposure to terrorism is not significantly associated with indicators of migration, health, household structure, or female empowerment, including recent migration, years in current residence, BMI, obesity, child illness, the number of children under five, the dependency ratio, female headship, and pregnancy. Similarly, recent births decline rather than increase with exposure to terrorism, working against explanations based on increased fertility or childcare burdens. Taken together, these results suggest that selective migration, health constraints, and most forms of household

⁸This exercise is particularly relevant because the heterogeneous effects reported in the previous section are concentrated among women. The selected outcomes help assess whether the female employment response reflects changes in household composition or constraints rather than labor market disruption.

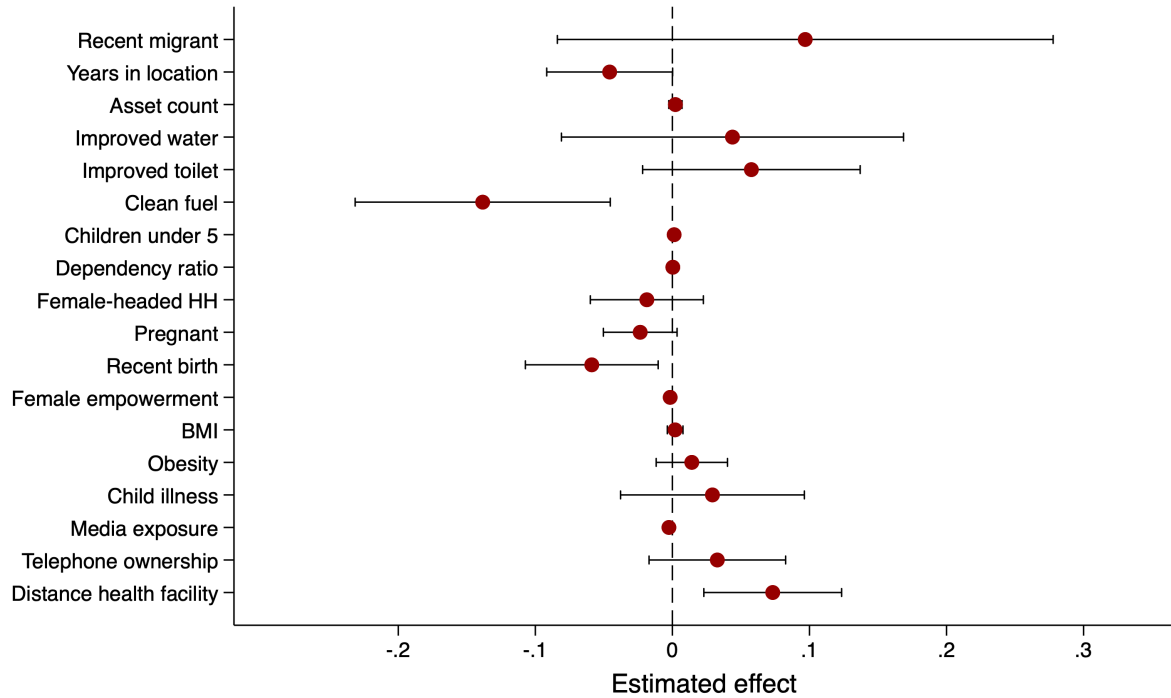


Figure 10: Exposure to Terrorism and Alternative Explanations for Employment Effects.

Notes: The figure reports estimates for outcomes capturing alternative explanations for the employment effects of terrorism. Each point reports the estimated coefficient on the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent’s DHS survey cluster during the preceding three years, estimated separately for each outcome. Outcomes capture migration, household demographics, health conditions, socioeconomic status, and market access. All outcomes are standardized to facilitate comparison across specifications. All regressions include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Horizontal bars show 95 percent confidence intervals based on standard errors clustered at the DHS cluster level. The vertical dashed line marks zero.

demographic adjustment are unlikely to be the primary drivers of the employment effects documented above.

The evidence is somewhat more mixed regarding local socioeconomic conditions and market access. Exposure to terrorism is not significantly associated with most indicators of household assets and living standards, nor with telephone ownership. However, more exposed areas are less likely to use clean cooking fuel, exhibit slightly lower media exposure, and report greater difficulty in accessing health facilities. Therefore, we do not interpret the evidence as ruling out all alternative explanations. Nevertheless, in the online appendix, we explicitly control for these significant correlates and show that the baseline employment estimates remain largely unchanged (table A12). Overall, the results suggest that the employment effects of terrorism are more consistent with disruptions to local labor market activity than with changes in population composition, health, household structure, or broader socioeconomic conditions.

7 Conclusion

While the macroeconomic costs of terrorism are well documented, much less is known about how terrorist violence affects local labor markets, particularly in developing countries. This paper examines how exposure to terrorism shapes employment outcomes in Nigeria. Combining georeferenced information on terrorist incidents with individual-level employment data, and exploiting spatial-temporal variation in local exposure to terrorism, we show that terrorism generates economically meaningful reductions in employment. A one standard deviation increase in exposure lowers the probability of employment by approximately 0.7 percentage points. The estimated effects remain robust across a wide range of alternative specifications, exposure definitions, spatial thresholds, sample restrictions, and inference procedures, while placebo timing tests provide no evidence of pre-trends. We also find that the employment effects are concentrated among women.

The evidence further suggests that terrorism affects not only whether individuals work, but also the nature of available employment opportunities. Exposure to terrorism reduces the prevalence of regular and cash-paying jobs and increases reliance on more precarious forms of work. The effects are particularly pronounced in sales, services, and unskilled manual occupations, suggesting that terrorism disproportionately affects activities that depend on local demand and market interactions. More broadly, the findings indicate that local labor markets adjust along multiple margins following terrorist attacks, affecting employment levels, employment stability, and occupational composition. While the evidence is consistent with both labor supply and labor demand adjustments, it also points to reduced market access as a potentially important complementary channel.

The results have broader implications for understanding the economic consequences of insecurity. To the extent that terrorism disrupts local labor markets, its costs extend beyond the immediate loss of life and the destruction of physical assets that typically dominate policy discussions. Instead, terrorism also reduces employment opportunities, weakens job quality, and may reinforce existing inequalities in labor market outcomes, particularly for women. More generally, the findings suggest that development policies aimed at promoting employment and economic transformation may be substantially less effective when persistent insecurity undermines local economic activity and labor market functioning.

Several questions remain open. Although the evidence is consistent with both labor supply and labor demand adjustments, the available data do not allow us to precisely identify the relative importance of specific mechanisms, particularly on the labor demand side. Terrorism may reduce employment through firm contraction, business exit, lower investment, disruptions to trade, or broader declines in economic activity. Similarly, while we largely rule out several alternative explanations, the evidence on market access remains suggestive rather than conclusive. Future work combining household surveys with firm-level, administrative, and high-resolution spatial data could help disentangle the relative importance of labor supply, labor demand, and market access channels through which terrorism affects labor market outcomes in developing economies.

References

- Abadie, A. and Gardeazabal, J. (2003). The economic costs of conflict: A case study of the basque country. *American Economic Review*, 93(1):113–132.
- Abadie, A. and Gardeazabal, J. (2008). Terrorism and the world economy. *European Economic Review*, 52(1):1–27.
- Alfano, M. and Görlach, J.-S. (2023). Terrorism, media coverage, and education: Evidence from al-shabaab attacks in kenya. *Journal of the European Economic Association*, 21(2):727–763.
- Amior, M. and Manning, A. (2018). The persistence of local joblessness. *American Economic Review*, 108(7):1942–1970.
- Angrist, J. D. and Kugler, A. D. (2008). Rural windfall or a new resource curse? coca, income, and civil conflict in colombia. *The Review of Economics and Statistics*, 90(2):191–215.
- Aragón, F. M. and Rud, J. P. (2016). Polluting industries and agricultural productivity: Evidence from mining in ghana. *The Economic Journal*, 126(597):1980–2011.
- Autor, D. H., Dorn, D., and Hanson, G. H. (2013). The china syndrome: Local labor market effects of import competition in the united states. *American Economic Review*, 103(6):2121–2168.
- Basuchoudhary, A. and Schulze, G. G. (2026). *Introduction: The Economic Approach to the Analysis of Terrorism*, page 3–34. Cambridge University Press.
- Bertoni, E., Di Maio, M., Molini, V., and Nistico, R. (2019). Education is forbidden: The effect of the boko haram conflict on education in north-east nigeria. *Journal of Development Economics*, 141:102249.
- Bertrand, M., Duflo, E., and Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *The Quarterly Journal of Economics*, 119(1):249–275.
- Besley, T. and Burgess, R. (2004). Can labor regulation hinder economic performance? evidence from india. *The Quarterly Journal of Economics*, 119(1):91–134.
- Besley, T. and Mueller, H. (2012). Estimating the peace dividend: The impact of violence on house prices in northern ireland. *American Economic Review*, 102(2):810–833.
- Brodeur, A. (2018). The effect of terrorism on employment and consumer sentiment: Evidence from successful and failed terror attacks. *American Economic Journal: Applied Economics*, 10(4):246–282.
- Burke, M., Gong, E., and Jones, K. (2015a). Income shocks and hiv in africa. *The Economic Journal*, 125(585):1157–1189.

- Burke, M., Hsiang, S. M., and Miguel, E. (2015b). Global non-linear effect of temperature on economic production. *Nature*, 527(7577):235–239.
- Clark, A. E., Doyle, O., and Stancanelli, E. (2020). The impact of terrorism on individual well-being: Evidence from the boston marathon bombing. *The Economic Journal*, 130(631):2065–2104.
- Conley, T. G. (1999). Gmm estimation with cross sectional dependence. *Journal of Econometrics*, 92(1):1–45.
- Dix-Carneiro, R. and Kovak, B. K. (2019). Margins of labor market adjustment to trade. *Journal of International Economics*, 117:125–142.
- Dreher, A., Krieger, T., and Meierrieks, D. (2011). Hit and (they will) run: The impact of terrorism on migration. *Economics Letters*, 113(1):42–46.
- Elster, Y., Zussman, A., and Zussman, N. (2017). Rockets: the housing market effects of a credible terrorist threat. *Journal of Urban Economics*, 99:136–147.
- Falola, T. and Heaton, M. M. (2008). *A history of Nigeria*. Cambridge University Press.
- Fenske, J. and Zurimendi, I. (2017). Oil and ethnic inequality in nigeria. *Journal of Economic Growth*, 22(4):397–420.
- Fetzer, T. and Kyburz, S. (2024). Cohesive institutions and political violence. *Review of Economics and Statistics*, 106(1):133–150.
- Hjort, J. and Poulsen, J. (2019). The arrival of fast internet and employment in africa. *American Economic Review*, 109(3):1032–1079.
- Hussain, S. and Yoon, C. (2025). The impact of terrorism on education: Evidence from the death of osama bin laden in pakistan. *Labour Economics*, page 102780.
- ILO (2020). World employment and social outlook: Trends 2020. Technical report, International Labour Organization.
- ILO (2024). Ilostat country profile: Nigeria. ILOSTAT database.
- Krueger, A. B. and Malečková, J. (2002). Education, poverty and terrorism: Is there a causal connection? *Journal of Economic Perspectives*, 17(4):119–144.
- Lewis, P. (2009). *Growing apart: Oil, politics, and economic change in Indonesia and Nigeria*. University of Michigan Press.
- Meierrieks, D. (2026). 17 macroeconomic consequences of and economic resilience to terrorism. *The Cambridge Handbook on the Economics of Terrorism*, page 373.
- Mensah, J. T. (2024). Jobs! electricity shortages and unemployment in africa. *Journal of Development Economics*, 167:103231.

- Notowidigdo, M. J. (2020). The incidence of local labor demand shocks. *Journal of Labor Economics*, 38(3):687–725.
- OPEC (2025). *Annual Statistical Bulletin 2025, 60th edition*. Organization of Petroleum Exporting Countries.
- Sala-i Martin, X. and Subramanian, A. (2013). Addressing the natural resource curse: An illustration from nigeria. *Journal of African Economies*, 22(4):570–615.
- Sandler, T. and Gaibullov, K. (2026). 2 terrorism: What we know, what we don't know, and what we need to know. *The Cambridge Handbook on the Economics of Terrorism*, page 35.
- Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from india. *American Economic Journal: Applied Economics*, 2(4):1–41.
- Trebbi, F. and Weese, E. (2019). Insurgency and small wars: Estimation of unobserved coalition structures. *Econometrica*, 87(2):463–496.
- World Bank (2022). Nigeria systematic country diagnostic. Technical report, World Bank.

Online Appendix to “Work Under Attack: Terrorism and Local Labor Markets”

A Appendix Overview

This appendix provides additional information on the data, sample construction, descriptive patterns, and robustness analyses. Figures [A1–A5](#) document the spatial and temporal distribution of terrorist activity in Nigeria, including alternative dimensions of terrorist incidents (casualties, deaths, injuries, and hostages), the geographic distribution of DHS survey clusters, alternative exposure radii, and the identifying variation underlying the empirical strategy. Figure [A6](#) presents leave-one-out robustness checks. Tables [A1–A8](#) report descriptive statistics on terrorist incidents and descriptive evidence on employment, occupational structure, remuneration, and work regularity across Nigerian states, as well as the distribution of the DHS (analysis) sample across regions, states, and survey rounds. Tables [A9–A12](#) present additional robustness checks, including alternative inference procedures, lag and lead specifications, unweighted regressions, and tests of alternative explanations.

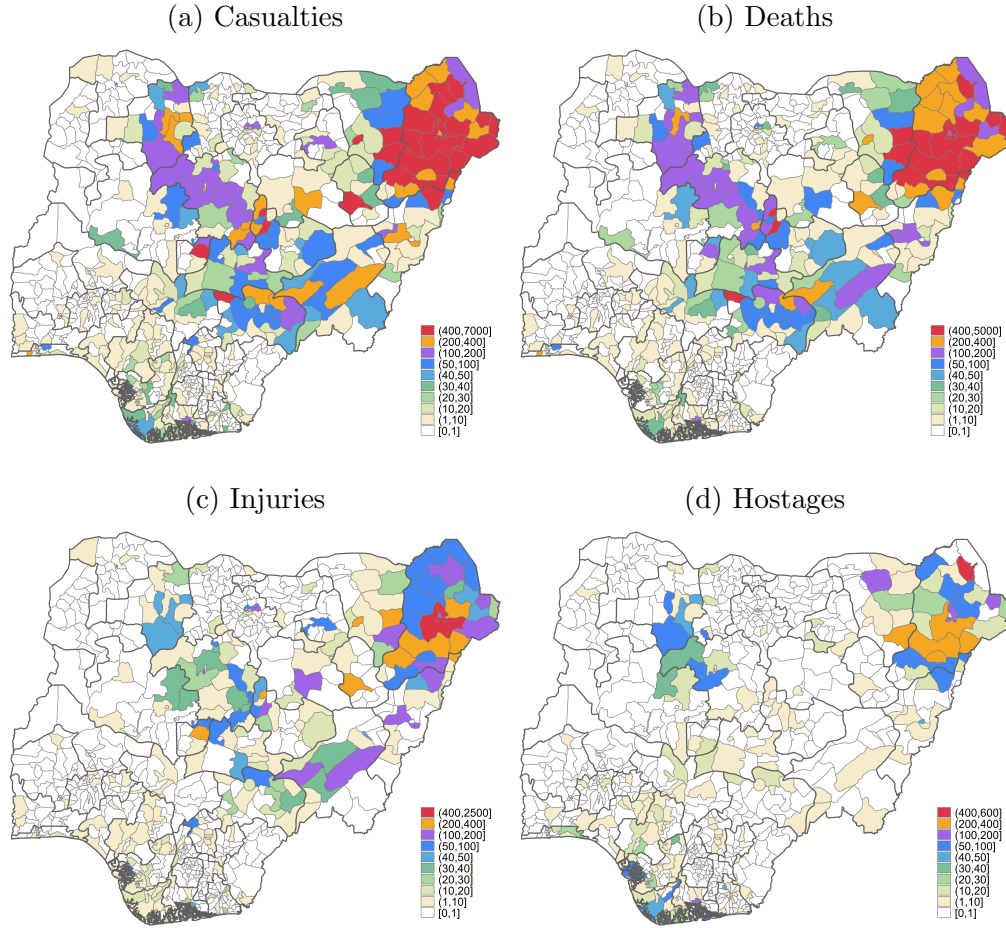


Figure A1: Spatial Distribution of Alternative Measures of Terrorist Activity

Notes: The figure maps the spatial distribution of alternative measures of terrorism intensity across Nigeria's Local Government Areas (LGAs) between 2000 and 2020. Panel (a) reports cumulative casualties, panel (b) cumulative deaths, panel (c) cumulative injuries, and panel (d) cumulative hostages taken. *Source:* Authors' calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>) and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

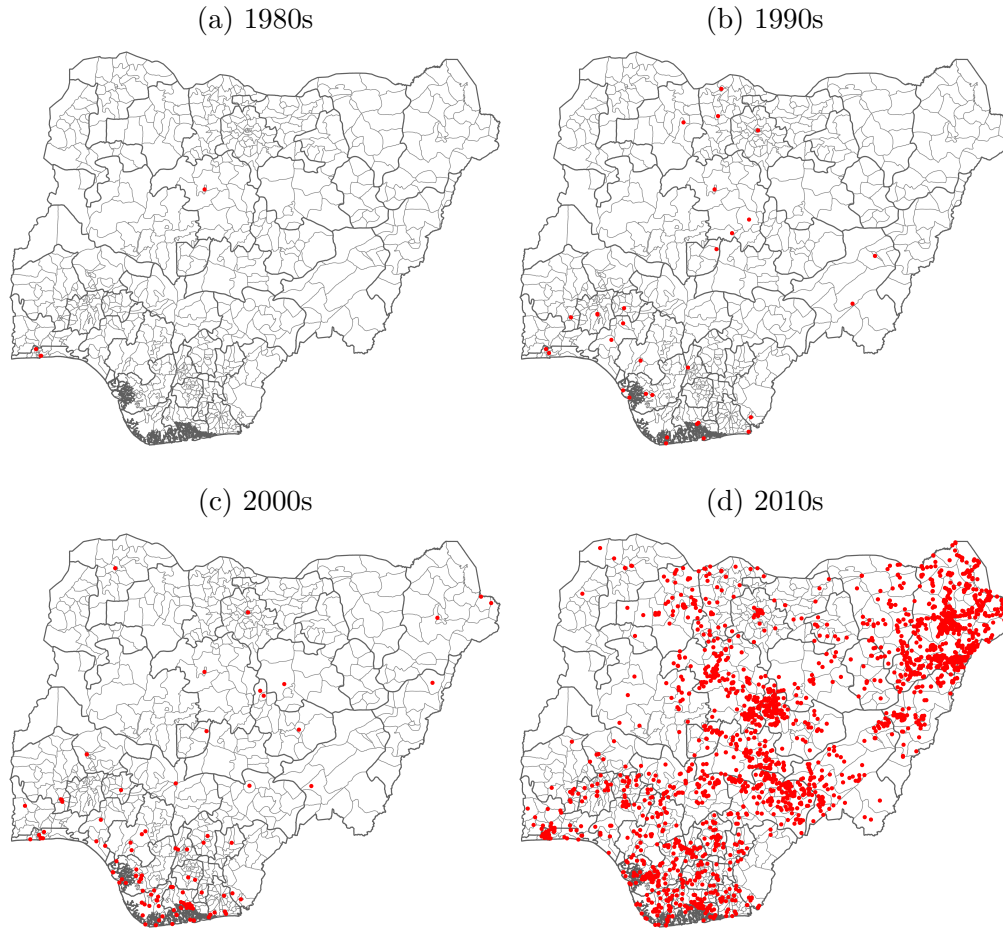


Figure A2: Spatial Distribution of Terrorist Attacks in Nigeria by Decade

Notes: The figure maps the spatial distribution of recorded terrorist attacks in Nigeria by decade. Panels (a)–(d) correspond to the 1980s, 1990s, 2000s, and 2010s, respectively. Each red marker denotes a recorded terrorist incident. The figure illustrates the long-run evolution of terrorist activity in Nigeria prior to and during the study period. *Source:* Authors' calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>) and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

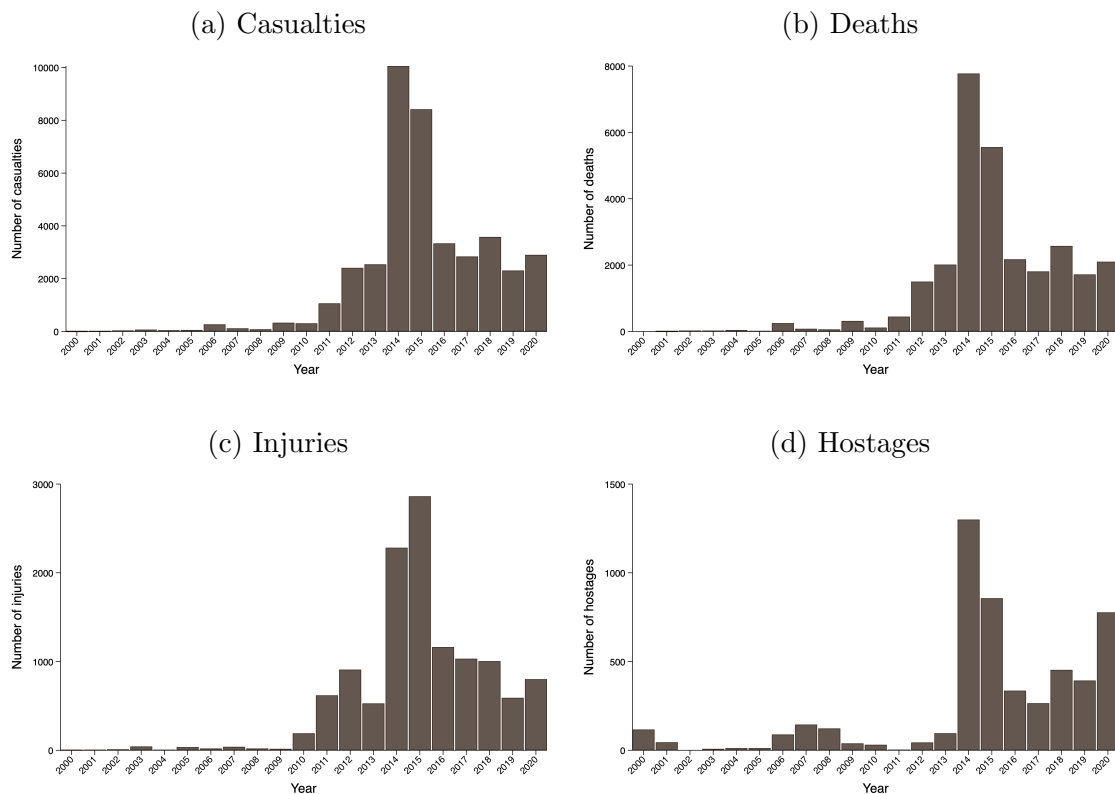


Figure A3: Alternative Measures of Exposure to Terrorism in Nigeria, 2000–2020

Notes: The figure reports annual totals for alternative measures of terrorism intensity in Nigeria between 2000 and 2020. Panels (a)–(d) show casualties (deaths plus injuries), deaths, injuries, and hostages associated with recorded terrorist attacks, respectively. *Source:* Authors' calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>).

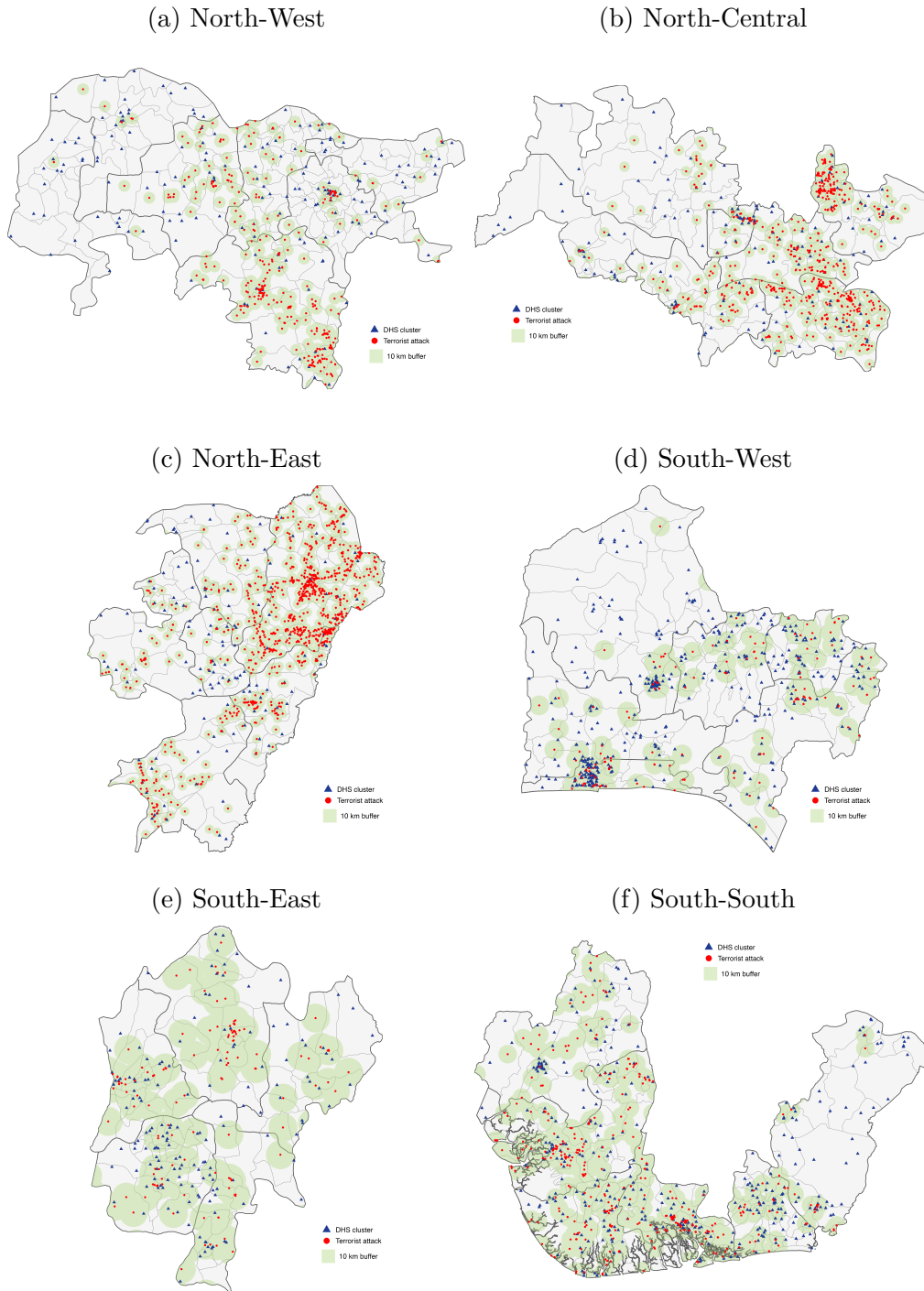


Figure A4: DHS Clusters and Terrorist Attacks Across Nigeria's Geopolitical Zones

Notes: The figure maps DHS survey clusters and recorded terrorist attacks across Nigeria's six geopolitical zones. Blue triangles denote DHS survey clusters, red dots denote recorded terrorist attacks, and shaded circles indicate the 10 km exposure radius used in the baseline specification. Panels (a)–(f) correspond to the North-West, North-Central, North-East, South-West, South-East, and South-South zones, respectively. *Source:* Authors' calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>), Demographic and Health Surveys (DHS; <https://dhsprogram.com/data/>), and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

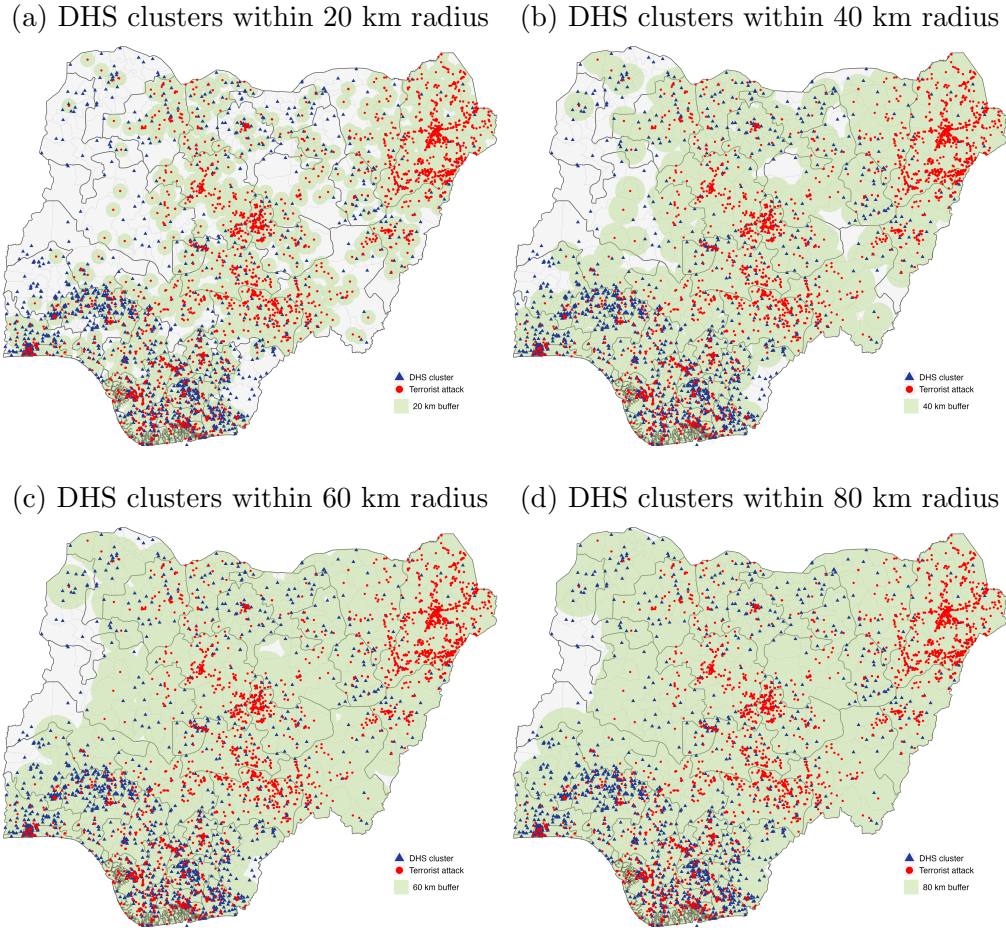


Figure A5: Alternative Spatial Definitions of Exposure to Terrorism

Notes: The figure illustrates alternative spatial definitions of exposure to terrorism used in the robustness analysis. Blue triangles denote DHS survey clusters, red dots denote recorded terrorist attacks, and shaded circles indicate exposure radii around attack locations. Panels (a)–(d) show exposure radii of 20 km, 40 km, 60 km, and 80 km, respectively, corresponding to the alternative measures used in figure 6. *Source:* Authors' calculations based on the Global Terrorism Database (GTD; <https://www.start.umd.edu/gtd/>), the Demographic and Health Surveys (DHS; <https://dhsprogram.com/data/>), and administrative boundaries from Global Administrative Areas (GADM; <https://gadm.org>).

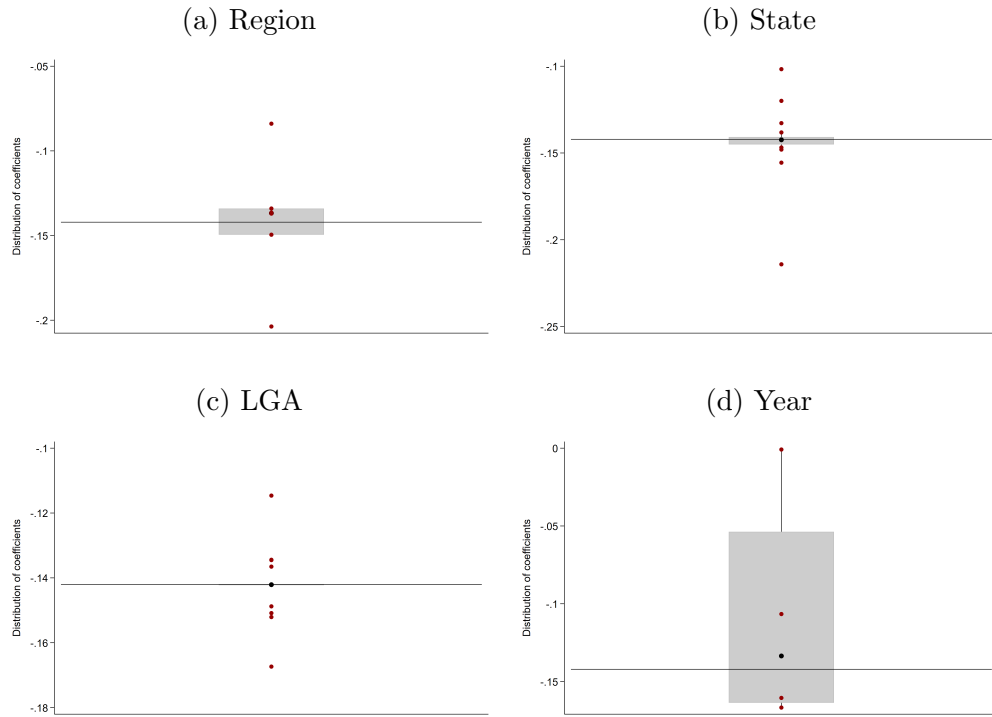


Figure A6: Leave-One-Out Robustness Analysis of Exposure to Terrorism and Employment.

Notes: The figure reports leave-one-out estimates of the effect of exposure to terrorism on employment. Panels (a)–(c) sequentially exclude regions, states, and local government areas (LGAs), respectively, while panel (d) sequentially excludes survey years. Each leave-one-out regression estimates the coefficient on exposure to terrorism from the baseline specification. Box plots summarize the distribution of coefficient estimates across leave-one-out regressions. Employed is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent’s DHS survey cluster during the preceding three years. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Standard errors are clustered at the DHS cluster level.

Table A1: Characteristics of Terrorist Attacks in Nigeria

	Number of incidents			Analysis period, 2000-2020			
	1976-2020 (1)	1976-1999 (2)	2000-2020 (3)	Casualties (4)	Deaths (5)	Injuries (6)	Hostages (7)
Panel A: Distribution of terrorist attacks in Nigeria							
Total	5,503	74	5,429	40,800	28,619	12,181	5,146
Panel B: Distribution of terrorist attacks in Nigeria by event characteristics							
	Terrorist group						
Boko Haram	2,784	0	2,784	30,104	20,651	9,453	3,395
Fulani extremists	1,070	0	1,070	6,022	4,855	1,167	607
Other	322	28	294	935	715	220	258
Unknown	1,327	46	1,281	3,739	2,398	1,341	886
	Attack type						
Armed assault	2,556	21	2,535	21,476	17,663	3,813	60
Bombing	1,306	25	1,281	13,468	6,361	7,107	1
Hostage	747	6	741	3,311	2,521	790	4,939
Infrastructure	323	7	316	407	339	68	41
Assassination	288	12	276	645	455	190	52
Other	25	1	24	78	34	44	53
Unknown	258	2	256	1,415	1,246	169	0
	Target type						
Private citizens	2,664	19	2,645	24,226	17,701	6,525	3,217
Military	605	12	593	5,691	4,298	1,393	301
Government	502	16	486	1,339	984	355	188
Police	397	2	395	1,758	1,371	387	109
Religious institution	300	3	297	2,918	1,380	1,538	125
Business	302	9	293	1,726	986	740	341
Educational institution	154	1	153	645	409	236	567
Other	446	9	437	2,346	1,364	982	298
Unknown	133	3	130	151	126	25	0
	Weapon type						
Firearms	3,075	29	3,046	19,083	15,398	3,685	3,533
Explosives	1,590	25	1,565	18,965	10,846	8,119	670
Incendiary	306	8	298	653	595	58	32
Melee	109	4	105	522	385	137	207
Other	7	0	7	20	17	3	0
Unknown	416	8	408	1,557	1,378	179	704

Notes: The table reports descriptive statistics for georeferenced terrorist incidents recorded in Nigeria between 1976 and 2020. Statistics are reported separately for the pre-analysis period (1976–1999) and the analysis period (2000–2020). Panel A reports aggregate counts of attacks, casualties, deaths, injuries, and hostages. Panel B reports the distribution of incidents by perpetrator group, attack type, target type, and weapon type. Hostages are defined as the sum of kidnapping and barricade hostages. Target type classified as “Other” include utilities, transportation, non-state militia, violent political parties, telecommunications, journalists, media, foreign missions, maritime facilities, NGOs, and aircraft. Weapon type classified as “Other” include sabotage and chemicals.

Table A2: Terrorist Activity in Nigeria by Year, 1976–2020

Year	Attacks	Casualties	Deaths	Injuries	Hostages
1976–1999	74	876	443	433	61
2000	5	2	0	2	117
2001	5	6	3	3	45
2002	6	39	28	11	0
2003	7	70	27	43	8
2004	6	47	41	6	12
2005	9	55	19	36	12
2006	32	270	250	20	89
2007	54	119	80	39	145
2008	67	82	62	20	123
2009	42	332	316	16	39
2010	63	308	117	191	31
2011	174	1,065	446	619	4
2012	612	2,411	1,502	909	44
2013	345	2,543	2,015	528	96
2014	713	10,058	7,775	2,283	1,300
2015	637	8,421	5,558	2,863	857
2016	533	3,337	2,174	1,163	336
2017	486	2,841	1,809	1,032	265
2018	649	3,582	2,577	1,005	453
2019	507	2,309	1,718	591	393
2020	477	2,903	2,102	801	777
Total	5,503	41,676	29,062	12,614	5,207

Notes: The table reports annual totals of recorded terrorist activity in Nigeria between 1976 and 2020. *Attacks* denotes the number of terrorist incidents, *Casualties* denotes the total number of deaths and injuries, *Deaths* denotes fatalities, *Injuries* denotes non-fatal injuries, and *Hostages* denotes the number of individuals kidnapped or taken hostage. The first row aggregates all incidents recorded during the pre-analysis period (1976–1999), while subsequent rows report annual totals for the analysis period (2000–2020).

Table A3: Employment Rates by State and Survey Year

State	Employed			
	2003	2008	2013	2018
Abia	36.98	65.74	67.83	76.20
Adamawa	58.31	71.73	61.78	68.25
Akwa Ibom	53.73	64.65	64.56	62.98
Anambra	70.23	65.51	59.16	77.87
Bauchi	57.55	71.64	60.28	68.94
Bayelsa	64.12	60.68	67.50	73.15
Benue	72.17	81.69	77.51	86.90
Borno	59.70	74.46	48.33	59.84
Cross River	61.36	75.04	70.64	79.38
Delta	59.76	63.69	60.21	73.29
Ebonyi	46.50	73.55	77.34	93.06
Edo	53.04	67.53	65.00	72.79
Ekiti	63.23	62.05	63.82	81.78
Enugu	66.66	60.69	63.86	53.85
FCT, Abuja	65.30	62.75	67.34	55.77
Gombe	57.73	59.40	58.86	57.08
Imo	52.19	59.07	58.10	71.65
Jigawa	59.12	60.34	64.09	57.33
Kaduna	51.13	49.55	66.06	69.50
Kano	48.25	60.76	57.09	61.79
Katsina	66.78	58.25	64.12	53.86
Kebbi	75.55	69.02	59.55	57.80
Kogi	57.01	70.39	71.60	82.07
Kwara	77.40	76.34	66.53	74.13
Lagos	69.07	72.37	75.50	78.21
Nasarawa	70.38	72.54	63.99	64.44
Niger	46.77	71.42	83.63	71.06
Ogun	80.05	81.00	80.43	83.38
Ondo	67.95	66.58	69.05	79.88
Osun	52.44	68.12	72.85	80.19
Oyo	62.24	80.50	79.27	82.38
Plateau	71.51	54.08	64.00	79.63
Rivers	47.99	67.58	78.82	78.26
Sokoto	61.21	70.03	51.27	57.23
Taraba	62.04	71.32	69.28	79.40
Yobe	52.66	49.38	49.76	74.71
Zamfara	64.91	58.43	71.71	51.18
Total	60.62	66.70	66.24	71.06

Notes: The table reports weighted employment rates by state and DHS survey round. *Employed* is measured as an indicator equal to one if the respondent is employed. Entries report weighted state-level means expressed in percentage points. Statistics are calculated using DHS sampling weights

Table A4: Employment and Occupation by State

State	Employed	Services	Professional	Clerical	Sales	Agriculture	Domestic	Skilled manual	Unskilled manual
Abia	68.36	8.18	8.34	1.56	27.19	9.13	0.13	10.61	1.27
Adamawa	66.75	3.68	3.12	0.68	20.73	18.39	0.10	8.00	1.03
Akwa Ibom	62.94	8.35	9.10	1.42	26.68	5.99	0.42	10.87	1.54
Anambra	68.44	8.97	8.06	1.51	31.07	5.21	0.11	8.91	1.64
Bauchi	65.89	4.61	2.24	0.20	28.89	12.16	0.40	13.45	0.95
Bayelsa	65.85	6.05	7.38	1.34	21.77	15.26	0.25	7.62	0.72
Benue	81.35	2.44	4.18	0.44	11.25	40.70	0.00	3.18	0.76
Borno	58.53	2.79	4.08	0.95	17.97	18.60	0.01	9.79	0.53
Cross River	73.73	8.16	5.52	1.12	17.93	27.00	0.93	6.53	0.85
Delta	65.07	9.13	6.74	1.45	22.02	10.91	0.35	9.01	1.22
Ebonyi	81.17	6.73	6.29	1.17	20.29	21.48	0.02	7.12	0.86
Edo	67.01	9.25	7.51	1.39	20.87	11.93	0.11	12.15	1.37
Ekiti	68.26	8.27	10.84	2.28	23.67	9.12	0.38	10.17	0.99
Enugu	59.87	6.15	6.68	1.47	23.70	11.68	0.31	7.77	1.59
FCT, Abuja	62.67	7.53	9.70	2.27	21.59	9.66	0.82	7.84	0.88
Gombe	58.36	3.33	2.80	0.47	22.63	13.40	1.59	7.12	1.31
Imo	62.64	12.86	9.82	1.03	21.81	5.81	0.07	10.45	1.52
Jigawa	60.63	3.65	1.57	0.18	36.46	9.25	0.00	12.60	1.14
Kaduna	62.66	4.85	5.02	0.50	30.32	10.22	0.27	6.13	1.09
Kano	58.92	4.77	3.35	0.35	31.36	4.87	0.14	14.00	1.40
Katsina	58.63	2.72	2.29	0.38	36.58	10.22	0.00	6.22	1.13
Kebbi	62.17	2.07	4.80	0.35	28.35	16.34	0.23	6.33	1.53
Kogi	71.92	8.94	6.69	1.39	27.34	14.54	0.65	8.77	0.93
Kwara	72.49	4.83	12.06	1.06	24.45	11.64	0.18	10.56	1.20
Lagos	75.12	12.17	15.25	3.09	29.86	1.01	1.13	13.54	1.66
Nasarawa	66.99	5.26	6.66	1.06	17.52	23.63	0.11	7.23	1.42
Niger	74.84	3.01	4.77	0.60	31.69	14.17	0.00	5.84	1.60
Ogun	81.55	7.74	7.19	1.39	33.49	13.92	0.25	12.25	2.12

Table A4 *Continued*

State	Employed	Services	Professional	Clerical	Sales	Agriculture	Domestic	Skilled manual	Unskilled manual
Ondo	71.03	8.69	8.92	0.64	22.50	14.33	0.20	9.52	1.17
Osun	73.02	5.59	11.44	0.99	32.69	5.95	0.14	10.03	1.45
Oyo	79.82	6.19	9.20	1.43	40.15	8.40	0.00	11.29	0.77
Plateau	66.21	3.88	6.77	0.56	17.81	19.28	0.59	5.29	2.39
Rivers	72.35	11.66	8.89	2.93	27.23	10.76	0.73	8.34	1.23
Sokoto	59.00	2.27	2.27	0.21	31.46	9.63	0.13	9.88	1.32
Taraba	72.57	2.98	3.55	0.64	25.38	22.12	0.26	5.98	2.05
Yobe	62.36	2.13	2.36	0.59	25.80	9.53	0.00	5.83	0.72
Zamfara	61.49	1.76	1.99	0.36	36.34	9.84	0.09	6.14	1.04

Notes: The table reports weighted state-level means of employment and occupational outcomes. *Employed* is an indicator equal to one if the respondent is employed. Occupational categories follow the International Labour Organization (ILO) classification and are measured as indicators for respondents employed in the corresponding occupation. Entries report percentages of respondents and are calculated using DHS sampling weights.

Table A5: Remuneration Type and Work Regularity by State

State	Cash	Cash & kind	In kind	Not paid	Worked last 12 months	Worked all year	Work seasonally	Work occasionally
Abia	48.69	8.68	0.67	10.83	69.01	58.62	7.63	2.01
Adamawa	39.66	3.36	0.61	25.75	69.55	34.42	30.38	3.69
Akwa Ibom	51.23	8.50	1.33	4.58	65.75	52.26	9.67	2.47
Anambra	54.18	7.71	0.52	6.79	69.54	58.57	8.72	1.08
Bauchi	43.28	8.00	1.51	17.19	70.15	36.86	26.53	4.37
Bayelsa	53.45	6.60	0.60	8.19	68.84	53.14	9.97	4.98
Benue	33.77	19.71	5.59	25.47	84.69	55.02	24.32	4.33
Borno	38.69	7.70	3.17	10.41	60.36	32.29	20.23	6.33
Cross River	41.35	6.77	1.34	26.86	76.42	54.55	15.60	5.07
Delta	51.92	8.36	0.52	5.69	66.60	56.43	6.24	2.60
Ebonyi	34.47	25.32	2.35	21.09	83.49	54.43	19.46	9.25
Edo	54.98	1.94	0.18	11.48	68.80	58.18	7.97	1.94
Ekiti	58.61	7.45	1.21	5.11	72.54	61.14	7.74	2.84
Enugu	40.14	6.50	1.17	16.40	64.31	49.63	11.88	1.75
FCT, Abuja	48.15	5.97	0.28	10.57	65.07	48.77	14.10	1.87
Gombe	32.10	5.24	2.41	20.40	60.30	32.50	21.23	4.94
Imo	52.10	5.17	0.50	7.21	65.16	48.50	11.47	4.26
Jigawa	51.69	11.32	1.82	3.27	68.37	48.39	13.06	5.61
Kaduna	48.55	9.20	1.19	4.90	63.98	46.22	14.43	2.20
Kano	52.98	5.43	0.44	3.51	62.49	47.30	10.23	3.66
Katsina	50.98	6.13	0.72	6.38	64.49	42.55	17.01	3.48
Kebbi	40.59	9.96	0.65	15.08	66.57	45.60	18.23	1.66
Kogi	51.62	5.09	1.77	15.15	73.88	55.93	11.19	5.10
Kwara	53.84	12.69	1.56	5.00	73.19	62.87	7.28	2.26
Lagos	65.26	4.02	1.02	6.50	76.95	70.26	4.36	1.37
Nasarawa	41.16	8.11	1.56	19.60	70.44	40.97	21.03	7.51
Niger	50.23	9.92	2.86	12.83	75.98	55.39	16.99	2.51

Table A5 *Continued*

State	Cash	Cash & kind	In kind	Not paid	Worked last 12 months	Worked all year	Work seasonally	Work occasionally
Ogun	70.51	8.45	1.07	2.17	82.24	77.70	2.99	0.79
Ondo	46.55	7.74	1.13	16.61	72.18	62.10	6.56	2.55
Osun	64.88	4.05	0.52	4.23	73.71	68.29	3.43	1.59
Oyo	72.71	4.52	0.89	2.19	80.31	75.31	3.78	0.48
Plateau	36.40	8.87	2.29	23.63	71.23	37.84	29.66	2.81
Rivers	55.10	5.20	1.22	13.46	75.07	61.83	8.39	3.67
Sokoto	45.06	6.55	0.23	8.57	60.92	44.02	12.06	2.67
Taraba	32.47	18.90	0.89	23.60	76.00	33.76	35.77	4.69
Yobe	47.28	7.15	0.81	10.90	66.24	38.20	24.63	2.41
Zamfara	39.32	12.47	1.18	9.92	63.20	41.38	17.37	3.14

Notes: The table reports weighted state-level means of remuneration type and work regularity outcomes pooled across all DHS survey rounds. *Cash*, *Cash and kind*, *In kind*, and *Not paid* indicate the form of remuneration received by respondents. *Worked last 12 months*, *Worked all year*, *Worked seasonally*, and *Worked occasionally* capture employment regularity. Entries report percentages of respondents and are calculated using DHS sampling weights.

Table A6: Regional Distribution of the Analysis Sample

Region	Observations	Percent of sample	Weighted percentage
North-West	39,606	23	28
North-Central	30,314	18	14
North-East	30,215	18	15
South-West	25,184	15	18
South-East	19,630	12	11
South-South	23,858	14	14
Total	168,807	100	100

Notes: The table reports the regional distribution of the analysis sample. Column (1) reports the number of observations, column (2) the unweighted share of the sample, and column (3) the corresponding weighted share based on DHS sampling weights.

Table A7: State-Level Distribution of the Analysis Sample

State	Observations	Percent of sample	Weighted percentage
Abia	3,655	2	2
Adamawa	4,457	3	2
Akwa Ibom	4,206	2	3
Anambra	4,142	2	3
Bauchi	5,516	3	3
Bayelsa	4,120	2	1
Benue	4,789	3	3
Borno	4,419	3	3
Cross River	3,288	2	2
Delta	4,200	2	3
Ebonyi	4,374	3	2
Edo	3,849	2	2
Ekiti	3,299	2	1
Enugu	3,777	2	2
FCT, Abuja	3,887	2	1
Gombe	5,411	3	2
Imo	3,532	2	2
Jigawa	5,357	3	3
Kaduna	6,564	4	5
Kano	8,050	5	7
Katsina	5,828	3	4
Kebbi	4,839	3	3
Kogi	4,153	2	2
Kwara	3,771	2	2
Lagos	6,813	4	7
Nasarawa	4,463	3	2
Niger	4,971	3	3
Ogun	2,930	2	2
Ondo	3,680	2	2
Osun	4,428	3	2
Oyo	3,945	2	4
Plateau	4,509	3	2
Rivers	4,155	2	4
Sokoto	4,699	3	2
Taraba	5,583	3	2
Yobe	4,653	3	2
Zamfara	4,495	3	3
Total	168,807	100	100

Notes: The table reports the state-level distribution of the analysis sample. Column (1) reports the number of observations, column (2) the unweighted share of the sample, and column (3) the corresponding weighted share based on DHS sampling weights.

Table A8: Sample Distribution Across DHS Survey Rounds

Year	Observations	Percent of sample	Weighted percentage
2003	9,879	6	6
2008	48,514	29	29
2013	55,615	33	33
2018	54,799	32	32
Total	168,807	100	100

Notes: The table reports the distribution of the analysis sample across DHS survey rounds. Column (1) reports the number of observations, column (2) the unweighted share of the sample, and column (3) the corresponding weighted share based on DHS sampling weights.

Table A9: Exposure to Terrorism and Employment - Alternative Inference Procedures

	Employed				
	LGA (1)	State (2)	Robust S.E. (3)	Cluster-year (4)	Spatial correlation (5)
Exposure to terrorism	-0.142*** (0.019)	-0.142*** (0.023)	-0.142*** (0.019)	-0.142** (0.041)	-0.142*** (0.023)
Controls	Yes	Yes	Yes	Yes	Yes
Cluster FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Mean of DV	67.34	67.34	67.34	67.34	67.34
Clusters	747	37		1399	
Observations	168,807	168,807	168,807	168,807	168,807
R-squared	0.208	0.208	0.208	0.208	0.173

Notes: The table reports robustness estimates of the effect of exposure to terrorism on employment under alternative inference procedures. *Employed* is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster during the preceding three years. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Columns (1) and (2) report standard errors clustered at the LGA and state levels, respectively. Column (3) reports heteroskedasticity-robust standard errors. Column (4) reports standard errors clustered at the cluster-year level. Column (5) reports Conley (1999) spatially correlated standard errors. Estimates are weighted using DHS sampling weights. Standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

Table A10: Exposure to Terrorism and Employment - Lags and Leads

	Employed		
	(1)	(2)	(3)
Exposure to terrorism, $t-3$	-0.176 (0.116)	-0.184 (0.114)	
Exposure to terrorism, $t-2$	0.196 (0.197)	0.116 (0.142)	
Exposure to terrorism, $t-1$	-0.800*** (0.279)	-0.617*** (0.177)	
Exposure to terrorism, t	0.214 (0.276)	0.067 (0.162)	0.051 (0.353)
Exposure to terrorism, $t+1$	-0.033 (0.103)		-0.154 (0.096)
Exposure to terrorism, $t+2$	-0.097 (0.179)		0.110 (0.128)
Exposure to terrorism, $t+3$	0.123 (0.110)		-0.063 (0.069)
Controls	Yes	Yes	Yes
Cluster FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Mean of DV	67.34	67.34	67.34
Clusters	1,395	1,395	1,395
Observations	168,807	168,807	168,807
R-squared	0.208	0.208	0.208

Notes: The table reports estimates of the effect of exposure to terrorism on employment using lagged and lead measures of terrorism exposure. *Employed* is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster. Subscripts $t-3$, $t-2$, and $t-1$ denote exposure occurring three, two, and one year before the survey year, respectively, while t denotes contemporaneous exposure. Subscripts $t+1$, $t+2$, and $t+3$ denote exposure occurring one, two, and three years after the survey year, respectively, and serve as placebo tests. Column (1) reports a specification including both lagged and lead measures of terrorism exposure. Column (2) excludes the lead terms, while column (3) excludes the lag terms. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Estimates are weighted using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

Table A11: Exposure to Terrorism and Employment - Unweighted Regressions

	Employed			
	(1)	(2)	(3)	(4)
Panel A: Cumulative Lag Exposure to Terrorism				
Exposure to terrorism	-0.177*** (0.029)	-0.176*** (0.030)	-0.145*** (0.036)	-0.122*** (0.037)
Controls	No	No	No	Yes
Cluster FE	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes
Mean of DV	67.07	67.07	67.07	67.07
Clusters	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807
R-squared	0.001	0.004	0.037	0.205
Panel B: Distributed Lag Exposure to Terrorism				
Exposure to terrorism, $t-1$	-0.764*** (0.118)	-0.820*** (0.111)	-0.645*** (0.136)	-0.588*** (0.134)
Exposure to terrorism, $t-2$	0.094 (0.085)	0.089 (0.082)	0.143 (0.110)	0.162 (0.116)
Exposure to terrorism, $t-3$	-0.069 (0.069)	-0.030 (0.071)	-0.116 (0.078)	-0.114 (0.077)
Controls	No	No	No	Yes
Cluster FE	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes
Mean of DV	67.07	67.07	67.07	67.07
Clusters	1,395	1,395	1,395	1,395
Observations	168,807	168,807	168,807	168,807
R-squared	0.002	0.005	0.038	0.206

Notes: The table reports estimates of the effect of exposure to terrorism on employment using unweighted regressions. *Employed* is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster. Panel A uses cumulative exposure over the preceding three years, while Panel B reports distributed-lag estimates for exposure occurring in years $t-1$, $t-2$, and $t-3$. All specifications include the baseline controls reported in table 2. Columns (3) and (4) additionally include DHS cluster fixed effects, while columns (2)–(4) include survey-year fixed effects. Unlike the baseline specifications, estimates are not weighted using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.

Table A12: Exposure to Terrorism and Employment – Alternative Explanations

Additional controls	Employed				
	Clean fuel (1)	Recent births (2)	Media exposure (3)	Sample: Distance to health facility	
				Distance to health fac. (4)	(5)
Exposure to terrorism	-0.140*** (0.040)	-0.201*** (0.045)	-0.138*** (0.040)	-0.075 (0.099)	-0.077 (0.099)
Controls	Yes	Yes	Yes	Yes	Yes
Cluster FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Mean of DV	67.27	61.91	67.34	60.55	60.55
Clusters	1395	1395	1395	1240	1240
Observations	167,656	120,723	168,807	41,083	41,083
R-squared	0.208	0.205	0.209	0.208	0.208

Notes: The table reports robustness estimates of the effect of exposure to terrorism on employment after accounting for alternative explanations. *Employed* is an indicator equal to one if the respondent is employed. Exposure to terrorism is measured as the cumulative number of recorded terrorist attacks occurring within 10 km of the respondent's DHS survey cluster during the preceding three years. Columns (1)–(3) augment the baseline specification with additional controls for access to clean cooking fuel, recent births, and media exposure, respectively. Column (4) additionally controls for whether distance to a health facility is reported as a major problem. Column (5) re-estimates the baseline specification on the restricted sample for which information on distance to a health facility is available, without controlling for distance itself. All specifications include the baseline controls reported in table 2, DHS cluster fixed effects, and survey-year fixed effects. Estimates are weighted using DHS sampling weights. Standard errors, reported in parentheses, are clustered at the DHS cluster level. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels, respectively.