Supplemental Appendix for

Exposure to Border Violence Erodes Military Trust: Mixed-Methods Evidence from Ghana

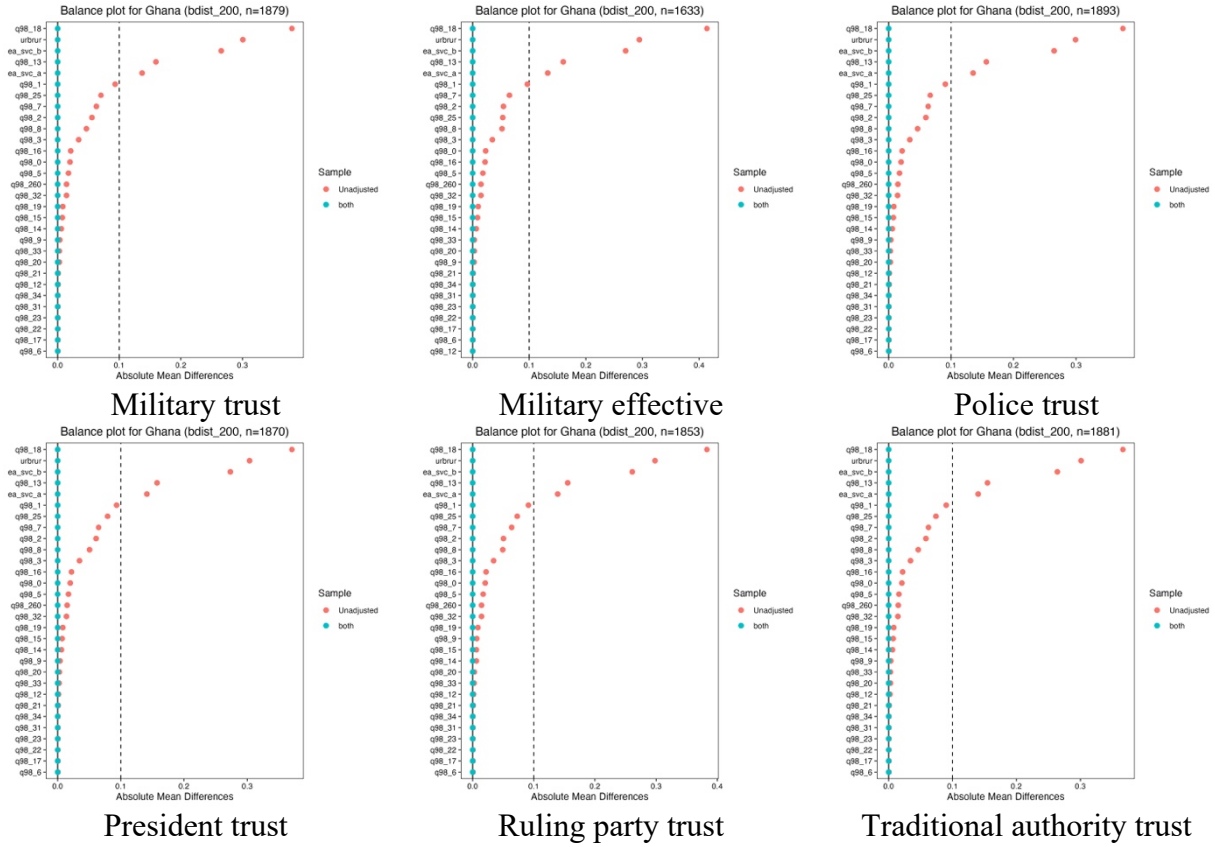
Summary Statistics

Table A1. Summary statistics of all variables used for analysis

	N	Min	Median	Mean	Max	SD
Ghana						
Border Distance 200km	2400	0	0	0.15	1	0.35
Border Distance 200km (IC)	2400	0	1	0.55	1	0.50
Border Distance 250km	2400	0	0	0.20	1	0.40
Border Distance 350km	2400	0	0	0.40	1	0.49
Distance to border category (km)	2400	1	4	3.26	4	1.08
Urban area (URBRUR)	2400	0	1	0.54	1	0.50
Electric grid in vicinity (EA_SVC_A)	2400	0	1	0.91	1	0.29
Water pipes in area (EA_SVC_B)	2400	0	1	0.84	1	0.36
Religious affiliation (Q98)	2311	0	8	11.97	260	28.93
Trust in president (Q43a)	2329	0	2	2.10	3	1.04
Trust in ruling party (Q43e)	2307	0	2	1.84	3	1.06
Trust in the police (Q43g)	2350	0	1	1.23	3	1.11
Trust in the military (Q43h)	2331	0	3	2.23	3	0.97
Trust in traditional leaders (Q43j)	2329	0	2	1.61	3	1.08
Perceptions of military efficacy (Q61a)	2172	1	5	4.38	5	0.93
BF						
Border Distance 150km	1200	0	0	0.43	1	0.50
Urban area (URBRUR)	1200	0	0	0.27	1	0.44
Electric grid in vicinity (EA_SVC_A)	1200	0	0	0.31	1	0.46
Water pipes in area (EA_SVC_B)	1200	0	0	0.31	1	0.46
Religious affiliation (Q98)	1178	0	18	13.15	181	12.71
Trust in president (Q43a)	1177	0	2	2.01	3	1.03
Trust in ruling party (Q43e)	1145	0	2	1.80	3	1.04
Trust in the police (Q43g)	1180	0	2	2.17	3	0.98
Trust in the military (Q43h)	1177	0	3	2.23	3	0.97
Trust in traditional leaders (Q43j)	1180	0	3	2.40	3	0.91
Perceptions of military efficacy (Q61a)	1192	1	4	3.98	5	1.10
Ghana (Wave 6)						
Border Distance 200km	2400	0	0	0.16	1	0.36
Urban area (URBRUR)	2400	0	1	0.54	1	0.50
Electric grid in vicinity (EA_SVC_A)	2400	0	1	0.85	1	0.36
Water pipes in area (EA_SVC_B)	2400	0	1	0.69	1	0.46
Religious affiliation (Q98a)	2245	0	13	13.05	260	25.71

Balance Plots for the Main Analysis

The following plots show the balance in the sample for the different covariates before (red) and after matching (turquoise). The covariates are (1) whether the respondent resided in a rural or an urban area (dichotomized using question URBRUR); (2) whether there was electric grid in the vicinity (question EA_SVC_A); (3) whether there were water pipes in the area (question EA_SVC_B); and (4) fixed effects by religious affiliation group, which serves as a major identity group distinction in the country (question Q98). Matching was applied separately for each outcome variable, with cases with missing values of the respective dependent variable dropped before matching.



Military trust | Military effective | Police trust

President trust | Ruling party trust | Traditional authority trust

Figure A1. Balance plots for the seven outcomes examined in the main analysis (200km). The figures show the absolute mean differences between treatment and control groups, before (red) and after matching (turquoise).

Results for Different Window Sizes

The plots in Figure A2 below show ATT estimates for the six outcome variables for larger sizes of the spatial threshold used to dichotomize treatment: 250km and 350km.

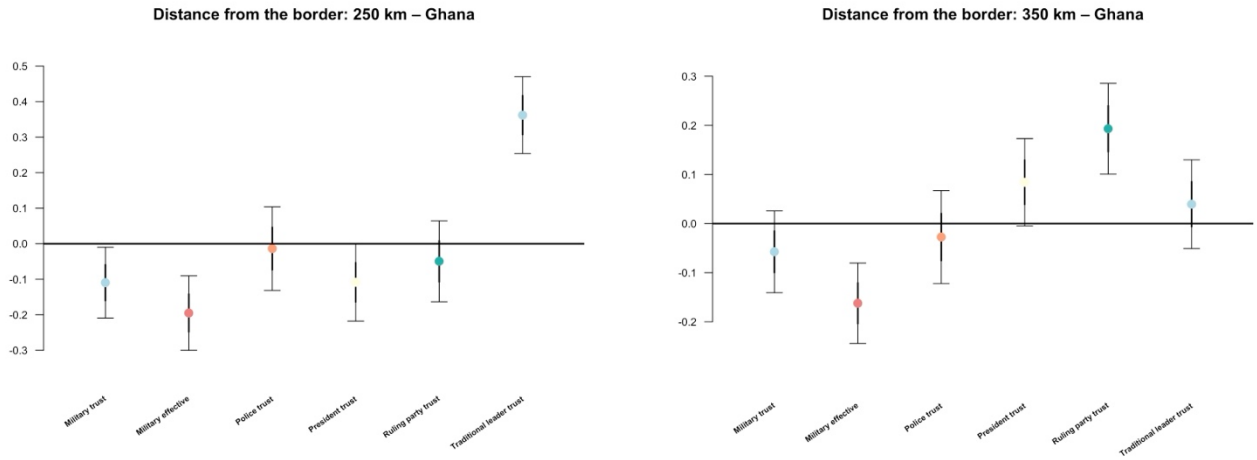


Figure A2. ATT estimates for different spatial treatment windows. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Linear Regression of Binned Treatment Estimates

Figure A3 presents coefficient estimates for the categorical exposure variable, while Figure A4 reports change in predicted values across distance-based exposure categories. Since they do not employ matching, these only provide descriptive evaluation to show that border proximity does not produce a uniform center-periphery trust gradient.

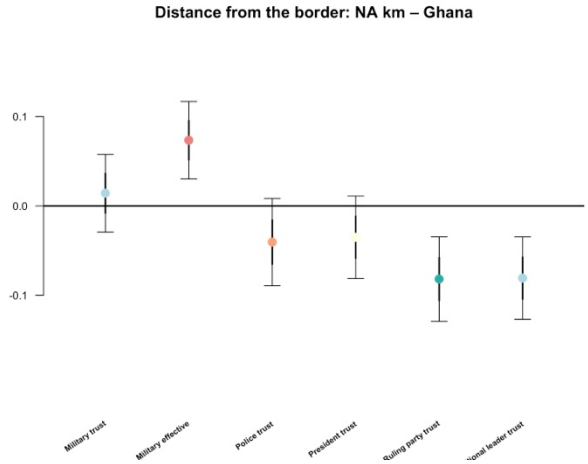


Figure A3. Coefficient estimates for categorical distance models. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

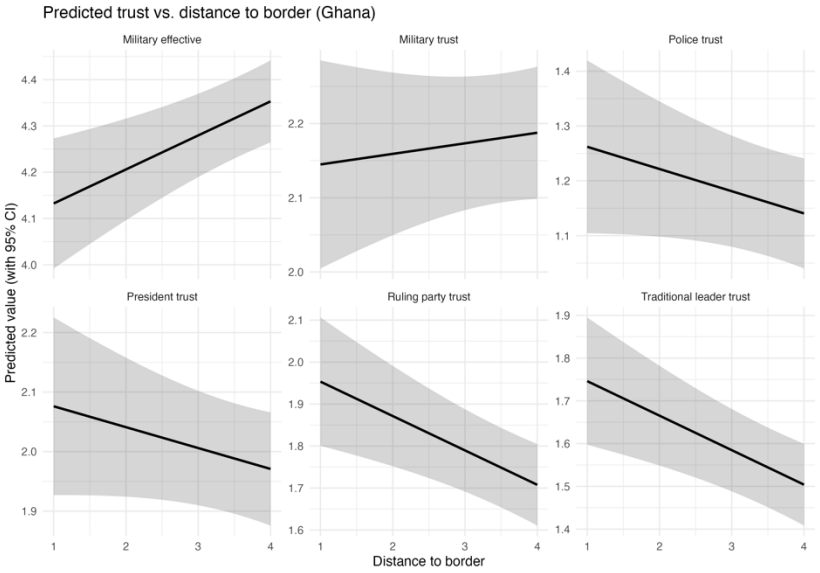


Figure A4. Change in predicted values across distance-based exposure categories with 95% confidence intervals (two-tailed tests).

Sensitivity Analysis: One-to-One Matching

As mentioned in the paper, using CEM is the recommended approach in conducting matching, one reason being that there is no need to impose a functional assumption on the data, and another one being that CEM allows for creating different sizes of control and treatment groups. In Figure A5, the results are shown using propensity score with one-to-one matching, i.e., where the control and treatment sample sizes are identical.

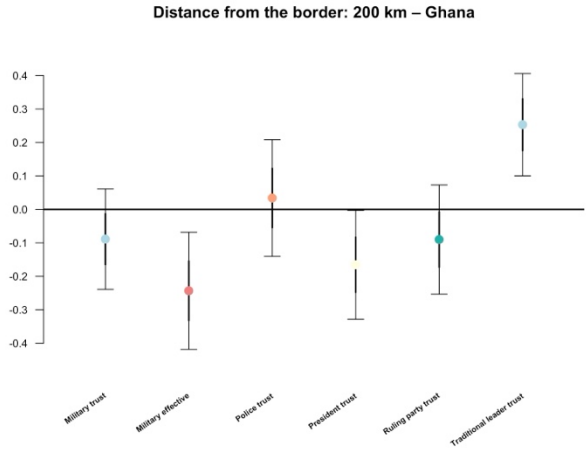


Figure A5. ATT estimates using one-to-one propensity score matching. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Sensitivity Analysis: Estimating the ATT with Interactions

In this additional analysis, we use linear models that, in addition to the treatment and the main covariates, include interactions of the treatment with these covariates. The results are shown in Figure A6. This provides an additional way of accounting for the risk of imbalance in our matched sample, although as Figure A1 above illustrates, this is unlikely to be the case.

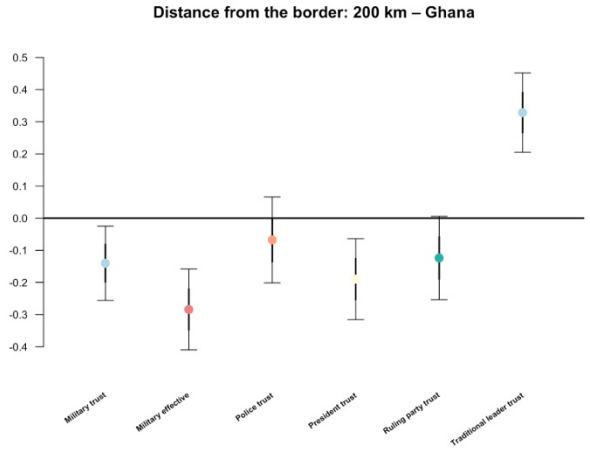


Figure A6. Average treatment effects in treated Afrobarometer respondents (ATT) estimated with interaction effects between treatment and covariates. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Placebo Test: Randomizing Treatment

In this placebo test, we create a randomized treatment to ensure that the results are not driven by the underlying CEM process.

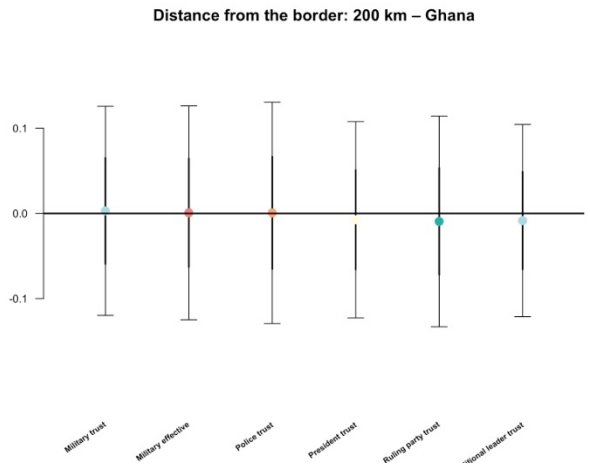


Figure A7. Average treatment effects in treated Afrobarometer respondents (ATT) with randomized treatment assignment. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Placebo Test: Estimating the ATT in Burkina Faso

In this placebo test, we estimate the same analysis from Figure 1 across the border in Burkina Faso (using a less expansive 150km threshold), where we do not expect a similar difference in effect between the affected periphery and the rest of the country, seeing no Ghanian raids occur.

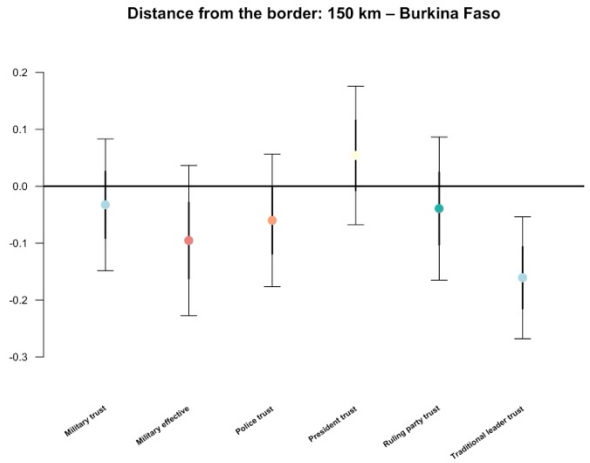


Figure A8. Average treatment effects in treated Afrobarometer respondents (ATT) in Burkina Faso. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Placebo Test: Estimating the ATT in Côte d'Ivoire

In this placebo test, we estimate the same treatment using a different border with Côte d'Ivoire, a country that does not experience a large-scale insurgency, and where – as a result – we do not expect a similar difference in effect between the periphery and the rest of the country.

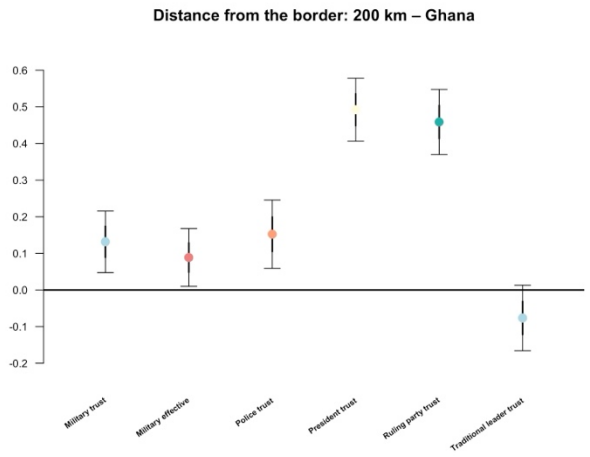


Figure A9. Average treatment effects in treated Afrobarometer respondents (ATT) for individuals residing near the border with Côte d'Ivoire. Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Placebo Test: Estimating the ATT in a Pre-Insurgency Population

In this placebo test, we estimate the same treatment using an earlier version of Afrobarometer (V6), which was taken a few months prior to the onset of the insurgency in Burkina Faso. While geolocation in this data is not as accurate, it should still produce a sample when one can reasonably assume the vast majority of the people surveyed were within the 275km distance.

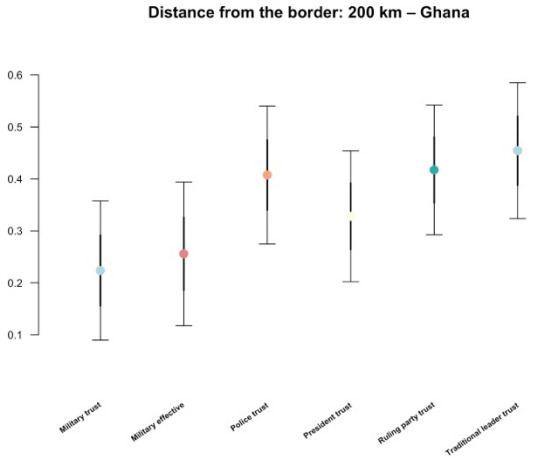


Figure A10. Average treatment effects in treated Afrobarometer respondents (ATT) before the onset of the insurgency in Burkina Faso (April to June, 2015). Bold bars represent mean ±1 SE and whiskers represent 95% confidence intervals (two-tailed tests).

Supplemental Information for the Fieldwork Section

Figure A11. Communities where interviewing took place.

INFORMED CONSENT FORM FOR REEARCH PARTICIPANTS

Title of Research

EXPOSURE TO VIOLENCE ERODES MILITARY TRUST: MIXED-METHODS EVIDENCE FROM GHANA

General Information about Research and Aim

The rise of Violent Extremist Organizations (VEOs) and terrorist groups in Burkina Faso and much of the Sahel has seen increases in military presence around border communities. The Government of Ghana deployed military and counter-terrorism measures, particularly around the border to counter the activities of VEOs and terrorist groups from 2019-2023. The aim was to secure borders and prevent spillovers of VE/terrorist activities. The increased military presence was also expected to build trust towards the state in its ability to protect citizens and communities from terrorist incursions and attacks. Citizens trust in the military can differ depending on a number of factors. Our study focuses on how exposure to risk/violence based on proximity to the border affect trust in the military in Ghana and Burkina Faso. While there have been a number of terrorist attacks in Burkina Faso, there have been none in Ghana, although growing fear of attacks, especially around border communities with Burkina Faso exists. We investigate the effect of proximity to the border on trust in the military due to insurgency/terrorism from Burkina Faso. Thus, the perceptions of border communities in northern Ghana about the military, the security agencies, and the exposure to violence in the light of the insurgency in Burkina Faso.

Procedures

To be able to conduct the study, we appeal to offer us your time and consent to take data from you to achieve the aim of this research. If you accept, you will be required to participate in an in-depth interview. You would also be asked a number of questions based on a KII guide.

If you do not wish to answer any of the questions posed during the discussion, you may say so and we would move on to the next question. The discussion would take place in a location and time of your choice. The information recorded is considered confidential, and no one else except the research team would have access to the information documented during your discussion. With your consent, we

would like to tape record this conversation so that we may better capture the details of what you will say. The discussion would last for approximately 40-50 minutes.

Possible Risks and Discomforts

There are no anticipated physical, social, economic or psychological risks or discomforts to you by participating in this study except in instances where a question or some questions may cause you to recall an unfortunate incident during the discussion session. You can withdraw when these questions put in a very discomforting situation. We would be most appreciative if you could kindly agree to answer the questions as frankly as possible.

Possible Benefits

There are no immediate or direct personal benefits for respondents. However, the data generated from this study would create an empirical literature that could be used for policy discussions and/or formulation about the role of the military in border protection and security and gauge policy about the perception and trust level for the military and other security forces by border communities on the exposure to violence, insurgency/terrorism. The study will also benefit academics and students on theoretical and empirical analysis of the nexus of exposure to violence and military trust.

Confidentiality

We would like to assure you that all information you would provide would be strictly treated as private and confidential and would be used only for purposes of this research. Your identity would be anonymised for the analysis so that no personal identifiers would be available to link you to the data you have provided. Moreover, after transcription, the digital recordings would be immediately destroyed. All paper transcripts would be burned as well while the soft copies would be electronically saved for 5 years with a secured password which would be known only to the team.

Compensation

The researcher cannot provide any compensation**.**

Voluntary Participation and Right to Leave the Research

This is to reconfirm that it is not compulsory for you to take part in this research. You may redraw from the research at any time you decide to and that choice would be respected. If we should ask any question, you find challenging to answer, please get us informed and we would skip to the next question. You can also withdraw from the study at any time without giving reasons.

Contacts for Additional Information

For further questions and clarifications on this research, you could please contact the Principal Investigator, Dr. Kaderi Noagah Bukari of the Department of Peace Studies, School for Development Studies, University of Cape Coast on 0245046945.

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research titled: "**EXPOSURE TO VIOLENCE ERODES MILITARY TRUST: MIXED-METHODS EVIDENCE FROM GHANA**" has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I consent voluntarily to participate as a subject in this study and understand that I have the right to withdraw from the study at any time without in any way it affecting me. I agree to participate as a volunteer.

_____ _____

Date Name and signature or thumbprint of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer.
All questions were answered and the volunteer has agreed to take part in the research.

_____ _____

Date Name and signature or thumbprint of volunteer

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

_____ _____

Date Name and signature of person who obtained

UNIVERSITY OF CAPE COAST

SCHOOL FOR DEVELOPMENT STUDIES

DEPARTMENT OF PEACE STUDIES

INTERVIEW GUIDE

EXPOSURE TO VIOLENCE ERODES MILITARY TRUST: MIXED-METHODS EVIDENCE FROM GHANA

Dear respondent, I am a researcher at the Department of Peace Studies, University of Cape Coast. I am undertaking a study on how **Exposure to Violence Erodes Military Trust in Ghana**. This research intends to investigate the effect of proximity to the border on trust in the military due to insurgency/terrorism from Burkina Faso. It examines the perceptions of border communities in northern Ghana about the military, the security agencies, and the exposure to violence in the light of the insurgency in Burkina Faso The research is intended for academic purposes and to help in policy direction towards understanding the perceptions of border communities about the security agencies in combating terrorism in Ghana. Please note that this interview is voluntary, and you have the right to stop it at any time or refuse to answer any questions. Your responses to the questions will remain anonymous and all information you provide will remain confidential. Your name will neither appear nor be associated with your responses in the analysis of the study.

Thanks for agreeing to participate in the study.

Respondent status……

District……..

Name of Community…….

Do I have your consent to conduct the interview? ……

1. What is the state of security in your community?
2. What state security is present at the community and borders?
3. What are your views about the presence of the military/police/immigration in your community?
4. Has their presence been positive or negative? How positive or negative is their presence?
5. What has been the effects of the insurgency in Burkina Faso on your community?
6. How do you see the role of the military and police in your daily security experiences?
7. How has the insurgency/terrorism in Burkina Faso affected the role of the military and police in your community?
8. Has it the insurgency/terrorism in Burkina Faso seen increases in the presence of the military, police or immigration in the border? Why has it led to increases? How has that affected in security in the community?
9. How trustworthy are you of the military/police/immigration in dealing with insurgency/terrorism?
10. Do you think proximity to the border has effect on trust in the military on dealing with terrorism?
11. How do communities in the border trust in security agencies (military, police and immigration) have impact on the threat of VE/terrorism? (Probe about the trust in local law enforcement's ability to maintain security in this community)
12. What informal security arrangements/structures exist to provide security for the community? What of community watchdog groups/ self-defense groups?
13. What is your level of trust in this informal security groups?
14. Compared to formal state security, do you trust the informal or formal security? Why?