

WORKINGPAPER

April 2024

Diversity Among Peacekeepers

Who Is Involved in UN Peace Support Operations and How Does It Matter?

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UNU-CPR Working Papers are research papers that have not been peer-reviewed or undergone a thorough editing and publication process. Written by subject matter experts, they offer unique insights and perspectives in response to current debates on issues of strategic interest to UNU-CPR audiences.

Acknowledgements

UNU-CPR Research Associate Fellows Charlie Plumb, Andrew Ham, and Kendal Gee; Simone Arelli, Apna Balgobin, Aurora Rudd, and Davina Resto for data collection and curation; Richard Glass, Chika Charles Aniekwe, Dr Claudia Pfeifer Cruz, Daniel Maier, Dr Jonathan Sandy, Lawson Assagaya, Dr Yvan Ilunga, and Angela Noko for focus group discussions; and Charlie de Rivaz, Fariha Shah, and Ruth Citrin from XCEPT for their guidance and insight.

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Executive Summary

Multilateral interventions through United Nations Peace Support Operations (PSOs) are key international responses in contexts where there is prolonged intra-State and inter-State armed conflict. Understanding the effectiveness of PSOs, in reducing both national conflict and the spread of conflict across national borders, is critical in improving the capacity of States and international actors to tailor targeted response plans and reduce the risk of violence. Recent years have seen rapid development of new technologies, such as machine learning models that enable the identification of informative patterns from large amounts of information.

This study aims to cover a critical methodological gap by testing the utility of machine learning in identifying potential correlations between PSO personnel characteristics, and national and cross-border stability dynamics. Experiments examine PSO demographics and conflict in four case studies: the Central African Republic (CAR), the Democratic Republic of Congo (DRC), Mali, and South Sudan. Quantitative data relating to PSO personnel characteristics (gender, region of origin, and status – “diversity indices”) were sourced from the United Nations Peace and Security Data Hub, while conflict location/intensity information was sourced from the Armed Conflict Location and Event Data Project (ACLED).

Quantitative data was analysed through machine learning techniques, while a specifically selected expert focus group was convened to critically evaluate data representativeness and assess findings. Region of origin was observed as the only demographic feature that was influential across all four case studies. However, its impact must be assessed through an understanding of the case-specific international political dynamics and operational capacity. Gender appeared to impact cross-border conflict in Mali and national conflict in DRC and South Sudan, both of which also had higher numbers of women in leadership positions. Finally, professional status (i.e., uniformed vs civilian) was correlated to both types of conflict in Mali and DRC, but not in CAR and South Sudan.

Introduction

Scholars have previously researched national and cross-border conflicts to identify the drivers and patterns of armed violence. Similarly, they have also examined the impact of multilateral interventions on these ongoing conflict dynamics. Yet, research on how different multilateral intervention configurations affect conflict, particularly across borders, is on-going. A critical knowledge gap exists in connecting specific multilateral interventions' personnel characteristics – such as gender, region of origin, and status (uniformed vs civilian) – to dynamics of national and cross-border conflict. Few studies have sought to understand the effectiveness of these factors, or “diversity indices,” in reducing the spread of conflict nationally and across borders.

For example, can a large proportion of personnel from outside the region signal operational collaboration, or does it hinder intelligence gathering and produce linguistic or cultural barriers? Can a gender-balanced deployment improve outcomes, and how might these outcomes vary when women serve as uniformed troops compared to civilian operatives? Using machine learning, it is now possible to unpack the complex relationship between national and cross-border conflict related data (e.g., frequency of geolocated instances of armed conflict) and data relative to the demographic characteristics of multilateral interventions. This enables exploration into the questions described above.

While this paper does not aim to exhaustively answer these questions, it does aim to serve as an exploration of a new approach through which further analyses could be conducted. Since the demographic composition of a United Nations Peace Support Operation (PSO) can impact both its material capabilities and local perceptions of the intervention, systematically examining these nexuses will provide important, and currently lacking, empirical evidence for the policymaking community.

This knowledge base, including evidence on the effectiveness of different types of multilateral organization interventions, needs to be expanded to improve how policymakers address national and cross-border insecurity. By doing so, it's possible to not only improve the capacity of States and international actors to tailor targeted response plans and reduce the risk of national and cross-border violence, but also strengthen the argument for ex-ante plans to address conflict drivers.

Engaging machine learning techniques enables the testing of theories of change that remain under-analysed, but only if these techniques are guided by a team of experts with deep knowledge of the local, national, and international policy dynamics involved. Guidance regarding the representativeness of various data sets and the interpretation of experiment results is required for this research to be most meaningful. Collaboration with multiple experts is therefore an essential element for success. A focus group of specialists whose area of expertise covers conflict dynamics, State fragility, and multilateral interventions in Africa, as well as experience in

the use of innovative technologies, will help interrogate results linking (or not linking) PSO demographic characteristics to armed conflict trends.

Furthermore, this research will use a case study approach examining PSOs deployed in the Central African Republic (CAR), the Democratic Republic of Congo (DRC), Mali, and South Sudan. The respective UN peace operation missions are: United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA); United Nations Stabilization Mission in the Democratic Republic of Congo (MONUSCO); United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA); and United Nations Mission in South Sudan (UNMISS). The research will not focus on multilateral interventions conducted by other actors such as the African Union. While analysis of interventions conducted by other actors is important for a holistic understanding of relevant dynamics, this study is limited to UN interventions.

This research conceptualizes national conflict as occurring within the context of regional conflict systems and conflict spillover dynamics. Experiments (detailed in the methodology section) will therefore focus on both national and cross-border conflict. This study defines cross-border conflict as unauthorized activities by armed groups and militia from neighbouring states.¹ This definition permits analysis of conflicts that trespass national borders but are not inter-State conflicts. Cross-border conflict will be quantitatively measured using the number of incidents involving armed actors from a neighbouring nation occurring physically in the geographic territory belonging to a case study nation.

Peacekeeper personnel data will include measurable elements such as overall personnel numbers, region of origin, gender, and professional status. Experiments will rely on variables that have monthly data points ranging from 9–12 years, depending on the case study mission, and will focus on identifying the nexus between different PSO personnel characteristics and national and cross-border conflict patterns.

The ultimate objective of this approach is to help move toward the creation of a Peacekeeper Diversity Index (or PDI) that may be useful within current debates on the future of peacekeeping. The termination of MINUSMA, debates on MONUSCO's future, and the emergence of regional military deployments (under the framework of the African Standby Force), signal an important change in the architecture of peacekeeping in the region. Moreover, the UN and the African Union are engaged in discussions on the future of a variety of African peace support missions. In the context of these developments, this study may give insight into how best to navigate the possible shift from traditional PSOs to more multifaceted regional deployments, particularly in terms of understanding how the demographic composition of missions can impact their effectiveness.

¹ See: "Conflict Dynamics," *XCEPT*, last accessed on 3 March 2024, <https://www.xcept-research.org/themes/conflict-dynamics/>.

Literature Review

The multidimensional and complex nature of contemporary conflicts has resulted in the development of new analytical frameworks. Since the end of the Cold War, scholars in the strategic studies field have coined terms such as 'new wars,' 'wars of a third kind,' 'post-modern wars,' 'fourth-generation warfare,' and 'people's wars' to describe contemporary conflicts.² These new wars depart from traditional armed conflicts in terms of motivation, structure, and methods. For instance, in traditional wars, direct military confrontations were utilized to capture territory. New wars depart from this model with irregular warfare and low intensity conflict largely replacing military battles. In new wars, territory is gained through political control of the population. Additionally, new wars are characterised by a diminishing role of the military in warfare which has been largely replaced by armed non-state actors. This trend has prompted the privatization of war due to an influx of hired mercenaries and private security companies.

The role of the State in new wars is challenged by the influx of non-State, decentralized, non-professional civilian militias participating in armed conflicts. The State's shifting role in conflict impacts how belligerents interact with borders.³ These shifts are associated with the debordering and denationalization of armed conflict, in turn driving the regionalization and transnationalism of war.⁴ These trends are observable in African conflicts where inter-State armed violence spills over borders to create regional conflict systems. Regional conflict systems are characterized by interconnected conflicts in neighbouring countries, resulting in the civil conflicts mutually reinforcing each other. Regional conflict systems are associated with armed actors moving across borders to conduct attacks, seek refuge, and mobilize resources.

State fragility is a driving factor in the regionalization of conflicts. Fragility, a concept that has been popularized in policy research and development, refers to a situation where a State authority is limited by institutional weakness, weak governance, and political and economic instability.⁵ Dunne and Tian (2017) argue that conflict and fragility are interrelated and contribute to a vicious cycle of poverty, underdevelopment, and insecurity in Africa.⁶ Adeto (2019) provides an in-depth explanation of how the fragility-conflict nexus drives conflicts in the Horn of Africa.⁷ He argues that fragile States struggle to maintain basic security, in turn fuelling the development

² Elizabeth Henderson and J. David Singer, "'New Wars' and Rumours of 'New Wars,'" *International Interactions* Vol. 28, No. 2 (2002): 165–190.

³ Mary Kaldor, "In Defence of New Wars," *Stability* Vol. 2, No. 1 (2013): 1–16.

⁴ Nadine Ansorg, "Wars without borders: Conditions for the development of regional conflict systems in sub-Saharan Africa," *International Area Studies Review* Vol. 17, No. 3 (2014): 295–312.

⁵ Andrew McKay and Erik Thorbecke, "The anatomy of fragile states in Sub-Saharan Africa: Understanding the interrelationship between fragility and indicators of wellbeing," *Review of Development Economics* Vol. 23, No. 3 (2019): 1073–1100.

⁶ John P. Dunne and Nan Tian, "Conflict and Fragile States in Africa," *Working Paper Series No. 274* (Abidjan, Côte d'Ivoire: African Development Bank, 2017).

⁷ Yohannes Abate Adeto, "State fragility and conflict nexus: Contemporary security issues in the Horn of Africa," *African Journal on Conflict Resolution* Vol. 19, No. 1 (2019): 11–36.

of ungoverned spaces where non-state actors become security providers. State fragility in the context of regional conflict systems increases the risk of violence in border areas. According to Foucher (2020), “the underdevelopment of border regions – poorly connected and poorly integrated peripheries – has led to their emergence as centres of rebellion and conflicts that spill over into the surrounding regions.”⁸

Ansorg’s 2014 analysis further links State fragility to cross-border conflict, pointing out that the State’s limited authority in peripheral regions provides militias from neighbouring states the opportunity to cross borders and exert political control over those areas.⁹ Cantens (2021) identifies the drivers of insecurity in the Sahelian borderland areas covering Lake Chad; the Saharan space in northern Mali, Niger, and Chad at the interface between the Maghreb and coastal Africa; and the Liptako-Gourma region which straddles Mali, Burkina Faso, and Niger.¹⁰ He points out that armed groups operating in these regions consist of religious armed groups attempting to dismantle State structures to govern territories that straddle current international boundaries. On the other hand, militia violence in borderlands can also be driven by governments in neighbouring states. Reyntjens’ 2020 analysis of interstate conflict on the continent argues that the Rwandan Government is motivated by economic interests to fund M23 rebels in the North Kivu region of the DRC.¹¹

State approaches to managing conflict systems in this study’s geographies have largely been ineffective due to the absence of State structures or the implementation of ineffective strategies. Schomerus and De Vries’ 2014 analysis of responses to the threat of the Lord’s Resistance Army at the border between South Sudan and DRC implicates the Government of South Sudan’s strategy to promote security pluralism as a driver of instability.¹² Security pluralism emerges when multiple security actors with diverging interests and responsibilities compete in a specific area. According to Goodhand (2018), because governments do not have monopoly over the use of violence, government officials are motivated to enter brokering arrangements with violence wielders operating in borderlands.¹³ The proliferation of non-State security providers is fuelled by governors providing political and sometimes financial support to armed groups operating in the peripheries.

⁸ Michel Foucher, "African Borders: Putting Paid to a Myth," *Journal of Borderlands Studies* Vol. 35, No. 2 (2020): 287–306.

⁹ Nadine Ansorg, "Wars Without Borders: Conditions for the Development of Regional Conflict Systems in sub-Saharan Africa." *International Area Studies Review* Vol. 17, No. 3 (2014): 295–312.

¹⁰ Thomas Cantens, "Border security in Africa: the paradigmatic case of the Sahel as the embodiment of security and economy in borderlands," *Commonwealth & Comparative Politics* Vol. 59, No. 4 (2021): 497–520.

¹¹ Filip Reyntjens, "Path dependence and critical junctures: three decades of interstate conflict in the African Great Lakes region," *Conflict, Security & Development* Vol. 20, No. 6 (2020): 747–762.

¹² Mareike Schomerus and Lotje De Vries, "Improvising border security: 'A situation of security pluralism' along South Sudan's borders with the Democratic Republic of the Congo," *Security Dialogue* Vol. 45, No. 3 (2014): 279–294.

¹³ Jonathan Goodhand, "Borderlands, Brokers and Peacebuilding: War to Peace Transitions Viewed from the Margins" (Centre for Poverty Analysis, 2018).

Schomerus and De Vries argue that central governments conceptualize insecurity as threats to political authority, and not in terms of civilian safety. Hence governments lend their tacit legitimization of armed groups operating in border regions to maintain their political control. Sudan's support to Janjaweed militia operations in Darfur and Mali exemplifies how governments promote security pluralism. On the other hand, the emergence of community protection groups also increases the number of non-State security providers. The Arrow Boys who operated in South Sudan's Western Equatoria Region emerged from community vigilante groups who had been formed to protect civilians from the Lord's Resistance Army.¹⁴

International actors are often involved in managing conflicts because of such State fragility. Multilateral interventions through PSOs are key international responses to prolonged armed conflicts. Hence, PSOs operate both nationally and in frontier regions where interstate conflict spills over borders to neighbouring states. This motivates the dual nature of experiments in this study, in which both national and cross-border conflict will be analysed. It is important to note that while PSOs do not have the mandate to operate across borders, they do have the mandate to stop cross-border spillover effects.

There is a growing scholarly debate over the net impact of PSOs on conflict intensity. Di Salvatore, Polo, and Ruggeri (2022) argue that while PSO missions are largely successful in reducing conventional violence, their impact on violence by non-State actors is ambiguous and context-specific. Their research notes that the emergence of non-conventional strategies increases the risk of PSOs inadvertently motivating non-State actors to adopt terrorism as a strategy. Their research indicates that the probability of non-State actors adopting terrorism before or after the deployment of a PSO depends on the capacity of the group prior to the deployments. According to their research, weaker groups are more likely to use terrorism prior to the deployment of a PSO. On the other hand, militarily stronger groups are more likely to escalate their strategies to use terrorism after deployment.¹⁵

Di Salvatore, Polo, and Ruggeri's arguments are reinforced by Nomikos, Şener, and Williams' 2021 research, which examines the impact of a PSO on different types of violence.¹⁶ Their findings show that the presence of a PSO reduces violence between rebel groups but does not significantly reduce violence against civilians. Moreover, they argue that PSOs embolden governments to escalate attacks against rebels and civilians because they lower the costs of violence to the government. PSOs operate based on government consent, which constrains their ability to dissuade the government from launching offensive operations. Consequently, the

¹⁴ Rens Willems and Chris van der Borgh, "Negotiating security provisioning in a hybrid political order: the case of the Arrow Boys in Western Equatoria, South Sudan," *Conflict, Security & Development* Vol. 16, No. 4 (2016): 347–364.

¹⁵ Jessica Di Salvatore, Sara Polo, and Andrea Ruggeri, "Do UN peace operations lead to more terrorism? Repertoires of rebel violence and third-party interventions," *European Journal of International Relations* Vol. 28, No. 2 (2022): 361–385.

¹⁶ William G. Nomikos, Ipek Sener, and Rob Williams, "UN Peacekeeping and Varieties of Violence: Evidence from the Border Between Burkina Faso and Mali," *SocArXiv*, 19 November 2021, <https://osf.io/preprints/socarxiv/5jmq4>.

research also finds that PSOs have limited impact on reducing fighting between government and rebel forces.

The studies examined above are part of an emerging body of scholarship that aims to produce nuanced analyses by measuring specific variables associated with peacekeeping operations and violence. This research aims to contribute to this literature by adopting an empirical approach to examine the effectiveness of PSOs in regional conflict systems. It also aims to cover a methodological gap in the literature by adapting a machine learning approach to identify any existing correlations between multilateral peace support operations data, in particular different diversity indices, and national and cross-border conflict event data.

The past decade has seen the expansion of similar research designs which use large data sets to measure the impact of PSOs on conflict dynamics over long durations. Nomikos, Şener, and Williams, whose findings are discussed above, use a geographic regression discontinuity design (GRDD) to test how the deployment of MINUSMA has impacted violence at the border between Mali and Burkina Faso. The GRDD approach restricts sample size to grids within 100 km of the border between Mali and Burkina Faso, then focuses on identifying correlations between the presence of peacekeepers and different varieties of violence.¹⁷

Ruggeri, Dorussen, and Gizelis' 2017 research design uses spatially-disaggregated information on the geographical locations of conflict and PSO deployments. Their research uses the Conflict Site Dataset (CSD), which is an extension of the UCDP/PRIO Armed Conflicts Dataset that provides coordinates for conflict incidents. The key variables in the research are distance from location of incident, distance from border, travelling time, and duration of incidents. Their findings indicate that although deployment of PSOs reduce conflict episode duration, their presence does not have a significant impact on the probability of conflict emerging. Their retrospective approach examines all the major PSO missions deployed in Africa from 1989 to 2006.¹⁸

Håvard, Hultman, and Nygård (2019) undertake a similarly comprehensive statistical review of the impact of PSOs. Their research design uses similar variables as those selected in this study, such as the size of deployments, to examine the impact of peacekeeping operations on the onset, escalation, de-escalation, and termination of conflict. Their research covers a period from 1960 to 2013 and identifies the relative effectiveness of PSO deployments in a variety of scenarios.¹⁹

Although this research aims to take a similar approach to the studies outlined above, it addresses methodological gaps by taking a more comprehensive approach than Nomikos, Şener, and Williams' focus on the Mali-Burkina Faso border. It also builds on the research of Ruggeri, Dorussen, and Gizelis and Håvard, Hultman, and Nygård, producing up-to-date findings on more

¹⁷ Nomikos et al., "UN Peacekeeping and Varieties of Violence," *SocArXiv*.

¹⁸ Andrea Ruggeri, Han Dorussen, and Theodora-Ismene Gizelis, "Winning the peace locally: UN peacekeeping and local conflict," *International Organization* Vol. 71, No. 1 (2017): 163–185.

¹⁹ Håvard Hegre, Lisa Hultman, and Håvard Møkleiv Nygård, "Evaluating the conflict-reducing effect of UN peacekeeping operations," *The Journal of Politics* Vol. 81, No. 1 (2019): 215–232.

current PSO deployments, and shifting the focus more specifically to PSO personnel characteristics.

Furthermore, this research will also build on a body of literature that more specifically looks at different diversity aspects of peacekeeping missions and links these aspects to the effectiveness of peacekeeping missions. It seeks to provide an additional empirical measure: the composition of personnel forces as a dimension of peacekeeping.

Di Salvatore and Ruggeri (2017) provide an analytical review of existing studies that empirically investigate the conditions under which PSOs are effective.²⁰ They examine underlying assumptions and selected criteria that different scholars use in defining and analysing “effectiveness” as well as variables, methodologies, and findings. Analysing PSO effectiveness in both conflict and non-conflict outcomes (e.g. economic development, sexual abuses, human rights, quality of life, etc.), they find that PSOs consistently reduce civilian and battle deaths and the geographic containment of violence but demonstrate a weaker effect on the duration of local peace. In general, PSOs have a higher likelihood of success when large contingents are deployed under robust, multidimensional mandates. Notably, they state that “different dimensions of peacekeeping affect conflict dynamics, and each of these operationalizations captures something different but nonexhaustive about peacekeeping.” Composition of peacekeeping forces, however, remains a dimension of peacekeeping scarcely analysed in the literature.

Some aspects of PSO composition diversity have been examined in relation to mission effectiveness. Bove, Ruffa, and Ruggeri (2020) identify four key dimensions of mission composition and explore diversity – defined primarily by national origin of personnel – within each. They find that field diversity (composition of deployed personnel) and leadership diversity may reduce battle violence and civilian casualties. However, low vertical leadership distance (diversity between the Force Commander and the peacekeepers) and low horizontal distance (diversity between field personnel and local populations) are related to better performance and lower levels of casualties, respectively.²¹

These findings are consistent with those of Goldring and Hendricks (2018), who find that PSOs are more effective at preventing civilian casualties when they are composed of peacekeepers from countries that are geographically proximate to the host country. They argue that such peacekeepers have better understandings of local societal and cultural norms, and therefore are

²⁰ Jessica Di Salvatore and Andrea Ruggeri, "Effectiveness of Peacekeeping Operations," *Oxford Research Encyclopedia of Politics*, 26 September 2017, <https://oxfordre.com/politics/display/10.1093/acrefore/9780190228637.001.0001/acrefore-9780190228637-e-586>.

²¹ Vincenzo Bove, Chiara Ruffa, and Andrea Ruggeri, *Composing Peace: Mission Composition in UN Peacekeeping* (Oxford: Oxford University Press, 2020). Accessible at: <https://global.oup.com/academic/product/composing-peace-9780198790655?cc=us&lang=en&>.

better able to collect and analyse intelligence, and may also be more invested in preventing conflict spread.²²

Karim and Beardsley (2017), meanwhile, explore the role of gender in PSOs. They argue that womens' participation in PSOs is limited by institutional barriers; peacekeeping consists of militarized institutions, which privilege certain forms of masculinity, relegate women to particular roles with less agency, and can facilitate conditions for increased gender-based violence. They find that PSOs with a higher proportion of female troops, or with a higher proportion of troops from countries with relatively strong records of gender equality, are associated with decreased levels of gender-based violence.²³ This study will seek to add additional evidence to this finding, as well as the other findings briefly listed above.

²² Edward Goldring and Michael Hendricks, "Help is Close at Hand? Proximity and the Effectiveness of Peacekeepers," *Research & Politics* Vol. 5, No. 4 (2018): 1–9.

²³ Sabrina Karim and Kyle Beardsley, *Equal Opportunity Peacekeeping: Women, Peace, and Security in Post-conflict States*, Oxford Studies in Gender and International Relations (New York: Oxford University Press, 2017).

Quantitative Methodology

This exploratory research adopted a mixed method approach using a combination of quantitative and qualitative techniques. Quantitative data for the machine learning experiments were sourced from large data sets covering a multiple year period.²⁴ Two broad types of data were collected. The first was PSO personnel data sourced from the United Nations, the second was conflict event data gathered from the Armed Conflict Location and Event Data Project (ACLED).

Databases tracking PSO demographics were accessed through the United Nations Department of Peace Operations and the Department of Political and Peacebuilding Affairs' (DPO/DPPA) Peace and Security Data Hub. This Hub provides historical monthly data which permits the curation of diversity indices organized by status, origin (neighbouring, regional, or international), and gender, as well as additional "risk level" contextual data and various extrapolated proportions.²⁵ The full breakdown of indices is detailed in Appendix 2.

Uncovering evidence of linkages between diversity indices and national and cross-border conflict permits further testing of various theoretical propositions. For example, does data on the region of origin of uniformed personnel (i.e. the troop contributing country, or TCC) provide insight into PSO capacity to de-escalate conflict because some TCCs have different capacities in terms of contributing equipment and self-sustainment?²⁶ Additionally, does the separation of data by gender reveal correlation between trends in deployment of female armed and civilian personnel and stabilization dynamics? Does data on the status of personnel provide insight into the relative effectiveness of uniformed troops to uniformed non-military personnel (experts, police, and general staff)? Tracking trends in the deployment of these personnel types against national and cross-border conflict allows, for example, empirical testing of the effectiveness of security sector reforms, or the effectiveness of technical expertise being provided by international civilian and expert personnel.

The quantitative data on conflict events was collected from ACLED. ACLED collects real-time data on the locations, dates, actors, fatalities, and types of all reported political violence and armed conflict events around the world. Their data repositories cover 58 African countries, dating back to 1997. This study collected data from ACLED databases for the following events: battles, explosions/remote violence, protests, strategic developments, and violence against civilians; as well as the following sub-events: abduction/forced disappearance, air/drone strike, armed clash, attack, chemical weapon, disrupted weapons use, non-State actors overtaking territory, remote explosive/landmine/IED, sexual violence, shelling/artillery/missile attack, arrests, grenade, and

²⁴ The methodology used machine learning experiments rather than standard statistical techniques in order to analyse these large data sets and allow for the identification of nuanced correlations between UN peace support operation personnel characteristics and conflict dynamics.

²⁵ Due to time limitations risk level data was included in the models but not experimented on as a separate variable.

²⁶ See Felix Haass and Nadine Ansorg, "Better Peacekeepers, Better Protection? Troop Quality of United Nations Peace Operations and Violence Against Civilians," *Journal of Peace Research* Vol. 55, No. 6 (2018): 742–758.

suicide bomb. The research used ACLED's Data Tool to download data sets for each case study nation. Historical monthly data was collected to match the timelines of the peacekeeper data sets provided by the DPO/DPPA.

Once downloaded, it was possible to create a secondary data set containing only incidents involving foreign actors. Using the ACLED conflict dataset generated with the filters described above as a starting point, only armed conflict events that involved transnational actors operating across State borders were then extrapolated. To do this, the study identified and filtered for armed groups, rebel forces, political militias, identity militias, and other actors that are based in neighbouring nations but that operate in the case study nation. This approach acknowledges that while a large proportion of foreign militia operations occur in border/peripheral areas, there are reports of foreign actors' activities in central parts of the case study nations too. In sum, each case study has two conflict data sets, one for national conflict (labelled "All"), and one for transnational conflict only (labelled "With Foreign Actors").

The process of identifying foreign actors was conducted by researching each case study nation to collect and categorize the foreign actors involved. A challenge in categorizing actors stemmed from the difficulties in creating a dichotomy between foreign and domestic groups. Several types of foreign armed actors operate in the four case study countries, including private military companies, domestic groups that use foreign mercenaries, regional military coalitions, and international armed forces. We selected only those foreign actors who primarily originate from outside the borders of the case study countries and operate in the territory without State authority. Hence, incidents involving private military companies like Wagner will not be selected because they are authorized to be in the country. On the other hand, groups like the Lord's Resistance Army which originated from Uganda and launched attacks in DRC, South Sudan, and CAR were included. In South Sudan, the activities of Sudan's military, specifically the Rapid Support Forces (RSF), were included because the RSF's activities are considered unlawful incursions.

In Mali we categorised Jama'at Nasr al-Islam wal Muslimin (JNIM – Group for the Support of Islam and Muslims) as a foreign actor. This is because while the group has headquarters in Mali, the location of its affiliates stretch to Burkina Faso. The group's cross-border structure is a result of the fact that it was formed through a merger of four Salafi-Jihadist groups in the Sahel: Katibat Macina, al-Mourabitoun, Ansar Dine, and the Sahara branch of Al Qaeda in the Islamic Maghreb (AQIM). Three of these groups, aside from Katibat Macina, have foreign cells and fighters, hence a large number of JNIM's attacks follow a cross-border pattern. There are cases in which ethnic groups straddle both sides of the border, creating a need to more carefully distinguish between domestic and foreign actors. For instance, there are Fula Ethnic Militia in Mali, at the same time there are also reported events involving Fula Ethnic Militia from Burkina Faso attacking Malian locations. Fortunately, ACLED data includes the country of origin of armed groups, allowing us to filter accordingly. Using the approach detailed above, foreign actors identified for the case studies include the Lord's Resistance Army in CAR, South Sudan, and DRC, and Al Qaeda in the Islamic Maghreb (AQIM) in Mali. The full list of foreign armed actors is detailed in Appendix 1.

Experiment Results

In order to test for the relative connection of different variables (i.e., gender, region of origin, and status) to conflict dynamics we used a two-pronged approach. First, we ran a model to predict the number of armed conflict events up to six months in the future.²⁷ Second, we ran the same model but this time left out a specific variable group to measure how much the accuracy drops. If the accuracy dropped then we surmised that the variable group omitted is linked in some way to conflict dynamics. The nature of the correlation to conflict (i.e., positive or negative) was not measured, nor were the effects of combined demographic characteristics (i.e., female civilian personnel from neighbouring nations).

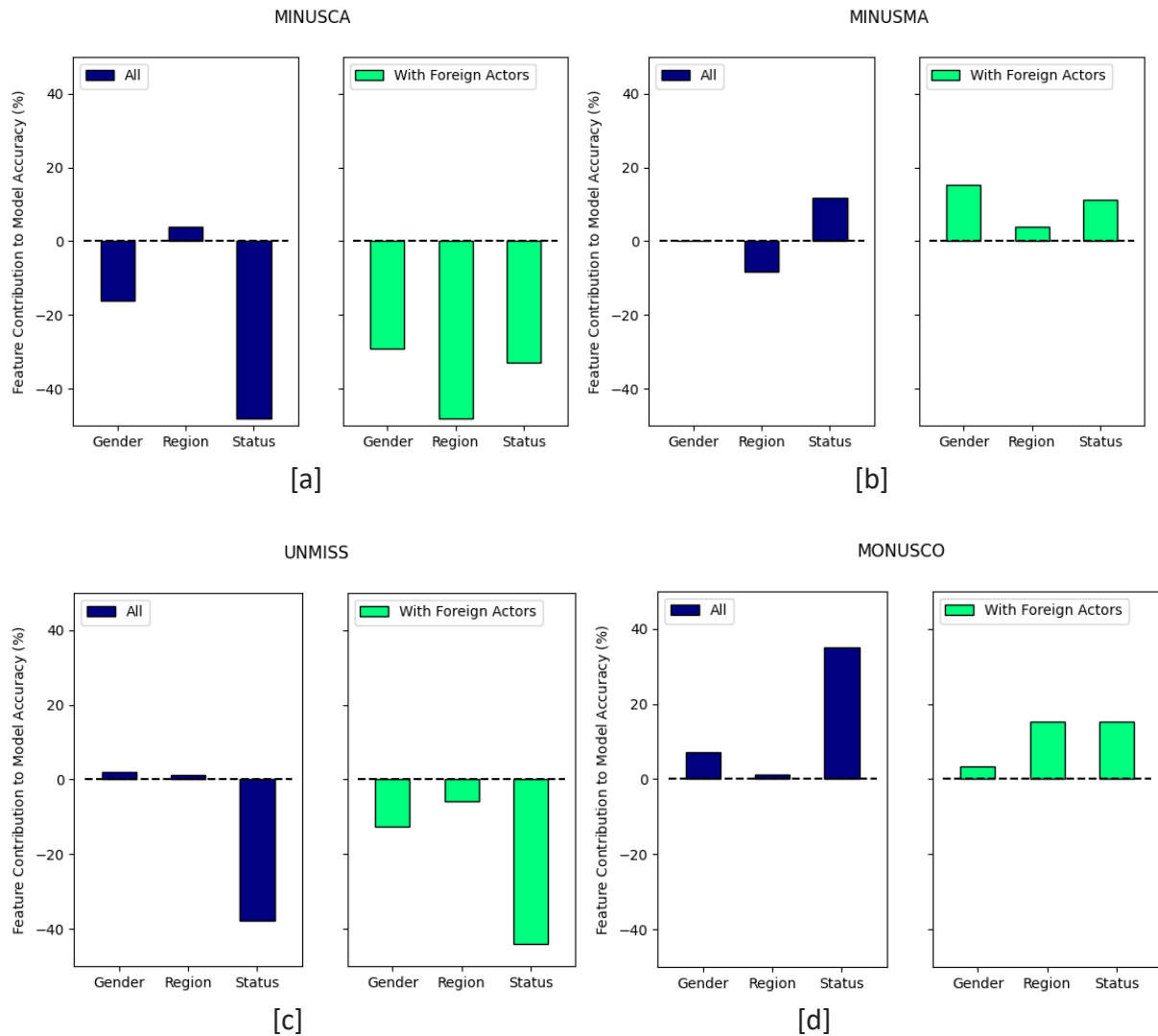
Below are the results for each of the four individual UN mission case studies. Each bar in the chart corresponds to the size of the prediction error difference when the model is trained on features excluding the group mentioned in the X-axis label. For example, where it says region then the variables about the region of origin of personnel are removed. Gender means that variables about gender information are removed. Status means that variables about the type of uniformed and civilian personnel are removed. The results are further divided by national conflict (All, blue bar) and cross-border conflict (With Foreign Actors, green bar). The higher the bar from a baseline of zero (expressed as percentage difference between the two prediction errors), the more that feature is linked to conflict dynamics.

If we look at the results for MONUSCO in the graph [d] below we see that there is a blue bar (all national conflict) that is much higher for "Status." This means that the model performs worse without status information. The feature's contribution to model accuracy is high. Therefore, we may surmise that variations in the status of personnel are somehow connected to conflict dynamics in that particular case study country for national conflict. Status also contributes to the model's accuracy for conflict involving foreign actors (green bar), although less significantly.

In another example, if we look at results for UNMISS in graph [c], we see a negative bar for "Status" in both the All and With Foreign Actors categories. This means that the model performs worse when information about status is included. That data confuses the model. We may infer therefore that the status of peacekeeper personnel is less clearly linked to conflict dynamics in that particular case study. In other words, since the conflict becomes less predictable with status information, we can say that we have evidence in favour of this claim, although of course it is not hard proof and additional experimentation may reveal important aspects that have been missed in this exploratory foray into the data.

²⁷ We applied a feed forward neural network that takes all the measurements in the data files and passes them through the following architecture: A fully connected layer with 512 hidden units, a Rectified Linear Unit activation function, a fully connected layer with 512 hidden units (again), a Rectified Linear Unit activation function (again), and a fully connected layer with 12 output units (six months x two variables). The parameters were tuned with 20,000 stochastic gradient descent steps on randomly chosen snippets of a length of 18 months (12 of which were used as input, six for prediction output) using the Adam optimizer with a learning rate of 0.000001.

In sum, a positive bar indicates the importance of a feature to the model, whereas a negative bar indicates negligible or deteriorative impact on the model’s accuracy. Below follows a short description of findings for each of the four case study nations as well as a table that summarizes them graphically in relation to each other.



Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA)

Graph [a]: The region of origin of personnel is the only demographic feature that had observable relation to overall conflict dynamics, but only for national conflict (All) and this relation was also quite tenuous. Neither gender nor status seem to have a significant relation to conflict dynamics. The demographic composition of MINUSCA has no observable relation to conflict dynamics for events involving foreign actors in CAR.

United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA)

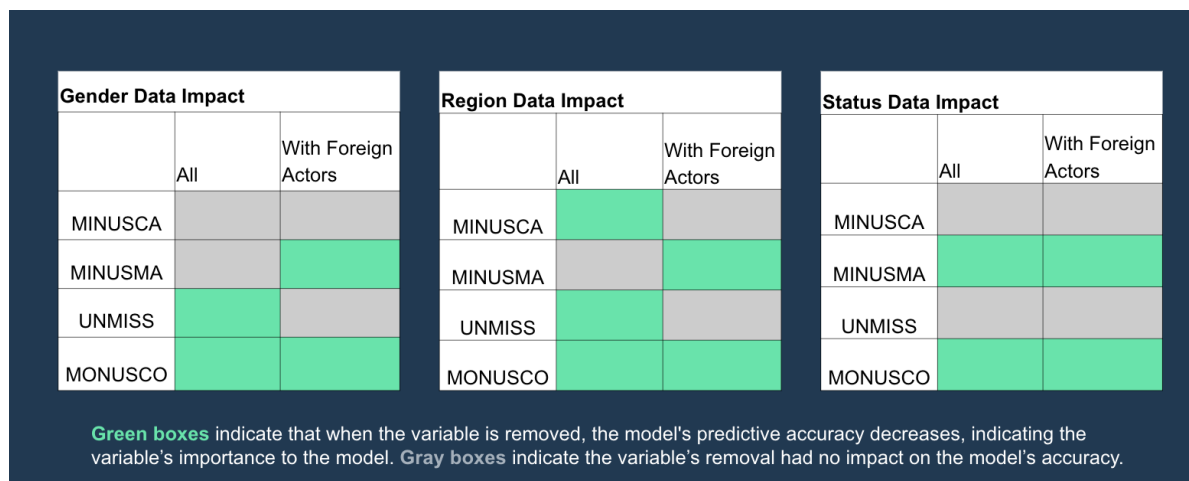
Graph [b]: The status of personnel is the only demographic feature that has recorded impact on the overall conflict dynamics in Mali, both for All and With Foreign Actors. Interestingly, all three variables (gender, region of origin, and status) have evidence of impacting activities involving foreign actors in Mali.

The United Nations Mission in South Sudan (UNMISS)

Graph [c]: Gender and region of origin make no significant contribution to predicting conflict dynamics in South Sudan (both types), while status has a deteriorative impact. The demographic profile of UNMISS has no observable relation to national and cross-border conflict dynamics in South Sudan.

The United Nations Stabilization Mission in the Democratic Republic of Congo (MONUSCO)

Graph [d]: The status of personnel deployed in MONUSCO is the most significant demographic factor connecting to overall conflict dynamics. The gender and region dimensions are also important, though gender is more connected to national conflict, and region is more connected to conflict involving foreign actors in DRC.



Focus Group Review

After the results detailed above were collected the methodology turned to the qualitative phase. The qualitative aspect utilized a focus group discussion which was held in the format of a closed roundtable with expert participants. The roundtable was convened after the machine learning experiments to stress test the relevance of findings and to further refine our research hypotheses.

The focus group population consisted of individuals working within the UN policy community, UN peace support missions, and sub-regional organizations in Africa. The group discussion was conducted virtually using a videoconferencing platform on the 13 December 2023. The focus group lasted two hours, during which results were presented and then interrogated by the group. Findings were also circulated beforehand to focus group participants. Attendees included the following nine individuals:²⁸

- Senior Gender Affairs Officer (MONUSCO)
- Local Governance and Conflict Specialist (UNMISS)
- Head Of Strategic Planning (MONUSCO)
- Professor of International Relations (Salve Regina University) and Deputy Director of Joint Civil-Military Interactions Research Network (JCMI)
- Senior Advisor to the Ministry of Peacebuilding in South Sudan and to the Deputy Special Representative of the United Nations Mission in South Sudan (UNMISS)
- Former Senior Advisor and Head of Stabilization (UNDP Lake Chad Basin Regional Stabilization Strategy)
- Senior Planner (MINUSCA)
- Head of the Anticipatory Action and Innovation Pillar (UNU-CPR)
- Researcher in the Peace Operations and Conflict Management Programme (SIPRI)

Engaging with policymakers and subject matter experts facilitated methodological triangulation and allowed for critical examination of the results, as well as the data sets used. Additionally, the focus group provided important domain knowledge to help contextualise any correlations identified in the quantitative analysis. This important feedback, as well as our own reflections, has been organized below by demographic feature, starting with region of origin, moving on to gender, and finally, status.

Participants noted that region of origin is the only demographic feature that was identified as influential across the four case studies. This is to say that when the region variable was removed from the model, the model's predictive accuracy decreased, representing the importance of the

²⁸ The focus group composition addressed Gender, Equality, and Social Inclusion (GESI) considerations. We targeted a 40 per cent female attendance for the expert focus group discussion which translated into five women out of the 12 experts who were invited. Also, quantitative data interrogated at the event included indicators on the gender of troops and civilian personnel in peace support operations.

variable in the model's predictive capabilities for overall conflict dynamics. The study included region of origin on the assumption that the inclusion of troops from neighbouring countries may grant a comparative advantage in managing regionalized conflict. During the roundtable, participants working within UNMISS affirmed this analysis, noting that the ability of peace mission members to speak local languages increases the PSO's effectiveness in managing conflict.

A roundtable participant familiar with UNMISS's Protection of Civilian (PoC) mandate highlighted that regional troops such as Acholi speakers have played a significant role in addressing climate change-driven conflicts in cross-border areas. UNMISS works with UN agencies and the UN country team to manage cross-border conflicts which manifest as pastoralist militia-driven violence. UNMISS and the UN agencies work with local peace committees to promote dialogue and support local peace agreements.

UNMISS Civil Affairs Division plays a critical interlocutor role between the local communities and the mission in addressing communal conflicts and supporting pastoralist migration processes. A 2016 survey by the UN Department of Peace Operations (DPO) that included UNMISS staff reported that language barriers often impede engagements with local peace committees on the PoC mandate.²⁹

The experiment results from the MONUSCO case study indicate that political dynamics between case study countries and their neighbouring States may play a part on conflict dynamics. The predictive model showed a discernible impact when information on the region of origin was removed. One of the region of origin variables measures troops from neighbouring nations. Discussions in the focus group noted that the results in this case study may be due to the multiplicity of national troops under different command structures. An academic participant pointed out that civilians have diverging perceptions of regional battalions in the Force Intervention Brigade (FIB). The FIB is a specialized force within MONUSCO that was formed in 2012 with a robust mandate to conduct a military offensive against M23. The FIB initially consisted of forces from Malawi, Tanzania, and South Africa. The academic noted that DRC's historical relations with its neighbours has resulted in civilians having a higher trust of Tanzanian battalions over troops deployed under the East African Community Regional Force (EACRF). This indicates that the comparative advantage that neighbouring troops have in understanding the local language and cultural norms interacts with the overall dynamics of regional relationships.

Moreover, the FIB's initial successes against M23 were bolstered by international pressure on Rwanda for allegedly supporting the militia group. Even prior to M23's recent resurgence, the FIB has struggled to make meaningful progress against the Allied Democratic Forces (ADF), the Democratic Forces for the Liberation of Rwanda (FDLR), and other groups it was mandated to neutralize. Researchers cited a range of factors behind the FIB's poor track record, including the mission's prioritization on implementing military solutions to the conflicts, and its narrow focus on a handful of militia groups when approximately 70 operate in Eastern DRC. The findings on

²⁹ UN DPKO-DFS and DPET, "Community Liaison Assistants in United Nations Peacekeeping Operations: Survey of Practice (UN Peacekeeping, 2016).

MONUSCO suggest that the impact of region of origin must be interpreted within the framework of regional political dynamics and military operational capacity.

Region of origin was the only feature that had an impact on the MINUSCA case study. Like DRC, the Government of CAR has authorized a number of deployments aside from MINUSCA, including bilateral security arrangements and private security companies. This complicates the process of understanding which factors relating to the origin of MINUSCA's troops may link to conflict dynamics. A senior planner in MINUSCA, however, pointed to the possible impact of deployment of troops from Cameroon. In MINUSCA, contingents from Cameroon have a special status in the mission despite the country ranking 10th and 3rd in terms of military and police contributions to the mission, respectively. The senior planner pointed out that Cameroon's troops are deployed along the border between the two countries. Cameroon's Douala Port is a main transit point for CAR imports and exports. The position of Cameroon's contingents along the border is therefore critical in securing the main supply lines into CAR and to the peace mission.

The findings from the MINUSCA case study also indicate that conflict dynamics may be influenced by the host state's relationship with economic partners in other parts of the continent; not only with neighbouring states like Cameroon. Rwanda is the largest military and police troop contributor to MINUSCA, as of November 2023, and in 2020 also deployed troops to CAR under a bilateral agreement; meaning that these troops are not constrained by the UN's rules of engagement which limit the use of force to situations of self-defence. One of the variables measured is proportion of non-neighboring troops from Africa.

Moving on to gender, the experiments indicate that gender dimensions have a significant impact on cross-border conflict in Mali, but not the overall conflict dynamics. However, the opposite was the case in South Sudan where gender dimensions slightly impact overall conflict but not cross-border conflict dynamics. In DRC, gender impacted both overall and cross-border conflict dynamics.

One focus group participant noted that gender diversity is a value promoted by the Women, Peace, and Security (WPS) agenda. The UN has made some progress in increasing the number of women in peacekeeping missions since the UN Security Council (UNSC) passed Resolution 1325 (2000) on the WPS agenda. The UN followed up with UNSCR 2242 (2015), UNSCR 2436 (2018), and developed the Uniformed Gender Parity Strategy (UGPS) 2018–28. As of June 2023, the overall proportion of women in peace operations stands at 7.3 per cent while female troops stand at 6.6 per cent as of June 2023.

A senior gender affairs officer in MONUSCO noted that the study conceptualizes gender participation in terms of number of women, as opposed to the contribution and role of women. Gender diversity, she noted, should be viewed from the perspective of its impact on enhancing the outcomes of peace support operations. Two other participants with expertise on MONUSCO and UNMISS also pointed out that the impact of gender in the two respective missions is linked to their roles rather than their absolute numerical representation. They note that while female

representation is low in terms of uniformed troops, both missions have a significant number of women in leadership positions, especially civilian staff and within United Nations Police which may help explain experiment results. MONUSCO, for instance – where gender impacts both types of conflicts – has a high proportion of female civilian personnel, the highest proportion in all four case study countries.

The focus group participants emphasized that increasing female police staff has the most positive impact on stabilization dynamics. According to a report by the Stockholm International Peace Research Institute (SIPRI), women represent 20 per cent and 31 per cent of the police force in MONUSCO and UNMISS respectively.³⁰ The experts on UNMISS argued that this figure is important because female police play a key role in addressing the sexual and gender-based violence (SGBV) dimension of communal conflict. The participants went on to link gender to region of origin by noting that female police who share the same cultural background as civilian populations are more effective. Experts on MONUSCO shared similar sentiments and highlighted the role of female engagement teams and community engagement facilities run by members of the FIB from Kenya and Malawi.

Focus group participants pointed out that MINUSMA initially struggled to implement the WPS component of its mandate due to lack of human and financial resources. Eventually, the Gender Unit's budget increased and more gender focal points were appointed. MINUSMA's Gender Unit was instrumental in providing technical support to mission components, civil society, and government, especially the Ministry for the Advancement of Women, Children and the Family. Additionally, the Gender Unit promoted efforts to mainstream women's political participation by supporting the establishment of women's committees, drafting advocacy documents, and making recommendations ahead of elections. The Gender Unit's efforts contributed to an increase in female ministers from 8 per cent to 34 per cent.³¹ Focus group participants noted this effort may be linked to the findings for MINUSMA in which gender variables were linked to cross-border conflict. The fact that there was not the same level of observability for overall conflict may be because the majority of conflict in Mali is cross-border. Events involving foreign armed actors account for 60 per cent of total conflict events in Mali.

Turning to status, experiment results indicate that while the status of staff is linked to overall conflict dynamics in both MONUSCO and MINUSMA, it appears to have no observable impact on conflict dynamics in either MINUSMA or UNMISS.

A participant deployed in MONUSCO argued that personnel status is quite pertinent, particularly when it comes to the mission's military component versus the civilian component. The expert argued that the military component's implementation of the mission's offensive mandate has

³⁰ Claudia Pfeifer Cruz, *Women In Multilateral Peace Operations 2023: What Is The State Of Play?* (Stockholm: Stockholm International Peace Research Institute, 2022).

³¹ Natasja Rupesinghe, John Karlsrud, Linda Darkwa, Tobias von Gienanth, Fiifi Edu-Afful, Noura Abouelnasr, and Tofayel Ahmed, *Assessing the Effectiveness of the United Nations Mission in Mali (MINUSMA)* (EPON, 2019).

possibly contributed to conflict dynamics. MONUSCO operations shifted significantly in 2013 when the FIB was endowed with an offensive mandate in response to M23's occupation of Goma.

Anti-MONUSCO sentiment may play a role even for other military components. Outside the FIB, MONUSCO has maintained a traditional peacekeeping approach which uses force for self-defence. This approach reduces the risk of retaliation against the mission but has also limited the mission's ability to prevent civilian massacres, which in turn contributes to negative local perceptions. Anti-MONUSCO sentiment was exacerbated by M23's re-emergence and the subsequent deterioration of the security situation in Ituri and North Kivu. DRC turned to the EACRF to stabilize the region, further damaging MONUSCO's credibility. In 2022, the Government of DRC responded to these security developments by informing the UN Security Council that the country would be accelerating MONUSCO's drawdown timetable.

Regarding MINUSMA, participants noted that this may be due to the interplay between the military and civilian components, and also negative local perceptions of mission troops, similar to MONUSCO. Prior to 2016, MINUSMA's military component was relatively successful in stabilizing northern Mali and supporting negotiations for the 2015 Algiers Agreement. However, Jihadist violence escalated in Northern and Central Mali, which increased the number of civilian and mission troop fatalities. In 2018, the UN Security Council extended MINUSMA's mandate to include stabilization efforts in central Mali. However, resource constraints impeded the mission from effectively implementing its mandate.

MINUSMA's civilian staff struggled to work in Mali's difficult security situation. The mission had a high level of 'bunkerization' and civilian staff relied on military escorts to conduct field missions and access local populations. In addition to the security challenges, civilian staff were concentrated in Bamako because of operational and logistical issues. Concentrating civilian staff in Bamako made communication with the government easier but isolated the mission from local populations, especially civilians in volatile regions.

Finally, participants noted that no demographic variable was found to be consistently impactful in overall conflict dynamics across all four case studies. This indicates that no one demographic variable (gender, region of origin, or status) carried sufficient importance to be impactful to conflict dynamics in every country examined. This was considered in itself an interesting finding. Nevertheless, each demographic variable was found to be linked to national and/or cross-national armed conflict at least once. Hence, there was no demographic variable that did not affect conflict dynamics in one way or another. This too was found to be of import.

Study Limitations

Conversations in the focus group, as well as among co-authors and contributors, helped to identify five key limitations of this study which need to be addressed. These limitations may also provide direction for future paths of research.

First, the study is limited to interventions by PSOs, although several other types of multilateral interventions impact national and cross-border conflict dynamics. Future research may aim to analyse and incorporate additional data sets connected to other types of interventions, for example stabilization forces from the African Union or European Union.

Second, there are other important types of interventions that impact conflict indirectly – such as those relative to humanitarian relief, disarmament, demobilization and reintegration, and small arms trade, as well as agricultural and related food security initiatives. Data concerning these types of multilateral interventions could also be taken into account.

Third, this research does not take into account the phenomenon of bunkerization. Scholars are examining how multilateral actors increasingly engage in bunkerization, or retreat behind fortified bases. This occurs primarily for those that operate in border areas. Fisher explores how international actors engage in bunkerization in the borderlands of the Somali Regional State (SRS).³² He defines bunkerization as the retreat of international relief workers “behind walls of bunkered aid compounds,” and argues that bunkerization is largely donor-driven due to the insecurity that exists in these peripheries, and the militarization of development and peacebuilding work. Bunkerization produces a remoteness between local communities and international aid and peace workers, hence limiting their ability to function effectively. Future research should take this dynamic into account and include data relative to not only the gender, nationality, and status of aid and peace workers, but also their level of integration into the local community.

Fourth, future research should also incorporate factors that link conflict dynamics to climate shocks and displacement patterns. The probability of cross-border conflict occurring in African nations is compounded by increasing vulnerabilities due to climate change and rapidly growing – and often displaced – populations. Climate and conflict are interlinked in myriad ways. Researchers have found that conflict can increase the risk of climate-related food insecurity, as observed in South Sudan and Nigeria.³³

Likewise, climate shocks can lead to increased risk of conflict. One study found that in a sample of 51 African countries from 1990 to 2018, climate shocks increased the likelihood of conflict by

³² Jonathan Fisher, "Reproducing remoteness? States, internationals, and the co-constitution of aid 'bunkerization' in the East African periphery," *Journal of Intervention and Statebuilding* Vol. 11, No. 1 (2017): 98–119.

³³ Weston Anderson et al., "Violent conflict exacerbated drought-related food insecurity between 2009 and 2019 in sub-Saharan Africa," *Nature Food* Vol. 2, No. 8 (2021): 603–615.

38 per cent, especially intercommunal conflict.³⁴ Investigators have found that climate-related conflict vulnerabilities are exacerbated by factors such as large-scale migration, weak local infrastructure, diminishing resources, and the existence of extremist groups.³⁵ Climatic conditions in certain contexts can also play a significant role as an explanatory factor for forced migration.³⁶ By adding data that measures multilateral interventions aimed at addressing climate-related fragility, we may better understand the contextual factors that contribute to a lowering of risk of conflict in geographies susceptible to climate shocks such as West Africa, the Sahel, and the Horn of Africa.

Fifth, there is a significant body of academic and policy literature on the link between migration and both internal and cross-border instability. 'New wars' studies perceive forced population displacement as a key strategy of conflict rather than just a consequence of violent conflict. Hence, violence is often intentionally directed towards the civilian population.³⁷ Consequently, a common characteristic of conflict is the high numbers of internally- and internationally-displaced peoples. Additionally, as Ansorg points out, migration itself may contribute to the spread of armed conflict because migrant populations often include militarized refugees.³⁸ Combatants may hide within refugee populations and seek to benefit from humanitarian aid. Finally, migration can increase competition for scarce resources, such as land and employment opportunities, leading to increased tensions. This indicates that tracking migration data, and data relative to multilateral interventions around migration, could also be used to better understand the relation between peacekeeper diversity indicators and de-escalation dynamics.

The brief review presented above signals that there are a number of additional directions in which this research on peace support interventions may be conducted. The methodological approach undertaken in this study seeks to be a starting point for future adaptations in which innovative techniques may be used to unpack linkages between a variety of multilateral intervention characteristics and stabilization dynamics in regional conflict systems. Indeed, this research aims to act as a testing phase for the potential development of a wider study using a similar human-machine co-learning approach but also including data relative to non-UN peacekeeping missions, humanitarian, development, and disarmament interventions, as well as climate and migration management initiatives.

³⁴ Yoro Diallo and René Tapsoba, "Climate shocks and domestic conflicts in Africa," *IMF Working Paper* (Washington DC: IMF, 2022).

³⁵ Andrea Malji, Laurabell Obana, and Cidney Hopkins, "When home disappears: South Asia and the growing risk of climate conflict," *Terrorism and Political Violence* Vol. 34, No. 5 (2022).

³⁶ Guy J. Abel et al., "Climate, conflict and forced migration," *Global Environmental Change* 54 (2019): 239-249.

³⁷ Alexander McKenzie, "'New Wars' Fought 'Amongst the People': 'Transformed' by Old Realities?" *Defence Studies* Vol. 11, No. 4 (2011): 569–593.

³⁸ Nadine Ansorg, "Securitisation strategies to prevent conflict diffusion in Tanzania and former Zaire," *Journal of Contemporary Africa* Vol. 38, No. 4 (2020): 579–593.

Conclusion

The demographic composition of a PSO can impact material capabilities and local perceptions of the intervention, to the benefit or detriment of peacekeeping efforts. This study combines the use of machine learning analysis with expert-led focus group observations to gather both quantitative and qualitative results. The main finding is that region of origin is the only demographic feature that has measurable influence across the four case studies. Focus group participants confirmed that the ability of peace mission officers to speak local languages and share similar cultural backgrounds may increase a PSO's effectiveness in managing conflict. Experts on UNMISS noted that the PoC mandate highlights that regional troops play a significant role in addressing climate change-driven conflicts in cross-border areas, highlighting the impact of a PSO personnel's region of origin on mission objectives.

Experts on MONUSCO indicate that political dynamics between case study countries and their neighbours may be linked to the importance of the region of origin variables in that case study. Troops from neighbouring nations have a comparative advantage in understanding the local language and cultural norms. Experiments on the MONUSCO case study indicate that the professional status of staff is also influential to the overall conflict dynamics. Status was also found to be linked to cross-border conflict in MINUSMA.

In DRC and South Sudan, the gender of personnel had observable impact on overall conflict dynamics, but not on cross-border conflict. Experiments also detected an impact of gender dimensions on cross-border conflict in Mali. Experts from the focus group confirmed that gender aspects that further the WPS agenda strengthen the role of female engagement teams and promote the role of female police, particularly among leadership positions, which can have an impact on effectively fulfilling a PSO mandate.

No variable (gender, status, region of origin) was found to have a measurable impact in every case study consistently. This indicates that no single variable impacts the effectiveness of a PSO mission. On the other hand, every demographic variable had an impact in at least one case study. This is to say that no variable was 'unimportant' to mission effectiveness.

These findings are better understood by considering the following three limitations. Firstly, demographic composition of a PSO represents one of numerous factors that may influence conflict dynamics in the case study countries. In other words, the study's limited scope in relation to such complex and multidimensional phenomena is akin to using a telescope to look at a small section of a vast night sky.

Secondly, the research findings do not establish the exact nature of the relationship between demographic features and conflict dynamics. This means that while the machine learning experiments can identify influential demographic features, they do not show whether this links to an escalation or de-escalation of the conflict. The findings only indicate which diversity indices

matter to which type of conflict (either overall conflict or cross border-conflict) and in which case study nations. These linkages are then corroborated, or rather contextualised, to some degree by focus group participants.

Lastly, this study represents only a very initial exploratory approach to applying machine learning techniques to unpack linkages between a variety of multilateral intervention characteristics and stabilization dynamics in regional conflict systems. It also underscores the importance of having a qualified team of experts with local and technical knowledge to critically evaluate and assess findings. In this study we hope to shed light on the importance of considering diversity indices, due to their ability to impact the capacity of States and international actors so they can tailor targeted response plans and reduce the risk of both national and cross-border violence.

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Appendix 1: List of Foreign Armed Actors

Central African Republic:

Arab Ethnic Militia (Sudan)
Coalition Siriri
Janjaweed
Lord's Resistance Army (LRA)
Special Forces of Revolutionary Justice (FSRJ)
Fulani Ethnic Militia (Chad)
Fulani Ethnic Militia (Cameroon)
Misseriya Ethnic Militia from Sudan
National Council for the Liberation of Chad
Revolution and Justice
SPLM: Sudan People's Liberation Movement (Splinter Faction)
Zaghawa Ethnic Militia Chad
Unidentified armed groups from Chad
Unidentified Armed groups (international)
Unidentified Communal Militia from Sudan
Unidentified Communal Militia South Sudan

Democratic Republic of the Congo:

Al Shabaab
Allied Democratic Forces
CNDD-FDD - Imbonerakure: National Council for the Defence of Democracy
CNRD: National Council for Renewal and Democracy
FDLR: Democratic Forces for the Liberation of Rwanda
FDLR-FOCA: Democratic Forces for the Liberation of Rwanda- Forces fighting Abacunguzi
FDLR-RUD: Democratic Forces for the Liberation of Rwanda-Rally for Unity and Democracy
FOREBU: Republican Forces of Burundi
FNL: National Forces of Liberation
NALU: National Army for the Liberation of Uganda
Lord's Resistance Army (LRA)
RED-TABARA: Resistance to the Rule of Law in Burundi
SPLM: Sudan People's Liberation Movement
Seleka Militia
Zaraguinas
UPC: Union for Peace in the Central African Republic
Unidentified Armed Group (Burundi)
Unidentified Armed Group (Rwanda)
Unidentified Armed Group (Uganda)
Unidentified Armed Group (Central African Republic)
Unidentified Armed Group (South Sudan)

Mali:

Al Furqan Battalion
Alliance for the Salvation of the Sahel
Al Mourabitoune Battalion
Ansaroul Islam
Anser Dine
Al Qaeda in the Islamic Maghreb (AQIM)
JNIM: Group for Support of Islam and Muslims
Islamic State (Sahel)
Islamic State (West Africa) - Greater Sahara Faction
Islamic State (West Africa) - Lake Chad Faction
Islamist Militia (Niger)
MUJAO Movement for Unity and Jihad in West Africa
Ngadana Communal Militia (Ivory Coast)
Polisario Front
Tuareg Ethnic Militia (Niger)
Unidentified Armed Group (Chad)
Unidentified Armed Group (International)
Unidentified Armed Group (Niger)
Unidentified Armed Group (Sudan)
Unidentified Communal Militia (Guinea)
Unidentified Communal Militia (Mauritania)
Fula Ethnic Militia (Burkina Faso)
Mourabitounes Group of Azawad

South Sudan:

Anyual Ethnic Militia (Ethiopia)
Awlad Kamil Clam Militia (Sudan)
Awlad Omran Clan Militia (Sudan)
Azande Ani Kpi Gbe (Central African Republic)
Blue Nile Communal Militia (Sudan)
Gok Ethnic Militia (Sudan)
Habbaniyah Ethnic Militia (Sudan)
Hawazmah Clan Militia (Sudan)
Ingessana Ethnic Militia (Sudan)
Justice and Equality Movement (JEM)
Lords Resistance Army (LRA)
Mbororo Ethnic Militia (Central African Republic)
Military Forces of Sudan (1989-2019)
Rapid Support Forces (Sudan)
Misseriya Ethnic Militia (Sudan)
Mundari Ethnic Militia (Sudan)

Ngok Clan Militia (Sudan)
Nuer Ethnic Militia (Sudan)
Rizeigat Ethnic Militia (Sudan)
South Kordofan Communal Militia (Sudan)
Turkana Ethnic Militia (Kenya)
Uduk Ethnic Militia (Sudan)
Unidentified Armed Group (Sudan)
Unidentified Armed Group (Uganda)
Unidentified Ethnic Militia (Sudan)
Union for Peace in the Central African Republic
Zande Ethnic Militia (Sudan)

Appendix 2: List of Data from DPO/DPPA Information Management Unit's Peace and Security Data Hub

Status:

Number of uniformed personnel
Number of uniformed military personnel (troops)
Number of uniformed non-military personnel (experts/police/staff)
Number of civilian personnel

Origin:

Number of uniformed personnel from neighbouring nations
Number of uniformed personnel from region
Number of uniformed personnel from international

Gender:

Gender of uniformed personnel (male)
Gender of uniformed personnel (female)
Gender of civilian personnel (male)
Gender of civilian personnel (female)

Additional "risk level" contextual data:

Number of personnel casualties
Number of uniformed military personnel casualties
Number of non-military personnel casualties
Number of personnel casualties from malicious acts (conflict related)
Number of personnel casualties from non-malicious acts
Number of personnel casualties from neighbouring nations
Number of personnel casualties from region
Number of personnel casualties from international
Gender of personnel casualties (male)
Gender of personnel casualties (female)

Extrapolated proportions:

Percentage of non-military to total uniformed personnel
Percentage of personnel from neighbouring nations to total uniformed personnel
Percentage of personnel from region to total uniformed personnel
Percentage of personnel from international to total uniformed personnel
Percentage of female to total uniformed personnel
Percentage of civilian to uniformed+civilian personnel
Percentage of female to total civilian personnel
Percentage of personnel casualties to total uniformed+civilian personnel
Percentage of non-military to total personnel casualties

Percentage of casualties from malicious acts to total personnel casualties
Percentage of casualties from non-malicious acts to total personnel casualties
Percentage of casualties from neighbouring nations to total personnel casualties
Percentage of casualties from region to total personnel casualties
Percentage of casualties from international to total personnel casualties
Percentage of female to total personnel casualties