

## What are the Benefits and Pitfalls of ‘Data-Driven’ Peacekeeping?

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### ISSUE

This brief examines a new trend in United Nations peacekeeping: the move toward systematic data analysis, both in field missions and among the actors who authorize, fund, and staff UN peace operations.

### INTRODUCTION

UN peace operations face a variety of challenges, but one of the most pressing, historically, has been a lack of adequate field information.<sup>i</sup> Peacekeepers often struggle to achieve core objectives – like protecting civilians and themselves – because they must manage risks and make decisions without reliable information about their operating environment.<sup>ii</sup> At the strategic level, the UN also struggles to manage and aggregate data effectively. This makes it difficult for UN officials, member states, and other stakeholders to systematically assess the performance of UN peace operations.<sup>iii</sup>

The UN is committed to solving these problems by improving its capacity to gather, analyze, and make decisions based on high quality data.<sup>iv</sup> This brief describes the rationale behind ‘data-driven’ peacekeeping, reviews achievements to date and ongoing work, and takes stock of its benefits, problems, and limitations. It focuses particularly on issues of interest to Canadian policy makers, including the Elsie Initiative and implementation of the *Vancouver Principles*.

The benefits of data-driven peacekeeping include improved situational awareness, better tools for evaluating performance, and new metrics for holding personnel accountable.<sup>v</sup> Insofar as it improves performance and transparency, systematic data analysis can also bolster public trust in UN peace operations.<sup>vi</sup>

Ongoing challenges include data bias and insufficient ‘data literacy,’ concerns about privacy and confidentiality, and political sensitivities around data gathering and reporting.<sup>vii</sup> Data-driven peacekeeping also has limitations – it is not immune to politicization and no amount of data can compensate for a lack of political will or a reluctance to act on reliable information.<sup>viii</sup>

A better understanding of these issues will help Canada strengthen peacekeeping operations and preserve public trust in the UN at a time when multilateral conflict resolution is under considerable pressure.

### BACKGROUND

This brief uses the term “data-driven peacekeeping” to describe a range of tools and practices designed to improve the quantity and quality of data available to peacekeepers, and to those who authorize, fund, and staff UN missions. It also refers to changes in decision making based on that data.<sup>ix</sup>

The push to make peacekeeping more “data-driven” is a product of two concurrent developments. First, peace operations have become more complex in the post-Cold War era. Most contemporary missions are multidimensional and responsible for a wide range of tasks that involve coordination with many different actors.<sup>x</sup> This makes strong analysis, coordination, and planning capabilities essential for achieving mission objectives.<sup>xi</sup> Second, changes in information and communication technology (ICT) make it possible to gather and analyze new types of data, including “Big Data.”<sup>xii</sup> These developments have coalesced with high-level efforts to reform UN peace operations, providing both a practical and political rationale for systematic data analysis.

## *TYPES OF DATA*

The relationship between technological innovation and data-driven peacekeeping is so close that some observers equate the latter with the former. It is true that devices like unmanned aerial vehicles (UAVs), global positioning systems (GPS), and mobile phones have transformed the ways in which peacekeepers gather, share, and use data.<sup>xiii</sup> New technology has also yielded new types of data. Postings to social media sites, satellite images of traffic patterns, crowd-sourced data, and “digital exhaust” from routine transactions like SIM card top-ups for mobile phones provide peacekeepers with valuable information about their operating environment.<sup>xiv</sup>

This vast array digital information – sometimes referred to as ‘Big Data’ – lends itself to quantitative analysis. It is important, however, not to equate ‘data’ with information that is collected through particular means or collated in particular ways and formats.<sup>xv</sup> Specifically, policymakers should avoid a bias in favour of statistical analysis or data that has been gathered using new technology. Quantitative and qualitative analyses both have comparative advantages and are best used in a complementary fashion.<sup>xvi</sup>

## **DATA-DRIVEN PEACEKEEPING**

Until recently, efforts to promote systematic data analysis were usually led by individual field missions, but Secretary-General António Guterres has taken a more centralized approach.<sup>xvii</sup> This has produced more standardized procedures and fostered the development of an integrated framework for using performance data in planning, evaluation, reporting, and deployment decisions.<sup>xviii</sup>

## *ACHIEVEMENTS TO DATE*

In strategic terms, the move toward systematic data-analysis in peacekeeping is relatively recent and linked to several high-level initiatives. The 2014 report of the Expert

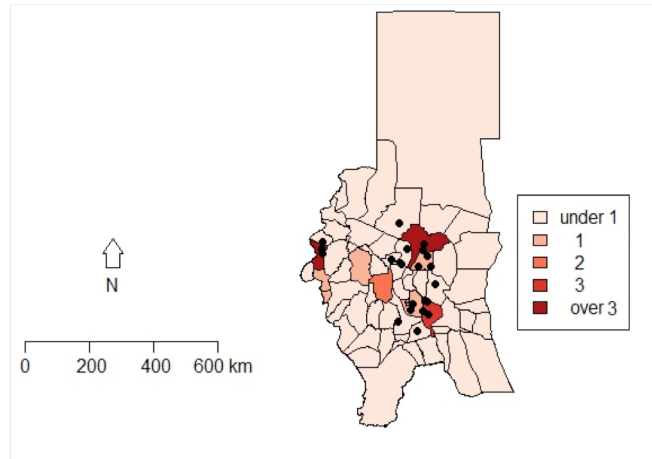
Panel on Technology and Innovation in UN Peacekeeping highlights the problem of “data sclerosis,” noting that “data liquidity” would allow for information to be “easily searched, queried against, measured, tracked over time, and visualized for better reporting, analysis, and decision-making support.”<sup>xxix</sup> In 2015 the High-Level Independent Panel on UN Peace Operations also argued that “timely, high quality and actionable information is central to effective performance,” and it called on the Secretariat to overhaul the information and analysis structures for peace operations.<sup>xx</sup>

On the political front, member states have signalled their commitment to data-driven peacekeeping both directly and indirectly. Security Council resolution 2436, passed in 2018, notes the importance of data to inform objective decision-making, evaluate peace operations, and generally improve their performance.<sup>xxi</sup> The Action for Peacekeeping (A4P) Declaration of Shared Commitments also includes a pledge from the Secretary-General to ensure that performance data is used to “inform planning, evaluation, deployment decisions and reporting.”<sup>xxii</sup> These developments come alongside changes in policy, including the introduction of the first Peacekeeping Intelligence Policy in May 2017.<sup>xxiii</sup>

At the operational level, the move toward data-driven peacekeeping has centred on the adoption of new technology – especially the Situational Awareness Geospatial Enterprise (SAGE) database – and the creation of new administrative units responsible for data analysis. SAGE is a web-based database system that allows peacekeepers to log incidents, events, and activities.<sup>xxiv</sup> It can be used to record outbreaks of armed violence, but also events like troop movements, abductions, and protests. Incidents can be categorized by type, location, number of victims, affiliation of perpetrators, and so on. SAGE was launched in 2014, but its roll out and training for peacekeepers are ongoing. It will help to overcome many of the data management problems facing UN missions by providing a centralized tool for organizing and rapidly visualizing information.<sup>xxv</sup>

From an organizational point of view, the Secretariat’s 2006 decision to establish Joint Mission Analysis Centres (JMACs) in all peace operations has fostered a more integrated approach to data management and analysis. JMACs are tasked with gathering information from a variety of sources and providing mission leaders with integrated threat analysis, including early-warning and “hotspot” maps to facilitate decision-making (see Figure 1).<sup>xxvi</sup> Some argue that JMACs are disproportionately focused on security issues and that their analytical products should be shared more widely, not just with mission leadership.<sup>xxvii</sup> Nevertheless, the JMACs provide an obvious focal point for collating and analyzing the many types of data that are useful to peacekeepers in their day-to-day work.<sup>xxviii</sup>

Figure 1: Spatial Correlation between JMAC reports on tensions in October, November, and December 2008 and Violence Against Civilians in Darfur in January 2009.



Source: Duursma and Karlsrud, 2018: 2.

## ONGOING WORK

While considerable progress has been made, more work is needed to fully realize the benefits of data-driven peacekeeping. At the field level, more resources are required to help peacekeepers store and manage information effectively, especially with the exponential growth of ‘big data.’<sup>xxxix</sup> For example, many JMAC sections face budget and staffing constraints that impair their ability to collect and analyze information.<sup>xxx</sup>

Peacekeepers also need to become more comfortable using the tools that are already available. In South Sudan, early attempts to launch SAGE failed, and some field personnel worry that data entry will become an additional burden on top of existing reporting requirements. Uncertainty about the quality of information in mission databases also means that some peacekeepers are reluctant to use that data as a basis for action.<sup>xxxi</sup> SAGE partly addresses this problem by allowing for more nuanced reporting – by allowing peacekeepers to rank the credibility of a threat, for example. Still, more work is needed to make SAGE data more comprehensive and precise, clarify the responsibilities of field personnel, and ensure accountability for data entry.<sup>xxxii</sup>

At the strategic level, the UN is still determining how to make systematic data analysis part of its decision-making processes for peace operations. To date, most of the assessment carried out by the Department of Peace Operations (DPO) has been geared towards lower level adjustments in activities and procedures, not toward higher-level adjustments in mission strategy and strategic policy direction.<sup>xxxiii</sup> At the request of the Special Committee for

Peacekeeping Operations – and with support from the Security Council – DPO is currently developing a Comprehensive Performance Assessment System (CPAS). The goal is to evaluate whole-of-mission performance and strengthen accountability through data collection and analysis. There are currently three pilot missions, and the intention is to have all missions using CPAS by July 2020.<sup>xxxiv</sup>

On the technological front, there is a need for more complementarity and compatibility – to ensure, for example, that SAGE complements other online tools, like the database of the Office of the UN High Commissioner for Human Rights.<sup>xxxv</sup> Questions also remain about the potential impact of technology like machine learning. Evidence suggests, for instance, that machine learning techniques could be applied to SAGE data and used to provide peacekeepers with more timely and specific predictions than what is possible through statistical analysis.<sup>xxxvi</sup>

## APPROACH AND FINDINGS

Research for this brief was conducted between July and September 2019 as part of Global Affairs Canada’s International Policy Ideas Challenge. The brief draws on a review of primary documents, secondary literature, and on a small number of semi-structured interviews with subject matter experts. The brief’s key findings fall into

three categories: situational awareness and responsiveness; performance and accountability; public perception and trust. More systematic data analysis will help to provide “common parameters” for evaluating performance and holding peacekeepers responsible when they fail to fulfill core functions.<sup>xxxvii</sup> When probing failures to protect civilians, for example, the UN has relied on a variety of different criteria to determine when special investigation is warranted.<sup>xxxviii</sup> These investigations would be more credible if defined benchmarks – like the number of civilians killed or an incident’s proximity to a UN base – were combined with data from SAGE to investigate allegations of underperformance.

### *SITUATIONAL AWARENESS AND RESPONSIVENESS*

One of data-driven peacekeeping’s main benefits is improved situational awareness for peacekeepers. UN missions now have access to much more information than they did historically, but they still struggle to manage and analyze that information in ways that are useful for day-to-day decision-making.<sup>xxxix</sup> Inadequate processes and technology for storing, grading, and analyzing information continue to undermine situational awareness.<sup>xl</sup>

A more systematic approach can provide peacekeepers with more reliable, actionable information about their operating environment. Continuing the roll out of SAGE will allow peacekeepers to make better use of data they already collect, and the database can be used to quickly visualize data and identify trends based on reported incidents.<sup>xli</sup> Applying machine learning tools to SAGE data could also allow peacekeepers to calculate the probability of attacks on civilians in defined areas with greater precision over much longer time frames.<sup>xlii</sup> This type of early warning can improve effectiveness by ensuring that air assets are used efficiently and that peacekeepers are deployed according to the highest level of need within a host country.<sup>xliii</sup>

In order to reap these benefits, several challenges need to be overcome. First, concerns about state sovereignty and non-interference may prevent peacekeepers from using all the data-gathering tools at their disposal. Host states – especially if they are party to a conflict – may deliberately restrict the types of technology that peacekeepers can use. The government of South Sudan, for instance, has resisted the deployment UAVs for surveillance purposes.<sup>xliv</sup>

Second, data needs to be presented in a way that is “digestible” for end users.<sup>xlv</sup> At the same time, peacekeepers need sufficient “data literacy” to confidently interpret the information that is available to them.<sup>xlvi</sup> This means being proficient with databases like SAGE, but also being able to identify key omissions or sources of data bias. Data literacy remains a challenge because current force generation and recruitment practices do not guarantee that peace operations

are staffed by personnel with the necessary skills, nor does existing training provide sufficient guidance.<sup>xlvi</sup>

Third, gathering and storing sensitive information – like data about attacks on civilians or conflict-related sexual violence – always comes with risks around privacy and confidentiality. Better situational awareness will come at considerable human cost if data is not collected, stored, and used appropriately. In the Democratic Republic of the Congo, some armed groups have launched retaliatory attacks on individuals or communities who are thought to be sharing information with peacekeepers.<sup>xlvi</sup> Responsible planning and careful training are essential to make sure that data-driven peacekeeping does not place local informants and other stakeholders at risk.

Finally, better situational awareness through data analysis does not automatically improve decision-making, which may be politicized, economically constrained, or personality-driven.<sup>xlix</sup> Being able to predict threats more accurately will do little to improve overall effectiveness if peacekeepers are unable or unwilling to act on that information.

### **Case Study No. 1: the Vancouver Principles**

The *Vancouver Principles* include commitments to prioritize early warning, provide appropriate training, support monitoring and reporting, and ensure that peacekeepers take effective action in response to credible information.<sup>i</sup>

Existing aggregate data on the recruitment and use of child soldiers is often incomplete, with insecurity and access restrictions making it difficult to verify information in a timely fashion.<sup>i</sup> UN peacekeepers are in a position to supplement this information with precise, real time data through SAGE.<sup>i</sup> Patrols may take UN troops to areas that other actors cannot access. To fill gaps in current reporting, however – and to ensure that data is of the highest possible quality – peacekeepers need training about what data to record and how to gather it.<sup>i</sup> Training is even more essential when peacekeepers are dealing with child informants who may be particularly vulnerable to reprisals from armed groups.

Using SAGE to record information about child combatants would also contribute to implementation of the Vancouver Principles by providing richer, more timely data for early warning and preventive action. It would allow peacekeepers to produce “risk maps” to visualize the probability of certain events – like encountering checkpoints controlled by child soldiers – in specific areas.<sup>i</sup>



The UN currently lacks a single, overarching framework for evaluating performance. The processes that do exist “serve different constituencies and a range of purposes,” and the information that is gathered “cannot be aggregated into a meaningful overall assessment of the performance of a given peacekeeping operation.”<sup>i</sup>

At the strategic level, data-driven peacekeeping will also make it easier to compare mission performance across time and space and identify common factors that contribute to success. In some cases, credible data may also help to improve performance by depoliticizing sensitive issues and providing objective information about how to identify and address shortcomings.<sup>li</sup>

Using data to shine a light on peacekeepers’ daily activities can also be politically contentious, however, especially when the goal is to assign blame for underperformance.<sup>lii</sup> Given that the UN’s top ten troop contributing countries (TCCs) all come from the global South, there is also a risk that they will perceive systematic data analysis as a way to justify one-sided criticism from states that contribute relatively few peacekeepers.<sup>liii</sup>

Heavy reliance on new technology could exacerbate this perception. There are “always ‘haves’ and ‘have-nots’ when it comes to advanced technology,” and this makes it all the more important for “technology contributing countries” – usually states from the global North – to expand access to the relevant technologies, be transparent about how data is gathered, and be sensitive to allegations of bias or hypocrisy.<sup>liv</sup> Systematic data analysis will do little to improve performance or accountability if key stakeholders are wary of the modes and reasons for data collection.

Finally, as with situational awareness, systematic data analysis is no substitute for political will. The Secretariat’s work on CPAS may yield important insights about performance and accountability in peace operations, but these will have minimal impact if key stakeholders – especially the Security Council, the General Assembly’s Fifth Committee, and TCCs – are unwilling to change the ways in which they authorize, fund, and staff UN peace operations.

### Case Study No. 2: the Elsie Initiative

The Elsie Initiative promotes gender equality by identifying barriers to women’s meaningful participation in peace operations. It seeks to address those barriers by gathering evidence, providing technical assistance and training, and delivering assistance to select UN missions.<sup>i</sup>

The Elsie Initiative has the potential to improve the UN’s current data collection practices. Deploying more female

peacekeepers could help to significantly reduce the data bias that results selective reporting on issues relating to gender, conflict-related sexual violence, and sexual exploitation and abuse (SEA). For example, existing data on sexual and gender-based violence (SGBV) only captures the “tip of the iceberg” because of chronic under-reporting, especially during armed conflict.<sup>i</sup> Evidence suggests that survivors are more willing to report violence to female law enforcement officials, meaning that greater gender parity among peacekeepers could reduce bias in monitoring and reporting around SGBV.<sup>i</sup> More accurate data could improve long-term planning and analysis, provide field personnel with real-time information about trends in their operating environment, and potentially improve accountability for perpetrators by documenting incidents in real time.

## PUBLIC PERCEPTION AND TRUST

Systematic data analysis can also strengthen public trust in UN peace operations. It does so indirectly insofar as it improves responsiveness, performance, and accountability. When peacekeepers use data analysis to identify threats, reposition assets, and prevent or respond to violence, it has reputational benefits for UN missions. The reverse is also true, however. When mission personnel fail to act on reliable information, it “breeds resentment and distrust” among host populations, who “often accuse peacekeepers of bias or indifference to their suffering.”<sup>lv</sup>

Data-driven peacekeeping can also build public trust by increasing transparency and providing a more accurate picture of what peacekeepers do on a day-to-day basis. For example, proactively sharing information can provide host populations with some assurance that decisions about a mission’s footprint – including the location of bases – are based on reliable data and threat analysis.<sup>lvi</sup> At the strategic level, it can also bolster political support for peacekeeping by providing a “quick, evidence-based way to tell... success stories.”<sup>lvii</sup>

If it is not undertaken carefully, however, data-driven peacekeeping could erode public trust. Pitfalls include data breaches and other violations of privacy, especially when data is gathered from vulnerable populations. The UN has already been the target of offensive cyber-attacks, and strong rules are needed to determine who will have access to sensitive information, how it will be stored, and what security measures will be used to ensure the integrity of the data.<sup>lviii</sup> Strategies for keeping informants safe include security assessments, anonymization, limiting sensitive questions, and not sharing specific data with local authorities.<sup>lix</sup> In order to maintain public trust, peacekeepers must be equipped to make sound judgements about how to strike an balance between transparency and confidentiality.<sup>lx</sup>

Perceived infringements on state sovereignty are also a problem. While there is a growing consensus that UN peace operations need reliable information to fulfill their mandates, the term ‘intelligence’ remains taboo in many UN circles because of its association with covert surveillance.<sup>lxi</sup> In its most recent report, for example, the Special Committee on Peacekeeping Operations acknowledges the Secretariat’s new “peacekeeping intelligence framework,” but insists that information gathering must be “non-clandestine” and that the Secretariat should be mindful of member states’ “legitimate concerns” in this area.<sup>lxii</sup> To accommodate these concerns, UN missions rely exclusively on “open source” data.<sup>lxiii</sup> Attempts to do otherwise would be politically and ethically unacceptable for many member states.

## CONCLUSION

Overall, the UN’s move toward data-driven peacekeeping has many benefits. These include better situational awareness, improvements in performance and accountability, and enhanced public trust in peace operations. Yet systematic data analysis also comes with challenges like data bias and insufficient data literacy, concerns about privacy and confidentiality, and political sensitivities around data gathering and reporting. Finally, there are some problems – like deficiencies of political will and a reluctance to act on reliable information – that cannot be solved through data analysis alone.

## RECOMMENDATIONS

- Canada should work with the Secretariat, troop and police contributing countries, and other stakeholders to incorporate ‘data literacy’ within pre-deployment, induction, and in-mission training for all peacekeepers. This should include support for training in how to use SAGE effectively and in how to handle sensitive information responsibly. Special attention should be paid to ensuring that those in leadership positions are able to confidently interpret different types of data, identify sources of data bias, and make decisions accordingly.
- Canada should work with the Secretariat and Heads-of-Mission to ensure that tools for gathering and analyzing peacekeeping data support implementation of the *Vancouver Principles* and the Women, Peace, and Security Agenda. Mission Information Requirements (IRs), Mission Intelligence Acquisition Plans, and Commanders Critical Information Requirements (CCIRs) should include – among other things – information about the recruitment and use of child soldiers and the prevalence of conflict-related sexual violence. SAGE should be configured to ensure that field personnel can record this information as a matter of

course and access it in real-time to inform decision-making.

- Canada should support UN peace operations – especially Joint Mission Analysis Centres – to ensure that their funding, staff, and equipment allow them to effectively gather, manage, and analyze data about their operating environment. This support should include air assets, travel budgets, and personnel with specialized training in data analysis and coordination.
- Canada should work with the Secretariat to determine whether its Comprehensive Performance Assessment System (CPAS) can be leveraged to advance the Elsie Initiative’s goal of gathering evidence on effective approaches to increasing women’s meaningful participation in UN peace operations. Canada should also work with like-minded member states to build support for CPAS and maximize the likelihood that key stakeholders – including the Security Council and the Fifth Committee – take performance data into account when making decisions about mandates and budgets for peace operations.
- Canada should work to address political and ethical concerns about systematic data analysis by engaging in dialogue with concerned states and other stakeholders, advocating transparency in UN data collection practices, and by promoting awareness of the risks associated with data breaches and violations of privacy, especially for vulnerable populations.

## REFERENCES

- Boutellis, A., "Can the UN Stabilize Mali? Towards a UN Stabilization Doctrine?," *Stability* 4, no. 1 (2015): 1-16.
- Cinq-Mars, E., "Special Investigations into Peacekeeping Performance in Protecting Civilians: Enhancing Transparency and Accountability," International Peace Institute.  
[https://theglobalobservatory.org/2019/09/investigations-peacekeeping-performance-poc-transparency-accountability/?utm\\_source=mailchimp&utm\\_medium=organic\\_email&utm\\_campaign=US\\_GO\\_publication\\_s\\_analysis&utm\\_content=link](https://theglobalobservatory.org/2019/09/investigations-peacekeeping-performance-poc-transparency-accountability/?utm_source=mailchimp&utm_medium=organic_email&utm_campaign=US_GO_publication_s_analysis&utm_content=link).
- Davies, S. and J. True, "The politics of counting and reporting conflict-related sexual and gender-based violence: the case of Myanmar," *International Feminist Journal of Politics* 19, no. 1 (2017): 4-21.
- Day, A., "Can Data Save UN Peacekeeping?," World Politics Review.  
<https://www.worldpoliticsreview.com/articles/27479/can-data-save-u-n-peacekeeping>.
- de Coning C. and E. Brusset, *Towards a Comprehensive Results-based Reporting and Performance Assessment Framework for UN Peacekeeping Operations*. Oslo: Norwegian Institute of International Affairs, 2018.
- de Coning C. and P. Romita, *Monitoring and Evaluation of Peace Operations*. Oslo: Norwegian Institute of International Affairs, 2009.
- Dorn, W., *Smart Peacekeeping: Toward Tech-Enabled UN Operations*. New York: International Peace Institute, 2016.
- Duursma, A., "Counting Deaths While Keeping Peace: An Assessment of the JMAC's Field Information and Analysis Capacity in Darfur," *International Peacekeeping* 24, no. 5 (2017): 823-47.
- , "Information Processing Challenges in Peacekeeping Operations: A Case Study on Peacekeeping Information Collection Efforts in Mali," *International Peacekeeping* 25, no. 3 (2018): 446-68.
- Duursma, A. and J. Karlsrud, *Predictive Peacekeeping: Opportunities and Challenges*. Oslo: Norwegian Institute of International Affairs, 2018.
- , "Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations," *Stability: International Journal of Security and Development* 8, no. 1 (2019): 1-19.
- Expert Panel on Technology and Innovation in UN Peacekeeping, *Performance Peacekeeping*. New York: United Nations Department of Peacekeeping Operations and Department of Field Support, 2014.
- Fast, L., "Diverging Data: Exploring the Epistemologies of Data Collection and Use among Those Working on and in Conflict," *International Peacekeeping* 24, no. 5 (2017): 706-32.
- Government of Canada, "Elsie Initiative for Women in Peace Operations." [https://www.international.gc.ca/world-monde/issues\\_development-enjeux\\_developpement/gender\\_equality-egalite\\_des\\_genres/elsie\\_initiative-initiative\\_elsie.aspx?lang=eng](https://www.international.gc.ca/world-monde/issues_development-enjeux_developpement/gender_equality-egalite_des_genres/elsie_initiative-initiative_elsie.aspx?lang=eng).
- High-Level Independent Panel on UN Peace Operations *Uniting Our Strengths for Peace: Politics, Partnership and People*. New York: United Nations, 2015.
- Hunt, C.T., "All necessary means to what ends? the unintended consequences of the 'robust turn' in UN peace operations," *International Peacekeeping* 24, no. 1 (2017): 108-31.
- Karlsrud, J., "Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies," in *Cyberspace and International Relations: Theory, Prospects and Challenges*, ed. Kremer, J.-F. and B. Müller (Berlin: Springer, 2014).
- MacGinty, R., "Peacekeeping and Data," *International Peacekeeping* 24, no. 5 (2017): 695-705.
- Miller, A. and C. Segal, "Do Female Officers Improve Law Enforcement Quality? Effects on Crime Reporting and Domestic Violence," *The Review of Economic Studies* 86, no. 5 (2019): 2220-47.
- NYU Center on International Cooperation, *Data for Peace and Security: Report of the Practitioners Workshop on Harvesting Best Practices and Building a Community of Practice*. New York: Center on International Cooperation, 2019.
- Peter, M., "UN Peace Operations: Adapting to a New Global Order?," in *United Nations Peace Operations in a Changing Global Order*, ed. de Coning, C. and M. Peter (Cham: Palgrave Macmillan, 2019).
- Shetler-Jones, P., "Intelligence in Integrated UN Peacekeeping Missions: The Joint Mission Analysis Centre," *International Peacekeeping* 15, no. 4 (2008): 517-27, <https://doi.org/10.1080/13533310802239741> (accessed 2008/08/01).
- Spink, L., Center for Civilians in Conflict, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*. Washington, 2018.
- United Nations, "Action for Peacekeeping: Declaration of Shared Commitments on UN Peacekeeping Operations." <https://peacekeeping.un.org/sites/default/files/a4p-declaration-en.pdf>.

---, "Under-Secretary-General for Peacekeeping Operations at the UN Security Council Thematic Debate on Peacekeeping Reform and Performance, 8349th meeting." <https://peacekeeping.un.org/en/under-secretary-general-peacekeeping-operations-un-security-council-thematic-debate-peacekeeping>.

United Nations Department of Peacekeeping Operations, *United Nations Peacekeeping Operations: Principles and Guidelines*. New York: United Nations, 2008.

United Nations, *Report of the Special Committee on Peacekeeping Operations - 2018 substantive session (New York, 12 February–9 March 2018)*. New York: United Nations, 2018.

United Nations Security Council, "Resolution 2436 S/RES/2436 (2018)." [https://undocs.org/S/RES/2436\(2018\)](https://undocs.org/S/RES/2436(2018)).



## ENDNOTES

- <sup>i</sup> Duursma and Karlsrud, 'Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations', 4, Duursma, 'Information Processing Challenges in Peacekeeping Operations: A Case Study on Peacekeeping Information Collection Efforts in Mali', 446.
- <sup>ii</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 2, Boutellis, 'Can the UN Stabilize Mali? Towards a UN Stabilization Doctrine?', 8-9.
- <sup>iii</sup> Day, *Can Data Save UN Peacekeeping*, de Coning and Brusset, *Towards a Comprehensive Results-based Reporting and Performance Assessment Framework for UN Peacekeeping Operations*, 18.
- <sup>iv</sup> Shetler-Jones, 'Intelligence in Integrated UN Peacekeeping Missions: The Joint Mission Analysis Centre', 517, United Nations, *Action for Peacekeeping: Declaration of Shared Commitments on UN Peacekeeping Operations*, 2.
- <sup>v</sup> Fast, 'Diverging Data: Exploring the Epistemologies of Data Collection and Use among Those Working on and in Conflict', 710-11, Expert Panel on Technology and Innovation in UN Peacekeeping, *Performance Peacekeeping*, 6.
- <sup>vi</sup> Day, *Can Data Save UN Peacekeeping?*
- <sup>vii</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 34, NYU Center on International Cooperation Netherlands Ministry of Foreign Affairs and UN Peacebuilding Support Office, *Data for Peace and Security: Report of the Practitioners Workshop on Harvesting Best Practices and Building a Community of Practice*, 8, Fast, 'Diverging Data: Exploring the Epistemologies of Data Collection and Use among Those Working on and in Conflict', 712.
- <sup>viii</sup> Karlsrud, *Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies*, 150.
- <sup>ix</sup> This definition draws on Duursma and Karlsrud (2019), but it has been expanded to include actors and decisions made beyond the field level. Duursma and Karlsrud, 'Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations', 2.
- <sup>x</sup> United Nations Department of Peacekeeping Operations, *United Nations Peacekeeping Operations: Principles and Guidelines*, 21-23.
- <sup>xi</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 11.
- <sup>xii</sup> Karlsrud, *Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies*, 141-42.
- <sup>xiii</sup> Dorn, *Smart Peacekeeping: Toward Tech-Enabled UN Operations*, 1, 7.
- <sup>xiv</sup> Karlsrud, *Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies*, 142.
- <sup>xv</sup> MacGinty, 'Peacekeeping and Data', 696.
- <sup>xvi</sup> de Coning and Romita, *Monitoring and Evaluation of Peace Operations*, 1.
- <sup>xvii</sup> Duursma and Karlsrud, 'Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations', 1.
- <sup>xviii</sup> ---, *Predictive Peacekeeping: Opportunities and Challenges*, 1, United Nations, *Action for Peacekeeping: Declaration of Shared Commitments on UN Peacekeeping Operations*, 2.
- <sup>xix</sup> Expert Panel on Technology and Innovation in UN Peacekeeping, *Performance Peacekeeping*, 8.
- <sup>xx</sup> High-Level Independent Panel on UN Peace Operations, *Uniting Our Strengths for Peace: Politics, Partnership and People*, 58.
- <sup>xxi</sup> United Nations Security Council, *Resolution 2436 S/RES/2436 (2018)*.
- <sup>xxii</sup> United Nations, *Action for Peacekeeping: Declaration of Shared Commitments on UN Peacekeeping Operations*, 2.
- <sup>xxiii</sup> Duursma and Karlsrud, 'Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations', 3.
- <sup>xxiv</sup> Ibid., 3-4.
- <sup>xxv</sup> Ibid., Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 30-31.
- <sup>xxvi</sup> Duursma, 'Counting Deaths While Keeping Peace: An Assessment of the JMAC's Field Information and Analysis Capacity in Darfur', 827, Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 20.
- <sup>xxvii</sup> ---, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 33, Shetler-Jones, 'Intelligence in Integrated UN Peacekeeping Missions: The Joint Mission Analysis Centre', 517-18.
- <sup>xxviii</sup> Karlsrud, *Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies*, 148.
- <sup>xxix</sup> Ibid., 142.
- <sup>xxx</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 30.
- <sup>xxxi</sup> Ibid., 31.
- <sup>xxxii</sup> Ibid., Duursma and Karlsrud, *Predictive Peacekeeping: Opportunities and Challenges*, 2.
- <sup>xxxiii</sup> de Coning and Brusset, *Towards a Comprehensive Results-based Reporting and Performance Assessment Framework for UN Peacekeeping Operations*, 19.
- <sup>xxxiv</sup> United Nations, *Under-Secretary-General for Peacekeeping Operations at the UN Security Council Thematic Debate on Peacekeeping Reform and Performance*, 8349th meeting.
- <sup>xxxv</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 31.
- <sup>xxxvi</sup> Duursma and Karlsrud, 'Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations', 5.

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- <sup>xxxvii</sup> United Nations, *Action for Peacekeeping: Declaration of Shared Commitments on UN Peacekeeping Operations*, 2.
- <sup>xxxviii</sup> Cinq-Mars, *Special Investigations into Peacekeeping Performance in Protecting Civilians: Enhancing Transparency and Accountability*.
- <sup>xxxix</sup> High-Level Independent Panel on UN Peace Operations, *Uniting Our Strengths for Peace: Politics, Partnership and People*, 58.
- <sup>xl</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 25.
- <sup>xli</sup> *Ibid.*, 30, 55.
- <sup>xlii</sup> Duursma and Karlsrud, *Predictive Peacekeeping: Opportunities and Challenges*, 2-3.
- <sup>xliii</sup> NYU Center on International Cooperation Netherlands Ministry of Foreign Affairs and UN Peacebuilding Support Office, *Data for Peace and Security: Report of the Practitioners Workshop on Harvesting Best Practices and Building a Community of Practice*, 7.
- <sup>xliv</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 26.
- <sup>xlvi</sup> NYU Center on International Cooperation Netherlands Ministry of Foreign Affairs and UN Peacebuilding Support Office, *Data for Peace and Security: Report of the Practitioners Workshop on Harvesting Best Practices and Building a Community of Practice*, 7.
- <sup>xlvi</sup> *Ibid.*, 8, 13.
- <sup>xlvi</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 24.
- <sup>xlvi</sup> Hunt, 'All necessary means to what ends? the unintended consequences of the 'robust turn' in UN peace operations', 115-16, Karlsrud, *Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies*, 150.
- <sup>xlvi</sup> MacGinty, 'Peacekeeping and Data', 703.
- <sup>i</sup> de Coning and Brusset, *Towards a Comprehensive Results-based Reporting and Performance Assessment Framework for UN Peacekeeping Operations*, 6.
- <sup>li</sup> NYU Center on International Cooperation Netherlands Ministry of Foreign Affairs and UN Peacebuilding Support Office, *Data for Peace and Security: Report of the Practitioners Workshop on Harvesting Best Practices and Building a Community of Practice*, 14.
- <sup>lii</sup> Day, *Can Data Save UN Peacekeeping?*
- <sup>liii</sup> Peter, *UN Peace Operations: Adapting to a New Global Order?*, 3.
- <sup>liv</sup> Expert Panel on Technology and Innovation in UN Peacekeeping, *Performance Peacekeeping*, 5.
- <sup>lv</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 2.
- <sup>lvi</sup> *Ibid.*, 22.
- <sup>lvii</sup> Day, *Can Data Save UN Peacekeeping?*
- <sup>lviii</sup> Duursma and Karlsrud, *Predictive Peacekeeping: Opportunities and Challenges*, 3.
- <sup>lix</sup> NYU Center on International Cooperation Netherlands Ministry of Foreign Affairs and UN Peacebuilding Support Office, *Data for Peace and Security: Report of the Practitioners Workshop on Harvesting Best Practices and Building a Community of Practice*, 7.
- <sup>lx</sup> Spink, *Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations*, 24-25.
- <sup>lxi</sup> MacGinty, 'Peacekeeping and Data', 701.
- <sup>lxii</sup> United Nations General Assembly, *Report of the Special Committee on Peacekeeping Operations - 2018 substantive session (New York, 12 February–9 March 2018)*, 21.
- <sup>lxiii</sup> Duursma, 'Counting Deaths While Keeping Peace: An Assessment of the JMAC's Field Information and Analysis Capacity in Darfur', 828.