Who Keeps the Peace? Gendered Effects in UN Peacekeeping[*]

Sky Kunkel[†]

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Abstract

Which peacekeepers keep the peace? Since the end of the Cold War in the early 1990s, UN Peacekeeping Operations (PKOs) have dramatically increased in size and scope. However, most analyses of peacekeepers' effectiveness fail to account for the gendered effects of women peacekeepers. Conversely, work exploring the role of gender in peacekeeping has not taken advantage of recent advances in data availability that allow for more fine-grained analyses of the local, subnational effects of peacekeeping deployments. I attempt to unify the relevant theoretical literature into a single framework, emphasizing how women peacekeepers increase local trust and thus reduce political violence. I also contribute to the empirical literature by using PRIO grid-level data to test whether peacekeeping forces with larger shares of women are more effective at reducing violence. More specifically, I use the Robust African Deployments of Peacekeeping Operations dataset and the Georeferenced Events Database to test how female peacekeepers affect violence against civilians by state and rebel actors. Using instrumental variable analyses and recent advances in optimal matching, I find strong evidence the female peacekeepers lead to dramatically less rebel violence against civilians than their male counterparts. These findings suggest that female peacekeepers are more important to keeping the peace than previously thought.

Keywords: UN, peacekeeping, conflict, peace science

Word count: 9,335

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1   Introduction

Past research on United Nations (UN) peacekeeping has consistently led to astounding results: peacekeeping works. Whether focusing on peacekeepers as a tool to protect civilians from violence,[1] a tool of mediation to bring together opposing sides for negotiations,[2] or as a stabilization factor within failing or failed states,[3] peacekeepers seem to prevent violence at a state level. While several existing pieces of literature[4] have robustly established that more peacekeepers lead to less violence against civilians,[5] especially from rebel actors, there is little understanding of what happens when peacekeepers are present at a local level. In fact, the only large-scale, quantitative research examining whether peacekeepers effectively prevent political violence concludes that as the number of peacekeepers

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1. Hultman, Kathman, and Shannon 2013, 2014.

2. Ruggeri, Gizelis, and Dorussen 2013; Hinkkainen Elliott, Polo, and Eustacia Reyes 2021; Greig and Diehl 2005.

3. Diehl, Reifschneider, and Hensel 1996; Doyle and Sambanis 2000.

4. Hultman, Kathman, and Shannon 2013; Fjelde, Hultman, and Nilsson 2019; Carnegie and Mikulaschek 2020.

5. In this paper, I use violence against civilians and political violence interchangeably to discuss intentional acts of violence taken by organized actors against civilians.

present increases, the likelihood of violence against civilians decreases.

Yet, these findings come into question when we examine local-level violence and peacekeeper presence. Take, for example, the following comparisons of a few peacekeeping bases in the Democratic Republic of the Congo.[6] In this situation, the UN mission present is working under a Ch. VII mandate, meaning they are mandated to patrol locally and to protect civilians from violence.

Lying on the eastern border of the Democratic Republic of the Congo, near Rwanda and Lake Kivu, approximately 9 kilometers away from each other are the two towns of Mushaki and Sake. From January to May of 2009, there were three hundred and twenty-four civilian deaths at the hands of rebel and government actors. In response, the UN sent a contingent of roughly four hundred peacekeepers to establish bases in each town, and the deaths per month in the following five months dropped eightfold to eight deaths per month. With shifting priorities throughout the country, however, the UN Mission to the Democratic Republic of the Congo (MONUC) switched some peacekeepers out and lowered the total troops in the two bases to three hundred troops. Even more astonishing, with twenty-five percent less operating capacity between the bases in Mushaki and Sake, there were *zero* civilian deaths by rebel or state actors in the following five months until March of 2010. In fact, from April 2010 until December of 2017 (a time span of ninety-three months), with a peacekeeping unit that stayed at around three hundred peacekeepers, there were a grand total of seventeen civilian deaths, or around one death every five months for over seven years. This astonishing record of peace in Mushaki and Sake at the hands of a relatively small peacekeeping unit, however, leads to a puzzle. If more peacekeepers lead to fewer deaths, as argued by most analyses of peacekeeping effectiveness, then how did a smaller contingent of peacekeepers so effectively keep the peace for so long?

In the above vignette, the missing puzzle piece is the *type* of peacekeeper deployed. I argue that, more important than the number of peacekeepers present, the gender makeup

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6. All of the empirical claims and evidence in this paragraph are taken from the UCDP and RADPKO data and are replicated within the online replication archive. Distance between locations was calculated using Google Maps.

of peacekeepers matters. During the first deployment to Mushaki and Sake, the UN contingent consisted of all male peacekeepers. In November of 2009, the peacekeeper switch was not just one of numbers, but also of gender; starting that month, the peacekeeping contingent in these bases went from zero to twenty percent female peacekeepers. In the remainder of the time in those bases, the female peacekeepers made up anywhere from ten to twenty percent of the peacekeeping force deployed. In these missions, the type of peacekeeper was instrumental in violence outcomes and peacekeeper effectiveness. Female peacekeepers compliment the effectiveness of their male counterparts, in large part because they can do the traditional tasks of peacekeepers via force and naming and shaming, while building a greater trust in the population that leads to more operational intelligence for the peacekeeping unit. My paper further argues that women are essential to the effectiveness of preventing violence in peacekeeping missions, as more trust leads to less violence.

Walter et al. point out that while we we know the deployment of peacekeepers decreases violence against civilians, it is unclear why.[7] The causal mechanisms of the country-level aggregate studies do not translate into local-level effects or UN policy. These studies show that more peacekeepers cause lower levels of violence against civilians; importantly, however, there are no outcomes of this research for policy-makers to implement. As Walter et al. argue, *send more peacekeepers all the time* does not make for good policy. Those analyses often neglect to account for treatment effect heterogeneity of peacekeepers and instead focus on the raw counts of peacekeepers present. These studies were a necessary first-step in the research of UN peacekeeping. Nonetheless, I build off of their arguments to further examine whether UN peacekeeping presence is the causal mechanism leading to lower civilian casualties. By further theorizing on the gendered effects of peacekeepers, I show that female peacekeepers play a substantial role in how peacekeeping operations (PKOs) reduce violence against civilians.

This paper proceeds as follows. First, I review the previous contributions to the peacekeeping effectiveness literature, and examine the literature on the efffects of female

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7. Walter, Howard, and Fortna 2021.

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peacekeepers. Second, I construct a framework suggesting why peacekeepers in general prevent violence locally; I then attempt to unify the relevant theoretical literature into a single framework, emphasizing how women peacekeepers increase local trust and thus reduce political violence. Next, I outline my research design and data, explaining why and how both are instrumental in determining causal relationships in some of the most advanced methods used in the peacekeeping literature. Finally, I analyze the results of my models, explaining their implications and where future scholars should proceed from here.

2 Previous Literature

2.1 Peacekeepers and Violence Prevention

The existing literature on UN peacekeeping effectiveness established that peacekeeping works. Hultman, Kathman, and Shannon argue that UN troops and police reduce the amount of violence against civilians while observers cause an increase in violence.[8] Bara and Hultman compare UN and non-UN peacekeeping and shows that UN peacekeepers are the only actors between the two that prevent violence against civilians by non-state actors.[9] However, these analyses and others tend to use data on peacekeepers granular to the country level and often measure in year intervals. If measured at the year level, this sets up a substantively significant assumption that peacekeepers are distributed evenly throughout the year. Peacekeeping missions are notorious for having varying levels of peacekeepers, as troop-contributing countries often send troops late or pull them out before the UN's mandated arrival or exit date.

While this assumption biases the data one way, the other assumption made by most of the literature biases the data geospatially. All of the earlier quantitative work on peacekeeping effectiveness utilizes data aggregated at the country level. In other words, it necessarily assumes (due to data availability) that peacekeepers and violence are spread

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8. Hultman, Kathman, and Shannon 2013 point out that this is likely because UN observers are unarmed, which indicates a lack of commitment by the international community to peace, showing belligerents that their actions likely will not have dire consequences.

9. Bara and Hultman 2020.

evenly across the country, from states as small as Burundi to as large as the Democratic Republic of the Congo (DRC), with the latter possessing eighty-four times the area than the former.[10] This assumption, of course, cannot be accurate due to variations in troop size, mission mandates, and even topographical land features. To be clear, this assumption is one that was necessary at the time due to the data researchers had access to, as there was only country-level data of UN peacekeepers. Yet, treating each country as functionally the same ignores the possibility of variance subnationally, including the areas peacekeepers select into; i.e., violence in one country is likely caused by different factors than violence in another, notwithstanding the fact that violence spillover may occur, violating the independence assumption. These methodological challenges extend to other aspects of peacekeeping, such as the nonrandom selection of PKO deployment.

Multiple articles detail the local effects of peacekeeping, such as Beardsley and Gleditsch and Peitz and Reisch identifying the conflict displacement of UN PK forces between rebel-government dyads,[11] and Ruggeri, Dorussen, and Gizelis examining how peacekeepers effect the duration of violence locally.[12] However, the only article so far to examine the local effects of peacekeepers on violence against civilians at a large-N comprehensive level is Fjelde, Hultman, and Nilsson[13] Fjelde, Hultman, and Nilsson find that "even when accounting for the non-random selection of peacekeepers to a location, their presence has a negative and significant effect on reducing the risk of violence against civilians by rebel actors."[14] As explained further in the Research Design and Methodological Contributions sections, this paper addresses a number of important gaps in Fjelde, Hultman, and Nilsson's research, such as their use of propensity score matching, sample size, definitions of political violence, and more.

I extend Fjelde, Hultman, and Nilsson's work because a primary analysis relied on an incorrect measure of the treatment used after matching. While their sample was matched with a binary indicator of whether a grid received peacekeepers or not, the subsequent

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10. From CIA Factbook DRC and CIA Factbook Burundi
11. Beardsley and Gleditsch 2015; Peitz and Reisch 2019.
12. Ruggeri, Dorussen, and Gizelis 2017.
13. Fjelde, Hultman, and Nilsson 2019.
14. Ibid, 125.

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analyses utilized a continuous variable as the treatment.[15] Running an analysis on a sample with a different measure of the treatment than the procedure used to match units leads to incorrect results that can result in substantially different results than the intial model suggests. Thus, my paper addresses this methodological miscalculation with new data and methods that examine the original question with greater leverage.

Furthermore, while Fjelde, Hultman, and Nilsson make several concessions and assumptions due to data constraints, my research examines the question of interest with more recent innovations in causal inference. First, Fjelde, Hultman, and Nilsson use propensity score matching, AKA greedy matching, to account for the non-random deployment of peacekeepers. Their justification for this is appropriate, as treating areas peacekeepers were and were not deployed to as functionally the same inherently biases the DV of violence against civilians since other reasons could plausibly be causing PK deployment to those areas. Fjelde, Hultman, and Nilsson also point out that peacekeepers might deploy more to higher violence areas, making it seem like peacekeeping increases violence, or they might deploy to lower violence areas, thus influencing the outcome towards peacekeeping as effective. However, King and Nielsen outline several reasons why propensity score matching often increases bias, showing that greedy matching often "increases imbalance, inefficiency, model dependence, research discretion, and statistical bias."[16] The model dependency aspect of propensity score matching is especially troubling, since reducing model dependency is one of the main benefits of matching.[17]

While my research innovates on the methods we use to analyze peacekeeper effectiveness, I also contend that previous research missed one of the most important aspects of peacekeeper deployed in a conflict: gender. In fact, recent evidence suggests that female peacekeepers have a different effect on the overall effectiveness of peacekeeping units.[18] I contribute to the existing literature on how the gender of peacekeepers matters, and further develop the theoretical understanding of how women make peacekeepers more

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15. This was verified with their replication code, as the paper is ambiguous on their matching procedure. I discuss this issue in more detail in my appendix.

16. King and Nielsen 2019, 435.

17. Ho et al. 2007.

18. Narang and Liu 2021.

effective.

2.2 Gender and Peacekeepers

Various scholars have discussed the theoretical reasons for why increasing female partic-
ipation in peacekeeping missions is beneficial for the mission itself and for locals. For
example, Karim and Beardsley argue that an increase in female peacekeepers and peace-
keepers from countries with better gender equality are associated with lower allegations
of sexual exploitation and abuse levied against the peacekeepers.[19] Further studies into
the effectiveness of female peacekeepers show that women can have an important impact
on increasing trust and promoting gender equality through their belief's in their own
ability,[20] and that countries tend to send female peacekeeping units into easier cases.[21]

Narang and Liu's article is the first systematic analysis of female particpation in
peacekeeping, showing that the inclusion of women into PK operations does not "come at
the cost of 'effectiveness.'"[22] However, that does not necessarily engage with the theories of
peacekeeping effectiveness by gender. Further analysis is needed at the subnational level
and to determine if the gendered participation of peacekeepers results in lower violence.
Narang and Liu's analysis also importantly focus on peace duration in post-civil war
societies. While important for various empirical and theoretical reasons, this result does
not speak to the ability of female peacekeepers to protect civilians per se. Thus, my
theory further addresses these gaps by distinguishing between the gendered affects of
peacekeepers. The peacekeepers in Ch. VII missions often target rebels with intentional
violence, but can only do so when they have reliable intelligence from civilians that is
gained through trust.[23] Since women are more likely to increase the trust of civilians, I
expect peacekeeping units with more women to have a stronger effect on violence.

I contribute to the existing research by unifying the literature on female peacekeepers
and their effects into a single framework of how they change local trust of peacekeepers

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19. Karim and Beardsley 2016, 100.
20. Karim 2017, 842.
21. Karim and Beardsley 2013.
22. Narang and Liu 2021: 4
23. Giray 2022; Duursma 2021.

and thus reduce political violence. When peacekeeping units with more women are present in localized spaces, civilians increase their trust of peacekeepers, which then leads to less violence against civilians than if peacekeeping troops with more men were present, and less than if no peacekeeping units were present.

3 Theoretical Framework

3.1 Why Commit Political Violence?

Before examining how peacekeepers reduce violence against civilians, this section examines *why* government and rebel groups engage in political violence[24] directed towards civilians. In the following sections, I theorize that peacekeepers change the costs of committing political violence by the warring actors. Therefore, an essential first step is determining the baseline incentives for committing political violence so that we can know what and how peacekeepers change the outcomes of those incentives. Establishing the baseline is critical so that further theorizing and empirical analysis can determine what the variation from the baseline means. All variation is impossible to interpret without a baseline or point of reference.

I designate the literature on why incumbent and rebel groups commit violence against civilians into "positive" and "negative" incentives. Positive incentives are reasons it could be a net benefit for a particular group to commit violence against civilians, while negative incentives are reasons political violence could harm the group that commits it. This distinction is necessary because local peacekeeper and base presence can both enhance the negative incentives and diminish the return on positive incentives to political violence taken by state and rebel actors.

Regarding positive incentives for political violence, there are four reasons governments and rebels commit violence against civilians. Political violence signals to civilians the high costs of supporting the other side[25] or in suppressing dissent.[26] Kalyvas further theorizes

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24. Political violence is thus defined as the intentional targeting of civilians to achieve political goals. I refer to political violence and violence against civilians interchangeably.
25. Kalyvas 2006; Weinstein 2007.
26. Hill and Jones 2014; Davenport 1995.

that when actors seek information, they commit violence against civilians.[27] Finally, political violence helps incumbents and rebels as each side tries to communicate their capabilities, resolve, or general power to the other side.[28]

For actor-specific positive incentives to violence against civilians, states often use it to suppress threats or insurgencies to the incumbent.[29] The other reason incumbents may commit political violence is the strategic benefits it brings, although this may spur support for the rebels.[30] In other words, states want to punish the supporters of rebel groups and thus commit violence against civilians to hurt those supporters. Rebels, on the other hand, commit political violence to either impose costs on the government that can weaken the incumbent[31] or to draw international attention to their cause.[32] Hinkkainen Elliott et al. distinguish that this is only necessarily a benefit when the group is already employing terrorist tactics.

Regarding negative incentives to violence against civilians, government and state groups have two reasons violence against civilians may incur costs harmful to their overall cause. Since civilians provide material and political support, actors often lose that support when committing political violence.[33] Thus, the lower the support by civilians, the more violent coercion emerges, leading to lower civilian support and so on.

There are two state-specific reasons for political violence and one rebel-specific type that result in negative incentives for each. For example, as states commit indiscriminate violence against civilians, civilians face lower relative costs of physical violence to support rebels. Since they are already targets of violence from the government, the threat of an increased amount of violence carries with it lower costs relative to escalation from no violence to violence.[34] Additionally, incumbents can face accountability post-war if the rebels succeed; leaders may become desperate and have a higher tolerance for political violence as rebel groups gain more of an advantage, but this can result in the leader

27. Kalyvas 2006.
28. Schelling 1966; Hinkkainen Elliott, Polo, and Eustacia Reyes 2021.
29. Davenport 1995; Lyall 2009.
30. Kalyvas 2006.
31. Lake 2002.
32. Hinkkainen Elliott, Polo, and Eustacia Reyes 2021.
33. Weinstein 2007; DeMeritt and Young 2013.
34. Mason and Krane 1989.

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and government forces being prosecuted or targeted after the war.[35] Finally, rebels face potential retaliation from the government for political violence, as the targeted civilian population may encourage incumbents to take harsher and more violent steps against rebels.[36]

3.2   Altering the Costs of Political Violence

After Chapter VII deployment, peacekeepers have two primary mechanisms that enable them to locally prevent violence against civilians. These mechanisms involve stopping active violence against civilians or deterring it in the future; peacekeepers achieve this by direct action and/or the threat of action. In other words, peacekeepers stop violence and deter violence at time t through immediate actions and the threat of future actions at time $t + 1$, $t + 2$,.. and so on. These mechanisms come directly from peacekeeper presence among local actors.

Because actors have incentives to commit violence against civilians, there are two potential outcomes of this violence (assuming it will be attempted). Either the violence will occur now, designated as active political violence, or it will occur later, designated as future/potential political violence. Chapter VII UN peacekeeping missions give peacekeepers the authority and mandate to protect civilians and patrol. So, to arrive at a site of either active violence against civilians or potential violence against civilians, peacekeepers seek out violence and arrive at active political violence, or they patrol locally and arrive at a site of active or potential political violence.

After arriving at a site of active or potential political violence at time t, there are four ways that peacekeepers reduce political violence either immediately or in the future. Arriving at active political violence, peacekeepers with a Ch. VII mandate can directly attack the forces committing the violence, which leads to a loss of resources, more power imbalances, and less capacity to commit political violence in the future. Importantly, this only applies to violence against civilians from rebels, as peacekeeper presence requires host-state consent; peacekeepers are thus unlikely to attack government forces directly

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35. Keels and Greig, n.d.; Downes 2006.
36. Hinkkainen Elliott, Polo, and Eustacia Reyes 2021; Abrahms 2013.

for fear of expulsion from the country. When peacekeepers commit violence to stop rebel political violence, the loss of resources and control can give rebels more incentives to commit violence against civilians as they try to reassert control over the local population and extract resources to reassert themselves at the top of the power structure and to compete with the state. To stop active political violence, peacekeepers resort to the use of force directly, although their presence on arrival can also signal to actors that peacekeepers can report them internationally. To prevent future political violence at a site of active political violence, peacekeepers can either report the violence, or by using violence now which confers credibility to commit violence later. So, peacekeepers can achieve the goals of Ch. VII missions by stopping active political violence through force and can prevent future political violence with reporting, threat of reporting, and threat of force.

H1: Peacekeepers will not effect state violence against civilians in a grid.

I expect PK presence to have a higher overall effect on reducing violence against civilians from rebel actors. Rebel groups do not share the same power of host-state consent required for PKOs, so they are more directly affected by PK presence than government forces are. Ultimately, while the mechanism outlined above directly affects the power to hurt from government forces, states retain the power of consent required for PKO operation. This notably does provide some (but not full) constraints on what peacekeepers can do to prevent violence against civilians, and thus, causes peacekeepers to have a higher relative effectiveness against political violence from rebels than from incumbents.

H2: As more peacekeepers are introduced into a grid, rebel violence against civilians will decrease at a higher rate than if none were present.

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3.3 How Female Peacekeepers Build Greater Trust

Not all peacekeepers are created equally. I argue that the existing theoretical evidence supports the contention that female peacekeepers will build greater trust than their male counterparts. Why would female peacekeepers increase trust from locals at a higher rate? Moreover, how does trust lead to lower civilian casualties? I establish the expectation that in terms of reducing violence against civilians, the hierarchy is a story of how some peacekeepers are better than others, but that any peacekeepers are better than none.

The mechanism at play here is one of intelligence. Recall that peacekeepers in Chapter VII missions are mandated to find and respond to violence. Warzones are not information rich environments, however. Not only are peacekeepers often contending with incumbent and rebel violence ranging from the battlefield to the streets, they must also navigate amongst a population that sees them as the outsider in the conflict. Peacekeepers thus face large obstacles that will hamper how effectively they keep the peace. Importantly, this is linked: If local populations do not trust or support peacekeepers, then peacekeepers can no longer gather intelligence.[37] Moreover, the distrust of peacekeepers can lead to more support for rebel groups that can further harm civiilians.[38] This is especially true regarding rebel groups, who are more likely than the state to act as insurgents who blend in to the population.

Yet, despite how well trained peacekeepers are, the advanced equipment they use, or even how good their leadership is, none of that can distinguish a rebel actor from a civilian. Moreover, any miststeps from peacekeepers, e.g. accidentally killing civilians, would likely lead to costs from the civilian population that would further isolate the peacekeepers. While each of these factors makes it incredibly difficult for peacekeepers to establish and maintain peace, an astounding amount of research has determined that more peacekeepers leads to less civilian deaths.[39] Even research that examines subnational deployments in peacekeeping that could potentially account for the difficulties peacekeepers face find that peacekeepers reduce violence against civilians.[40] However, more recent evidence shows

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37. Giray 2022.
38. Ibid.
39. Hultman, Kathman, and Shannon 2013; Carnegie and Mikulaschek 2020; Bara and Hultman 2020.
40. Fjelde, Hultman, and Nilsson 2019.

that, more important than the number of troops, peacekeepers rely on early warning systems and intelligence to prevent violence against civilians.[41] I argue that this is even more important when we look at how female peacekeepers build trust moreso than their male counterparts, which leads to more effective peacekeeping.

When a peacekeeping unit with more women on average arrives in a grid, locals build more trust than when less women are present. Why? I draw on evidence from six different mechanisms on how women ultimately increase trust in peacekeepers from local populations. I import this theory to the local level, explicating that each of these mechanisms only works when peacekeepers interact with civilians. Peacekeepers build trust through their local interactions, and more women in the unit leads to more trust.

First, women peacekeepers are self-confident in their efficacy and unique contributions and importance to peacekeeping units.[42] By being more self-confident, they import this confidence to locals who then trust them more.[43] Second, women peacekeers are better at handling the sensitive situations that occur during peacekeeping missions in insecure states.[44] This includes activities such as personal searches, interviewing victims of violence, and listening to victims that experience sexual and gender-based violence (SGBV). Women within these communities are often more comfortable with female peacekeepers, and sometimes are restricted from speaking to male peacekeepers.[45] As those within the community, and especially women, become more comfortable with peacekeepers, they are more likely to trust them. Third, female peacekeepers, on average, have less "militarized masculinity" than male peacekeepers.[46] This masculinity hampers trust between civilians and peacekeepers, and further contributes to them being seen as an occupier there to enforce peace through force. As outsiders, peacekeepers with more masculinity are more likely to be seen as an occupying army than as a friendly defender of human rights by the locals. Female peacekeepers operating with less militarized masculinity would thus be seen as more friendly, leading to increased local perceptions of them.

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41. Duursma 2021.
42. Karim 2017.
43. Ibid.
44. UNIFM 2010.
45. UNIFM 2010.
46. Karim and Beardsley 2013.

The fourth reason female peacekeepers build trust is that they are more likely to restrain their male counterparts from committing SGBV and other illicit activities.[47] UN Peacekeepers have committed many crimes against the civilians they are there to protect, such as inciting a cholera outbreak in Haiti or the use of "women and children as sex slaves" in Bosnia.[48] While this inherently puts women as the group primarily responsible for restraining male peacekeepers instead of UN leadership and training, it's still important to acknowledge how women tend to reduce the negative externalities of male peacekeepers and decrease the chances of civilians losing trust in the peacekeepers. Fifth, women peacekeepers are inherently less threatening to civilians, which further builds trust within the local community.[49] Sixth, and finally, more women within the forces of the security apparatus leads to positive impacts on how locals see their "legitimacy and trustworthiness," and that it "may increase both men's and women's willingness to report other gendered and nongendered crimes."[50]

Each of the aforementioned mechanisms increases locals' trust of UN peacekeepers when the proportion of peacekeeping women is higher. Two important things happen as locals increase their trust in peacekeepers. First, increased local trust in peacekeepers leads civilians to be more willing to report crimes and violence to peacekeepers,[51] and especially a higher willingness to report SGBV.[52] Second, more trust from locals leads to "increased operational intelligence/situational awareness, including knowledge about movements in the community of arms, contraband or weapons caches."[53] Each is important in reducing political violence; as peacekeepers learn about more crimes, violence, and other important events (and hence name and shame) than they otherwise would, their ability to deter political violence increases. With more trust within the community, and thus more reporting and intelligence from civilians to peacekeepers, the rebels now have higher costs to violence, as it is more likely peacekeepers will learn about it and

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47. Narang and Liu 2021.

48. Pillinger, Hurd, and Barnett 2016; James and Tribune 2002.

49. Simić 2010.

50. Gunderson and Huber 2022: 3

51. Gunderson and Huber 2022.

52. Narang and Liu 2021; Karim and Beardsley 2016.

53. UNIFM 2010: 28

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respond. Moreover, as peacekeepers now have more information about arms and other illicit activities throughout the area they deploy to, they increase their ability to restrict the flow and thus decrease the threat of nonstate actors to the civilian population.

Finally, my theoretical framework assumes that female peacekeepers have the same baseline of abilities that male peacekeepers have in terms of the traditional mechanisms used to stop violence. In other words, I assume that female peacekeepers should have the same ability to stop the violence through direct action (e.g., violence) and reporting (e.g., naming and shaming). While this is a substantial assumption, it lays outside the scope of this paper to compare the direct abilities of male and female peacekeepers. This assumption, combined with the six mechanisms listed previously that directly lead to more trust and thus more operational intelligence, lead to my final hypothesis that female peacekeepers will have a larger negative effect on rebel violence than their counterparts.

H3: More female peacekeepers will have a larger effect on reducing rebel violence than more male peacekeepers.

4   Research Design

In this section, I explicate how I test the proposed hypotheses outlined above. Important to distinguish is the necessity of testing these hypotheses at a subnational level. Each of the mechanisms outlined above should independently affect violence against civilians, but testing it must be done subnationally. Female peacekeepers' interactions with populations that lead to more intelligence and thus more efffectiveness, mean that the mechanisms operate at a local level.

4.1   The Data

To further understand when and where peacekeepers save civilian lives, scholars need accurate and disaggregated sources of data on both violence against civilians and UN peacekeeper movement. I follow the lead of other research in this area, such as Fjelde, Hult-

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man, and Nilsson,[54] Beardsley and Gelditsch,[55] and Ruggeri et al.;[56] each use the UCDP's Georeferenced Dataset (GED) from the Uppsala Conflict Data Program.[57] The UCDP covers "all cases where one-sided violence by an armed actor reaches an annual twenty-five-fatality threshold."[58] To geolocate peacekeeper movement, I use the Robust African Deployments of Peacekeeping Operations (RADPKO), as opposed to GEO-PKO.[59] While GEO-PKO contains more temporal variation than RADPKO, it does not contain information on the gendered breakdown of peacekeepers like RADPKO does.

PRIO   In this paper, the unit of analysis is a PRIO-GRID, which is how the UCDP and RADPKO organizes data. PRIO-GRID is a system introduced by Tollefsen et al. that divides the world into approximately 50 km x 50 km grids, or around 0.5°, regardless of national or geographic boundaries.[60] Disregarding the land boundary has several practical applications, but none more so than the fact that that the boundaries are randomly selected and thus fully exogenous of the data that exists within each grid. PRIO grids being created without any direct influence of land or geography means at the unit of analysis, measurement errors in the coding of the violence data can be assumed to be as-if randomly distributed among units. We can also assume that any missing data is distributed randomly, meaning there are no endogeneity concerns between potential missing data and its correlation with the treatment assignment. In the GED data, it is hard to be certain that all instances of violence against civilians are identified correctly and fully accurate. Nevertheless, because the grid borders of PRIO are exogenously determined independent of the violence within, and there is thus no causal connection between whether violence occurred and the grid assignment, we can assume that any characteristics determining why this data is missing is spread evenly between the grids and will thus bias the data evenly. PRIO also aggregates the data on the control and matching variables I use in this study, which are described in depth in Section 4.5.

54. Fjelde, Hultman, and Nilsson 2019.
55. Beardsley and Gleditsch 2015.
56. Ruggeri, Dorussen, and Gizelis 2017.
57. Raleigh et al. 2010.
58. Fjelde, Hultman, and Nilsson 2019.
59. Cil et al. 2020.
60. Tollefsen, Strand, and Buhaug 2012.

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UCDP GED   The Uppsalla Conflict Data Program's Georeferenced Events Database[61] provides data on violence and conflict throughout the world. Specifically, the UCDP assembles the data with various sources and reliability checks.[62] For example, the coding guidelines are thorough and provide layers of reliability and inter-coder checks to ensure accuracy. The GED measures violence against civilians as violent events taken against civilians that are not the result of collatoral damage. In other words, the GED records events as intentional acts of violence. In this paper, I match the GED data to the RADPKO data to geolocate both the violence and peacekeeper locations and to answer my research question.

Table 1: Descriptive Statistics of the Dependent Variables

Statistic	N	Mean	St. Dev.	Min	Max
Gov VAC (C)	317,683	0.023	1.949	0	801
Gov VAC (B)	317,683	0.001	0.028	0	1
Reb VAC (C)	317,683	0.043	1.718	0	336
Reb VAC (B)	317,683	0.002	0.040	0	1

RADPKO   The majority of the quantitative literature that analyzes peacekeeper effectiveness almost exclusively analyzes data at the country level. In using data aggregated at this level, researchers necessarily assume that the spatial distribution of peacekeepers and violence is evenly spread around the nations they deploy to, primarily because of a lack of subnational data. However, the Robust Africa Deployments for Peacekeeping Operations (RADPKO) provides information on UN peacekeeping operations throughout Central and Western Africa. Hunnicutt and Nomikos 2020 put together the RADPKO dataset because of an "empirical levels-of-analysis-problem and divergent sampling strategies"[63] present in the existing quantitative literature. I use RADPKO because it focuses on the disaggregation of peacekeeping forces in various practical ways, especially relating to GEO-PKO.

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61. Sundberg and Melander 2013; Davies, Pettersson, and Öberg 2022.

62. See UCDP's "Data Collection" section of their website: https://www.pcr.uu.se/research/ucdp/methodology/

63. 646

RADPKO contains geospatially and temporally disaggregated data down to a more granular level than ever before available to researchers.[64] By going through archival data available from the UN Department of Peace Operations (DPO), the dataset was constructed at an incredibly fine-grained level. RADPKO disaggregates deployed peacekeepers by gender and peacekeeper type,[65] thus allowing for a more thorough, subnational analysis.

Statistic	N	Mean	St. Dev.	Min	Max
Total PKs Deployed	317,683	30.467	230.716	0.000	6,615.667
Female PKs Deployed	317,683	0.894	9.492	0.000	402.798
Male PKs Deployed	317,683	29.635	223.695	0.000	6,425.000
Gender Balanced Units	317,683	0.024	0.154	0	1
Gender Un-Balanced Units	317,683	0.024	0.154	0	1

Table 2: Descriptive Statistics of the Independent Variables

Another significant benefit of using the RADPKO data is that it encompasses nearly the entire range of data for PKOs with a Chapter VII mandate. In this sense, each PKO in the RADPKO dataset has the authority and mandate to patrol locally and protect civilians. While not inherently the only type of peacekeeping mission that matters, the assumption that peacekeepers stop violence where it happens and the assumption that they respond to violence temporally require the PKO to have the ability to respond to local-level monthly violence without UNSC approval. Without a Chapter VII mandate, peacekeepers have their hands tied and thus have little incentive or ability to respond to violence.

Even more importantly, the causal mechanism of the gendered effects of peacekeepers can only work at a local level. For female peacekeepers to build trust with civilians, and thus allow peacekeepers to respond to violence more effectively, local interactions are required. Studying this mechanism at a national level would bias the results, so this study uses RADPKO for the subnational data available.

RADPKO covers PKO movement when deployed in the following countries/regions:

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64. Ibid.

65. E.g., military, police, observer.

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Sierra Leone, the Democratic Republic of Congo, Liberia, Côte d'Ivoire, Burundi, Sudan, South Sudan, Abyei,[66] Chad, Mali, and the Central African Republic.

Finally, since this data covers all Chapter VII missions, the entire universe of cases available to analyze. In other words, this sample is only lightly truncated[67] and gives a substantial number of observations to answer the research question and test the hypotheses proposed.

4.2   Various Models & Methods

To understand the gendered effects of peacekeepers on violence, I employ several models and robustness checks. I first note, however, the strong likelihood of the selection effects for peacekeepers. Several papers,[68] and most notably Ruggeri, Dorussen, and Gizelis show that peacekeepers explicitly deploy to so-called "hard-cases"[69] at both a national and subnational level. Hence, research designs that do not take this into account are likely to bias peacekeepers as being less effective than they are in reality, as they select into areas with a higher likelihood of civilian violence than locations without peacekeepers.

In response to the nonrandom deployment of peacekeepers, Ruggeri, Dorussen, and Gizelis developed an instrumental variable that accounts for the selection of where peacekeepers deploy.[70] Ruggeri et al. propose an instrumental variable with potentially endogenous variables that, when interacted, are exogenous to the outcome while also explaining peacekeeper deployments. Advanced further by Fjelde, Hultman, and Nilsson, each paper proposes and uses an instrumental variable of *Total Peacekeepers in Africa × Distance to Capital*. The interaction between the variables is fully exogenous of violence subnationally, while also explaining peacekeeper deployment; as the total supply of peacekeepers throughout Africa increases, it is easier to deploy subnationally. And, as the number of peacekeepers increases, it is also easier to deploy closer to a country's capital. Thus, with

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66. While not an independent country, RADPKO classifies it as such due to the region having a unique peacekeeping mission deployed.

67. Because some missions are ongoing, and the fact that RADPKO only covers PKOs until 2018, the sample does not contain the total universe of cases but is very close to it.

68. Costalli 2014; Fjelde, Hultman, and Nilsson 2019; Hultman, Kathman, and Shannon 2013.

69. Ruggeri, Dorussen, and Gizelis 2018, 1008.

70. Ruggeri, Dorussen, and Gizelis 2017.

this interaction, my models can predict the deployment of peacekeepers to estimate local violence outcomes through a 2-stage least squares (2SLS) regression.[71]

	Female PKs Deployed	Male PKs Deployed
	(1)	(2)
Female PKs in Africa × Distance to Capital	0.005***	
	(0.0002)	
Male PKs in Africa × Distance to Capital		−0.010***
		(0.0005)
Constant	0.003***	0.715***
	(0.0003)	(0.020)
N	317,683	317,683
R^2	0.002	0.001
Adjusted R^2	0.002	0.001
Residual Std. Error (df = 317681)	0.095	2.235
F Statistic (df = 1; 317681)	491.296***	435.832***

*p < .1; **p < .05; ***p < .01

Table 3: Stage 1 results of a 2-Stage Least Squares Regression.

To know whether an instrument is strong and thus whether it will provide reliable estimates, Stock, Wright, and Yugo devised an easily interpretible test of the proposed instrument.[72] During the first stage of a 2-stage, least squares (2SLS) model, the F Statistic provides a strong indicator of the relative power of the instrument. Instruments with an F Statistic greater than 10 mean that the estimates of the instrument are reliable, while those below 10 generally are not. I show the first stage for each instrument used in my analysis in Table 3. The F Statistics for the instruments determining Female and Male peacekeeper deployments are well above the commonly accepted threshold of 10, meaning the instrument will provide reliable estimates in the second stage of the models.

To understand peacekeepers' effect on violence against civilians, I employ several innovative methods in the causal inference literature. These methods represent significant advances over the prior peacekeeping effectiveness literature, with a specific focus on im-

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71. While Ruggeri et al. and Fjelde, Hultman, and Nilsson do not distinguish between the gender of peacekeepers, I use the same instrument but broken down by the gender of the peacekeepers, thus estimating *Total Female Peacekeepers in Africa × Distance to Capital*, and the reverse to estimate the deployment of male peacekeepers. Replicating Fjelde, Hultman, and Nilsson, I log the distance to capital in kilometers, and measure total peacekeepers in Africa in the tens of thousands.

72. Stock, Wright, and Yogo 2002.

proving the accuracy of causal claims made on peacekeeping reduction of violence against civilians. For example, researchers often use matching between observations with bigger datasets to improve the leverage of causal claims. Matching entails examining individual observations that received the "treatment" (i.e., peacekeeper presence) and those that did not. Other papers in the literature use greedy matching with one-to-one replacement; however, propensity score matching has been shown to potentially increase bias and model dependence.[73] These stakes are elevated because peacekeeping missions occur in environments that are not rich in data collection and availability, which further increases the chance of unobserved sorting occurring in the background that could bias the results. My analysis mitigates these issues by instead employing cardinality matching, which, among other benefits, improves the sensitivity test used to determine how biased the results are.[74] Matching sensitivity tests look "for the existence of unmeasured covariates that might bias the comparison between groups."[75] Thus, having an improved sensitivity test for potential missing data while simultaneously avoiding the pitfalls of propensity score matching means we can create a more balanced sample to run the analysis.

4.3 Dependent Variables

Broadly, this paper seeks to answer the question: which peacekeepers reduce violence against civilians? To understand what that means, let us first take a step back and examine how violence against civilians is measured. I quantify violence against civilians in two distinct ways, both as a binary and as a continuous outcome. I measure violence against civilians, coded in the UCDP's data as One-sided violence (OSV).

My dependent variable (DV) of *violence* is measured in two ways to capture as much variation in the data as possible. My analysis innovates on past research by measuring the total violence against civilians by incumbents and rebels. Fjelde, Hultman, and Nilsson argue that expecting peacekeepers to reduce every instance of violence against civilians is too hard of a test; yet, I note that peacekeepers in these missions are given

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73. King and Nielsen 2019.
74. Visconti and Zubizarreta 2018.
75. Carreras, Vera, and Visconti 2022: 12.

an explicit mandate to protect civilians and respond to local violence escalation. The Security Council tasks them to respond to violence, so it is crucial to test whether they do that successfully by preventing outbreaks of violent events and deaths. Further, analyses of PK effectiveness at reducing violence should be hard tests. They must test what peacekeepers are mandated to do to understand how effective they are.

Fjelde, Hultman, and Nilsson measured violence against civilians through a dichotomous outcome "where five or more civilians were killed in a given grid cell in a given month."[76] Measuring violence this way biases the data and conclusions in two distinct ways. First, I argue that the 5-death threshold used is too restrictive and not precise enough to measure violence against civilians accurately, at least in isolation. Ignoring smaller counts of violence bias the estimates if the variable of interest is the total number of deaths; this could result in under-counting the violence, which will bias the estimates higher and show a more substantive effect of peacekeeping without an identical under-counting of peacekeepers. Second, I reconceptualize how Fjelde, Hultman, and Nilsson operationalize "violence" against civilians. While civilian death is a relatively standard measure of one-sided violence (OSV) in the existing literature, it is not accurate to use death as the sole measure of political violence.

To be clear, Fjelde, Hultman, and Nilsson's conceptions of how to measure political violence are useful; I use their dependent variable as a measure of the probability of violence when peacekeepers deploy. My argument instead focuses on the idea of testing different types of violence outcomes rather than a binary measure that may mislead. Thus, I use their conception of political violence (a binary measure of whether >4 civilians died) and my own conception (a count outcome measure the total number of civilian deaths).

As stated in the theory section, I expect the gendered effects of peacekeepers to have different effects on state actors versus rebel groups. Thus, my models disaggregate the violence by the actor committing it.

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76. 112

4.4 Independent Variables

The treatments measured in this paper of gendered peacekeepers are measured based on the analysis used. I run two main analyses over the course of this research, with each analysis broken down into four separate measures of the different dependent variables. When using a continuous measure of peacekeepers, I use the variables *Female PKs Deployed* and *Male PKs Deployed*. Each of these are coded from RADPKO's data on the gender of peacekeepers deployed. Modelling after Fjelde, Hultman, and Nilsson, I measure peacekeepers deployed in the 100s, meaning 5 female peacekeepers in the dataset would be equal to 500 female peacekeepers in reality.

My second set of independent variables measure the gender balance of a peacekeeping unit. Because the second set of models in this paper use a matching approach based on the "treatment" of peacekeeper presence to match treated and untreated grids, I cannot use a continuous variable as the independent variable after matching. Thus, with the matched dataset of approximately 13,000 observations[77] my analysis is run with the measure of treatment as *PK Presence* coded as a binary indicator of whether gender balanced or unbalanced units were present.

For that analysis, my main treatment variables are *Balanced PK Unit* and *Unbalanced PK Unit*. These treatments are dummy measures of the binary treatment variable of peacekeeper presence. *Balanced PK Units* are any measures of the treatment where there were more women present than the median number throughout the sample of deployed peacekeepers. In other words, any peacekeeper unit that had a greater percentage of women than the median 1.5% is coded as a one in *Balanced PK Units*, with the reverse being true for *Unbalanced PK Units*.

4.5 Matching

While the usual definition of "treated" for a matched dataset is those exposed to the treatment, my models instead seek to understand the differences between areas with balanced and un-balanced peacekeeping units deployed. While the instrument described

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77. Divided equally between the treatment and control groups

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above addresses issues of selection effects between female and male peacekeepers, it cannot account for the inherent differences in the cells that peacekeepers deploy to. In other words, male and female peacekeepers could be deployed to locations that are distinct enough to make it harder or easier to keep the peace.

In line with that possibility, I match areas treated by peacekeeping units with more women to those treated by peacekeeping units with less women. In my model, I match on covariates that either play a selection in the treatment, or that could be associated with the outcome (violence against civilians). Accordingly, I match for common covariates in the civil war and peacekeeping literature[78] and those that may plausibly affect the ability of peacekeepers to protect civilians from violence. Each of the following variables come from PRIO, which regularly updates their data and is collected at the same level as the PRIO-grid data used for peacekeeper movement. Similarly, I account for population density under *Population Density*, as a greater number of civilians will result in more people for peacekeepers to protect. My regressions further control for the amount of mountainous terrain as a proxy of navigation difficulty (*Avg. Mountain*), the number of people per grid as a measure of the number of people peacekeepers protect (*Sum Population*), and finally the travel time to the nearest city as a proxy for road and infrastructure conditions that could slow mechanized peacekeeping units (*Travel Time to City*). All control variables are aggregated at the grid-month level, with missing values imputed with the average from all other instances of the variable, a common practice in the methods literature. Finally, I control for the amount of urban area in a grid under *Urban* as a proxy for urban environments since peacekeepers will have more physical objects to navigate around and patrol in more dense urban areas. I also measure nighttime lights as a proxy of economic activity (*Avg. Night Lights*), an approach increasingly common in the civil war and comparative politics literatures.

My analysis mitigates issues of propensity score matching by instead employing cardinality matching, which, among other benefits, improves the sensitivity test used to determine how biased the results are.[79] Matching sensitivity tests look "for the existence

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78. Fjelde, Hultman, and Nilsson 2019.
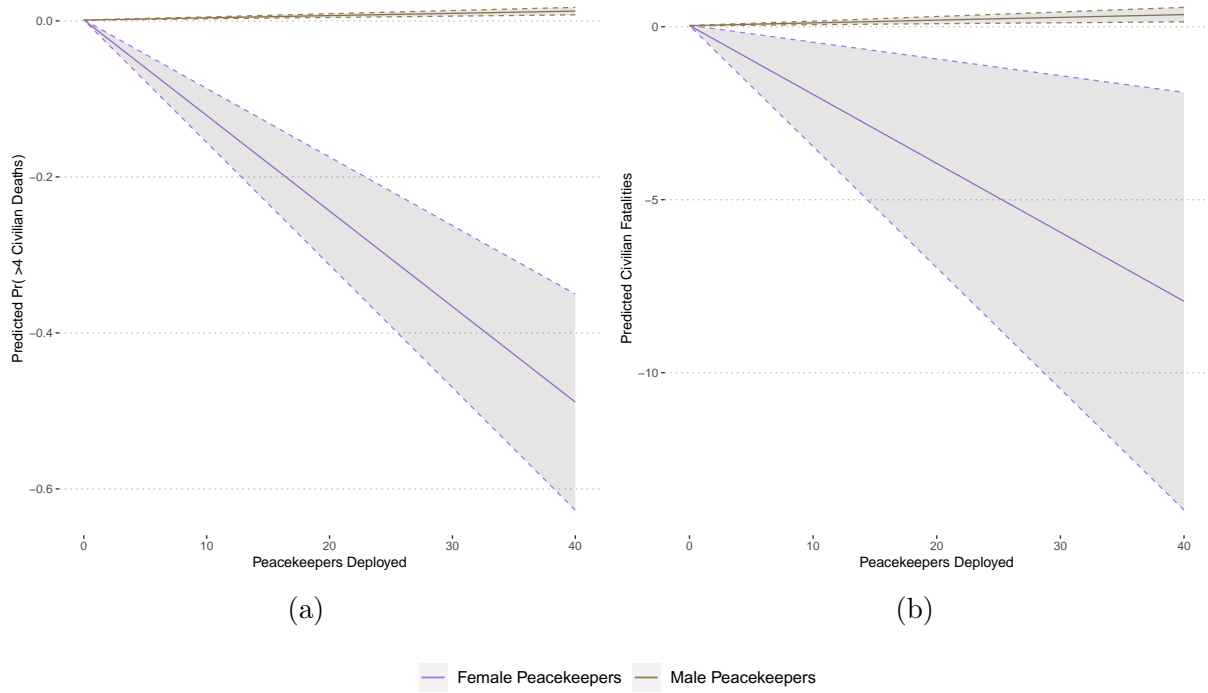79. Visconti and Zubizarreta 2018.

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Figure 1: Predicted probabilities of violence based on gendered peacekeepers deployed. X-axis measures 100s of peacekeepers, meaning the value 20 represents 2000 UN troops and so on.

of unmeasured covariates that might bias the comparison between groups."[80] Thus, having an improved sensitivity test for potential missing data while simultaneously avoiding the pitfalls of propensity score matching means we can create a more balanced sample to run the analysis.

In the models, control for the same variables used for matching, along with other variables that may potentially bias the outcome if not controlled for. For example, I also control for peacekeeper deployment lags, following Hultman et al. (2014) and Hinkkainen et al. (2021), since the deployment of peacekeepers one month can plausibly affect violence the next month.[81]

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5   Analysis/Discussion

Who keeps the peace more effectively, men or women peacekeepers? To answer this question, I first employ ordinary least squares (OLS) models examining the effect of peacekeeper presence on rebel violence against civilians. *H1* posits that female peacekeepers will have a stronger effect on violence against civilians by rebel groups, so Figure 1 plots the predicted probabilities of rebel violence against civilians based on the number of peacekeepers deployed and grouped by gender. Figure 1a compares the effects of male and female peacekeepers on the probability of five or more civilian deaths by rebel groups in a single month. As the figures show, an increase in female peacekeepers is associated with a dramatic decrease in the probability of civilian deaths; an increase of one thousand female peacekeepers is predicted to lower the probability of rebel violence by about 25%. Contrastingly, an increase in male peacekeepers is associated with a minor increase in the likelihood of rebel violence against civilians. An increase of one thousand male peacekeepers is predicts an increased likelihood of rebel violence against civilians by 0.5%, roughly equivalant to 0. Figure 1b compares an increase in peacekeeper presence with the total count of civilian casualties. These figures show similar trends to the binary measure of violence against civilians. As the number of female peacekeepers increases, the predicted total civilian fatalities by rebels decreases. Similarly, the number of male peacekeepers predicts an increase in the count of civilian fatalities very close to zero.

As has been pointed out numerous times in the peacekeeping literature, peacekeepers are often sent to the areas experiencing higher-levels of violence. While the models in Figure 1 do account for the previous 6 months of violence as a control variable to account for this effect, there are still other possibilities about why they may be going to an area with a higher propensity to violence. Even more importantly, existing evidence[82] shows that female peacekeepers are often sent to "easier" cases compared to their female counterparts. Thus, the results in Figure 1 could be the result of selection effects, as peacekeeping commanders select male peacekeepers into more dangerous areas than

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80. Carreras, Vera, and Visconti 2022.
81. Hultman, Kathman, and Shannon 2014; Hinkkainen Elliott, Polo, and Eustacia Reyes 2021.
82. Karim and Beardsley 2013.

female peacekeeprs. To control for those potential selection effects, and other possible concerns of endogeneity, I use an instrumental variable modelled on Ruggeri et al. and Fjelde, Hultman, and Nilsson (Ruggeri, Dorussen, and Gizelis 2017; Fjelde, Hultman, and Nilsson 2019).

Table 4: PKO Effectiveness by Peacekeeper Gender - 2SLS

	Gov VAC (B)	Gov VAC (C)	Reb VAC (B)	Reb VAC (C)
	(1)	(2)	(3)	(4)
Female PKs Deployed	0.001	0.684	−0.265***	−7.262**
	(0.036)	(2.568)	(0.078)	(3.049)
Male PKs Deployed	−0.003**	−0.048	−0.017***	−0.473***
	(0.002)	(0.138)	(0.003)	(0.125)
Avg. Mountain	0.002***	0.074**	0.006***	0.088***
	(0.001)	(0.032)	(0.001)	(0.030)
Travel Time Nearest City	−0.00000***	−0.00001***	−0.00000***	−0.00003***
	(0.000)	(0.000)	(0.000)	(0.000)
Perc. Urban	0.002***	0.059***	0.0003	0.016
	(0.0005)	(0.023)	(0.0005)	(0.026)
PK Lag	0.00000***	0.0001*	0.00000*	0.00003**
	(0.000)	(0.0001)	(0.000)	(0.000)
Violence 6 Months Before	0.0002***	0.005***	0.0003***	0.008***
	(0.000)	(0.001)	(0.000)	(0.001)
Constant	0.002**	0.021	0.009***	0.251***
	(0.001)	(0.062)	(0.002)	(0.068)
N	317,399	317,399	317,399	317,399
R²	0.012	0.003	0.023	0.007
Adjusted R²	0.012	0.003	0.023	0.007
Residual Std. Error (df = 317391)	0.028	1.947	0.039	1.713
F Statistic (df = 7; 317391)	559.958***	129.165***	1,075.181***	313.592***

*p < .1; **p < .05; ***p < .01
Robust Standard Errors clustered at the PRIO-Grid level. B = Binary outcome, C = Count outcome.

I estimate the effects of male and female peacekeepers in Table 4. My results confirm *H1*, *H2*, and *H3*, and show the gendered effects of peacekeepers. When accounting for the nonrandom deployment of peacekeepers, female peacekeepers are fifteen times more likely to prevent violence from rebel groups, according to column 3 of Table 4. An increase in one hundred male peacekeepers is associated with a 1.7% decrease in the probability of rebel violence against civilian, while the same increase in female peacekeepers is assocated with a 26.5% decrease in the same probability. This is a dramatic difference, and shows how effective female peacekeepers often are compared to their male counterparts.

While the binary measure of the dependent variable shows a decrease, the continuous measure of violence against civilians shows the difference between male and female peacekeepers in stark terms. Per Table 4, every one hundred female peacekeepers is associated with a decrease in more than seven civilian deaths compared to if no peacekeepers were there, and more than six deaths compared to male peacekeeper presence. In other words,
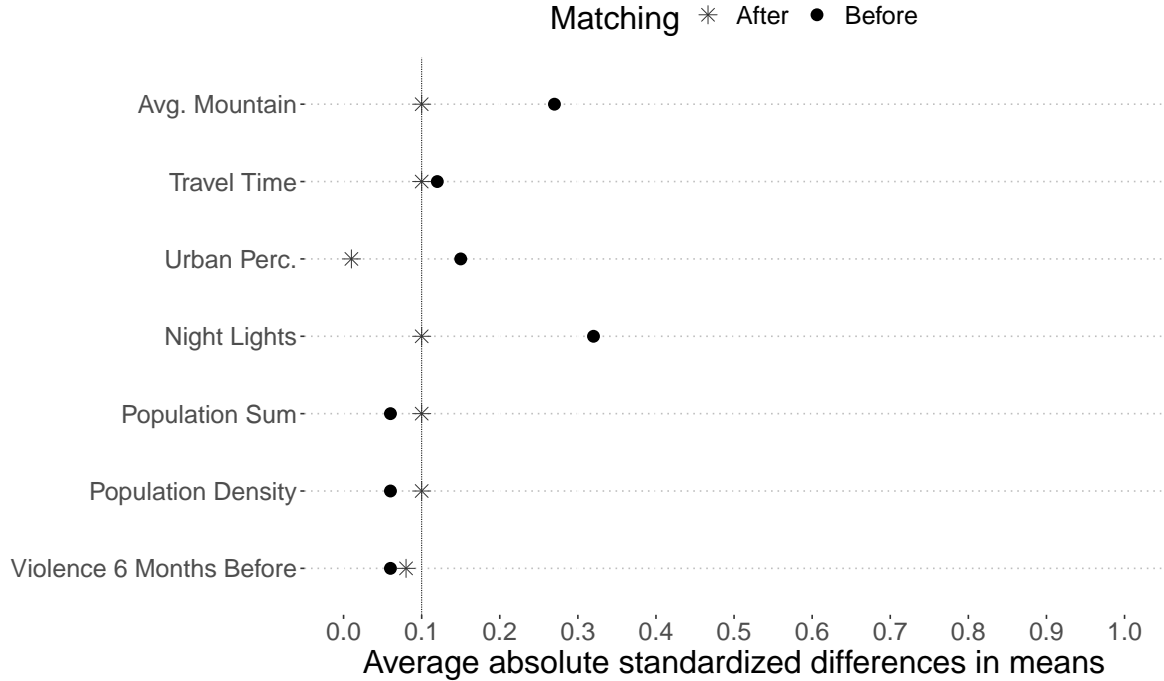
Figure 2: Loveplot of the standardized differences before and after matching.

while every one hundred male peacekeepers is associated with a decline in less than one civilian deaths by rebels, female peacekeepers lead to dramatically fewer deaths, even when controlling for potential selection effects.

As Table 4 shows, female peacekeepers have a large effect on lowering rebel violence against civilians. Yet, even when using an instrument to account for the nonrandom deployment of peacekeepers, it is still possible that female peacekeepers and male peacekeepers deploy to different areas that may otherwise bias the estimates of peacekeeping effectiveness. Thus, to account for the different locales that female and male peacekeepers deployed to, I employ cardinality matching.[83]

In Figure 2 and Table 5, I show the results of my cardinality matching via Loveplots and a regression table, specifically by matching observations "treated" with more women peacekeepers to observations with less women peacekeepers. Matching is useful when units were unlikely to receive the same treatment based on observed covariates, such as peacekeeping deployments. Moreover, matching reduces model dependence and helps estimates increase in reliability. My models match gender "balanced" peacekeeping

83. Visconti and Zubizarreta 2018.

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treatments with so-called "unbalanced" units. To define gender balanced units, I give each observation with a peacekeeping unit present a proportion of how many women are in the unit relative to the total unit size. In other words, a unit with 10 peacekeepers of which 4 were women would be scored as 0.4. All peacekeeping units in which the proportion of women was higher than the median is marked as gender balanced, whereas those at or below the median threshold are marked as unbalanced.[84]

Table 5: PKO Effectiveness by Peacekeeper Gender - Logit

	Reb VAC (C)	Reb VAC (B)
	(1)	(2)
Female PK Unit	−1.305***	−0.825*
	(0.404)	(0.470)
Avg. Mountain	2.288***	0.830
	(0.389)	(0.524)
Travel Time Nearest City	0.001**	0.001
	(0.0005)	(0.001)
Perc. Urban	0.411	0.160
	(0.280)	(0.375)
Night Lights	−26.498**	−7.966
	(12.169)	(11.726)
Population Sum	0.00000	0.00000
	(0.000)	(0.000)
Population Density	0.001	0.0001
	(0.004)	(0.003)
Violence 6 Months Before	0.005***	0.020***
	(0.0005)	(0.001)
PKO Lag (B)	0.650**	0.608
	(0.332)	(0.557)
Constant	−5.289***	−2.770***
	(0.778)	(1.036)
N	13,778	13,778
Log Likelihood	-322.722	-4,252.525
AIC	665.444	8,525.050

*p < .1; **p < .05; ***p < .01
Robust Standard Errors clustered at the PRIO-Grid level. B = Binary outcome, C = Count outcome.

Table 5 shows the results of my analysis after matching. While Table 4 utilizes a 2SLS model approach, this model inherently biases the estimates, as it relies on the same assumptions as OLS models, which is potentially problematic with count data that is overdispersed. Thus, beyond using matching for Table 5, I also employ a negative binomial logit model as another robustness check against the 2SLS models, especially as these logit models are better at handling overdispersed and count data.

Table 5 presents the main analysis for the matched dataset. Broadly speaking, when

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84. The median sits at around 0.6%, with this number close to zero due to peacekeeping's incredibly low rate of female participation. While this number is incredibly small, this measure of peacekeeping is necessary, especially because matching and the subsequent analyses must be done with a binary measure of the treatment. Thus, I dichotomize female and male peacekeeping deployments into this classification.

gender balanced peacekeeping units deployed (the "control" unit is gender unbalanced peacekeeping units), that unit was substantially more likely to prevent rebel violence than their unbalanced counterparts. While the constant of the continuous outcome is -5.29, this decrease in violence is even stronger when a gender balanced unit is present at a statistically significant level. The binary outcome of greater than four civilian deaths in column 2 is approaching significance, as gender balanced units are more likely to prevent violence from rebel groups.

Thus, Tables 4 and 5 confirm the hypotheses proposed above, especially validating *H3*. When the total count of female peacekeepers is compared against the total count of male peacekeepers or no peacekeepers, female peacekeepers provide the "biggest bang for the buck," as they lead to less violence than the other two alternatives. Male peacekeepers, on the other hand, do prevent more violence than if no peacekeepers deployed, and so are preferable to the alternative of no deployment. When gender balanced and gender unbalanced peacekeeping units are compared and matched alongside observed covariates in a logit model, these results hold and show that peacekeepers have a substantial effect on reducing violence against civilians by rebel actors.

6   Conclusion

Who keeps the peace in UN peacekeeping operations: male or female peacekeepers? Existing peacekeeping effectiveness research is agnostic as to whether there are gendered effects of peacekeepers; moreover, the existing qualitative research on gender and peacekeepers does not engage with the various literatures on peacekeeping effectiveness. In this paper, I have attempted to unify the relevant theoretical literature in both fields into a framework of how female peacekeepers drive local trust in PKOs that then leads to more intelligence and thus greater operational effectiveness. I conclude that while male peacekeepers prevent violence at a local level, female peacekeepers have a substantially larger effect on reducing rebel violence against civilians.

Using the UCDP GED's violence data matched to RADPKO's peacekeeping data, I

run two main analyses to understand the gendered effects of peacekeepers. My first analysis uses an instrumental variable to address selection effects and potential bias among the deployment of female and male peacekeepers. My second analysis uses optimal matching to reduce model dependency and bias among locations female and male peacekeepers deployed to. The first analysis provides strong evidence for hypotheses one, two, and three, while the second analysis acts as a robustness check on the third hypothesis, further strengthening the claims made, namely that female peacekeepers are more effective at reducing rebel violence against civilians.

The conclusions in this paper have strong implications for the future of UN peacekeeping operations. While affirming existing theories on why peacekeepers keep the peace, this paper also concludes that female peacekeepers are instrumental in reducing violence at even greater levels. This provides a clear path forward for troop-contributing countries, and for UN decision-makers who decide where to send troops. The knowledge that female peacekeepers provide such a substantial effect on reducing rebel political violence should effect policy-makers and the UN as well. Institutions and states seeking to increase women's contributions to peacekeeping missions to further these goals should consider supporting existing programs such as Canada's Elsie Initiative for Women in Peace Operations[85] and the Gender and Security Studies Lab at Cornell University.[86]

This research does have limitations. For example, the sample size of women's deployment in peacekeeping operations is noticeably smaller than men's deployment, due to the overall number of troops of each gender. With the smaller sample of women in the analyses, the confidence interavals and standard errors are much less precise than estimates of male peacekeepers. Moreover, I note that, in my sample, female peacekeepers *never* appear without male peacekeeper counterparts deployed alongside them in the same grid-month observation, while male peacekeepers often deploy without female peacekeepers. This suggests that the strong effects of female peacekeepers may be contingent upon their co-deployment with male peacekeepers. While outside the scope of this paper, future re-

85. https://www.international.gc.ca/world-monde/issues_development-enjeux_developpement/gender_equality-egalite_des_genres/elsie_initiative-initiative_elsie.aspx?lang=eng

86. https://www.sabrinamkarim.com/gsslab

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search should examine the interactive effects between female and male peacekeepers both theoretically and empirically.

Peacekeeping works. With this research, I provide a novel causal identification of the gendered effects of peacekeepers. By interacting with civilians, female peacekeepers can increase trust and improve their operational effectiveness.

Acknowledgements

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