

# Online Appendix

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## A Data Collection

### A.1 Missingness in Mission Reports to the Secretary General

Figure A1 displays the frequency with which Chapter VII peacekeeping missions publish and make publicly-available reports to the Secretary General containing deployment maps that RADPKO uses to determine the location of peacekeepers within a given country. It is clear from this figure that missions publish reports to the Secretary General containing deployment maps very infrequently. In fact, no mission in the RADPKO sample publishes two deployment maps in consecutive months.

RADPKO relies on two strategies to handle this missingness. First, we assume that deployment locations remain static between the publication of deployment maps in reports to the Secretary General. To the best of our knowledge, all other data estimating subnational peacekeeping deployments must make this assumption. Second, RADPKO relies on mass deployment reports from the UN DPO published on a *monthly* basis to estimate the size and composition of personnel located at individual peacekeeping bases. The high level of missingness in published deployment maps therefore does not constrain RADPKO's estimates of unit size and composition, unlike other subnational data on peacekeeping personnel that rely exclusively on map symbology to estimate unit size.

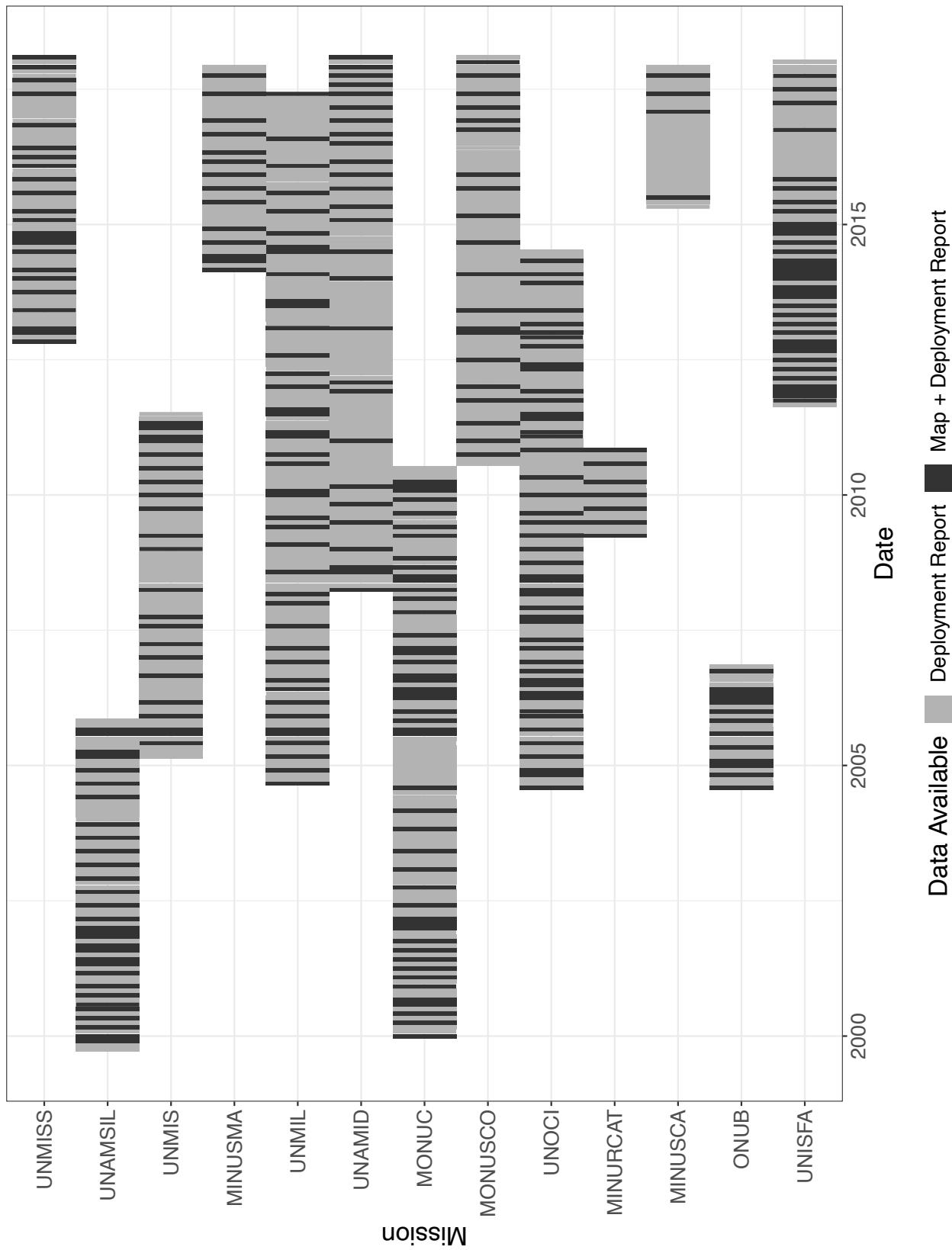
### A.2 RADPKO-GEOPKO Comparison, MONUC June 2001

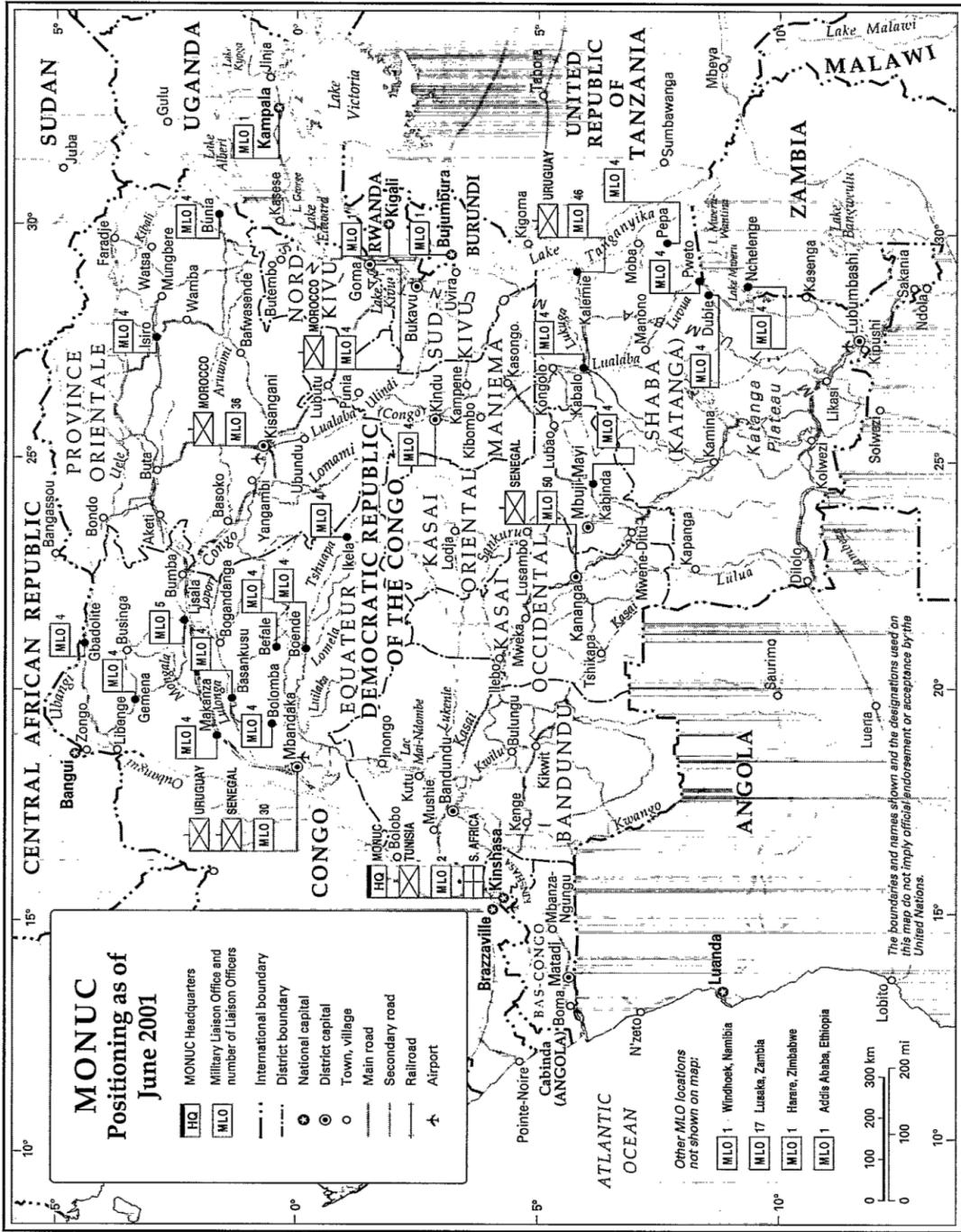
From pages 4 to 7 in the main body of our paper, we outline how the RADPKO methodology estimates base-level counts of peacekeepers by contributing country, gender, and personnel type for the MONUC deployment in June 2001 (see Figure A2 for the corresponding map of deployment). Below, we compare these estimates to those produced using the GEOPKO methodology (?).

Table A1 compares GEOPKO and RADPKO base-level estimates of peacekeeping contributions for the MONUC deployment in June 2001 explicitly. This comparison demonstrates how our methodology can provide the most precise estimates of local peacekeeping deployment per type to date. (Note that we cannot estimate the total number of peacekeeping personnel deployed as part of MONUC in June 2001 using the GEOPKO data, since discrete counts of police and military observers are not included in the data.) Importantly, while GEOPKO estimates that 1060 peacekeeping troops are deployed as part of MONUC in June 2001, RADPKO estimates that 1993 peacekeeping troops are deployed: the actual reported deployment of troops to MONUC in June 2001.

Moreover, the assumption we make in the distribution of a contributing country's personnel, per type, over deployed units only introduces a minimal degree of uncertainty into base-level estimates of peacekeeping troops while retaining the precision in estimation RADPKO enjoys from using monthly deployment reports. Our estimates of troop deployments per contributing appear plausible given the unit-types map symbology suggests are located at each base and, in fact, demonstrate the uncertainty to other methodologies using static multipliers for unit-size indicated by map symbology. Table A1 shows that GEOPKO's symbology-based

Figure A1: Availability of Mission Reports to the Secretary General





Department of Public Information  
Cartographic Section

Figure A2: MONUC, June 2001 Deployment Map

**MONTHLY SUMMARY OF TROOP CONTRIBUTION TO UNITED NATIONS OPERATIONS as of 30 June 2001**

		MINUGUA	MINURSO	MONUC	UNAMSIL	UNDOF	UNFICYP	UNIFIL	UNIKOM	UNMEE	UNMIBH	UNMIK	UNMOGIP	UNMOP	UNOMIG	UNTAFT	UNISO
Albania	Observer															1	
Albania	Police																
Albania	Troop																
Algeria	Observer			13													
Algeria	Police																
Algeria	Troop																
Argentina	Observer		1														3
Argentina	Police	1															
Argentina	Troop																
Argentina	Observer																
Australia	Observer																
Australia	Police																
Australia	Troop																
Australia	Observer																
Austria	Observer	3															3
Austria	Police																
Austria	Troop																
Bangladesh	Observer																
Bangladesh	Police																
Bangladesh	Troop																
Bangladesh	Observer																
Belgium	Observer																
Belgium	Police																
Belgium	Troop																
Belgium	Observer																
Benin	Observer																
Benin	Police																
Benin	Troop																
Bolivia	Observer	1															2
Bolivia	Police																
Bolivia	Troop																
Bosnia H	Observer																
Bosnia H	Police																
Bosnia H	Troop																
Brazil	Observer																
Brazil	Police	1															8
Brazil	Troop																
Bulgaria	Observer																
Bulgaria	Police																
Bulgaria	Troop																
Burkina F	Observer																
Burkina F	Police																
Burkina F	Troop																
Burkina F	Observer																
Burkina F	Police																
Burkina F	Troop																
Cameroun	Observer																
Cameroun	Police																
Cameroun	Troop																
Canada	Observer																10
Canada	Police																20

CT

Figure A3: MONUC, page from 2001 Deployment Report

Table A1: MONUC June 2001, GEOPKO-RADPKO Troop Comparison

Base	GEOPKO	RADPKO
Kinshasa	160: 10 (ZAF), 150 (TUN)	325: 95 (ZAF), 224 (TUN), 6 (MLTI)
Mbandaka	300: 150 (URY), 150 (SEN)	443: 210 (URY), 227 (SEN), 3 (MLTI)
Kananga	150 (SEN)	250: 247 (SEN), 3 (MLTI)
Kalemie	150 (URY)	239: 236 (URY), 3 (MLTI)
Goma	150 (MAR)	326: 323 (MAR), 3 (MLTI)
Kisangani	150 (MAR)	326: 323 (MAR), 3 (MLTI)
Other	0	3 (MLTI)

methodology systematically underestimates troop contributions at each base since the unit sizes the map symbology implies do not accurately represent MONUC’s actual deployment records for June 2001.

With respect to the way RADPKO’s methodology distributes personnel from MONUC’s multinational contingent: while there is no way to know how personnel from the multinational contingent were deployed ex-ante, our distributional assumption adds only 14 additional personnel to each base-level estimate. We argue that this degree of uncertainty is substantively insignificant, given the number of additional troops required to reduce substantively the likelihood of rebel-perpetrated one-sided violence extant research identifies (see Fjelde et al 2019).

### A.3 RADPKO-GEOPKO Comparison, Additional Cases

In the above example, we are able to produce highly plausible base-level estimates of peacekeeping troops per contributing country because no contributing country attached to MONUC deployed more than one unit at each base. We acknowledge that in some extreme scenarios, the assumption we make about how peacekeepers are distributed across active bases in a given mission could produce imprecise estimates of a unit’s size and composition.

Specifically, our methodology for distributing peacekeepers introduces additional uncertainty into the RADPKO data as contributing countries deploy multiple units of peacekeepers in various sizes across different bases. As the number of units a contributing country deploys increases, but the distribution of these units is non-uniform across the bases where the contributing country is active, our distributional assumption could bias our base-level estimates of peacekeepers.

For example, imagine that 1000 Nigerian peacekeepers – 900 troops, 100 police – were divided into 10 distinct units for a given mission; and that these units were deployed non-uniformly to two different bases. Our methodology would assume that each unit deployed received 90 troops and 10 police. Using our methodology, the worst case in this scenario would be that the Nigerian units are highly skewed in terms of size – i.e., there are 9

squads and 1 division – and that the largest unit is deployed by itself to one base while the remaining, smaller units are deployed together to the other base. In this case, our methodology would produce a significant underestimate of Nigerian police and troops for one base and a significant overestimate for the other base.

We use the June 2016 deployment of peacekeepers attached to MINUSMA and the March 2014 deployment of peacekeepers attached to UNMISS to investigate the frequency with which our methodology will lead to imprecise estimates of local peacekeeping deployment, as described above. Note that deployment patterns for both of these missions pose the most significant challenge to our methodology, since both are diverse in terms of nationality and contain many active bases. As we demonstrate below, RADPKO’s methodology generates precise and plausible base-level estimates of deployment more often than not; and many times allows us to estimate *perfectly* the peacekeeping units deployed by between 25 percent and 75 percent of a mission’s contributing countries. Again, we reference predicted estimates of base-level deployments using the GEOPKO methodology as a way to evaluate our distributional assumption in these two cases.

### **MINUSMA, June 2016**

We first assess how well our methodology distributes peacekeepers across active MINUSMA bases in June 2016 in comparison to estimates generated using the GEOPKO methodology. At first glance, the significant number of contributing countries active at different bases in Mali might suggest that the distributional assumption underlying the RADPKO methodology will produce imprecise base-level estimates of peacekeeping troops deployed per each contributing country (see Figure A4). However, comparing base-level estimates of troops deployed from Bangladesh and Burkina Faso – two of the mission’s largest contributors who both have units of different sizes deployed non-uniformly across different bases – demonstrates that the RADPKO methodology produces estimates that are substantively comparable to those produced using the GEOPKO methodology (see Table A2).

Moreover, the RADPKO methodology provides perfect estimates of peacekeeping contributions, per type and by gender, for at least 25 percent of the units attached to MINUSMA in June 2016, including all units from: China, El Salvador, Guinea, Indonesia, Liberia, Nepal, the Netherlands, Nigeria, Norway, Sweden, and the multinational contingent. This means that RADPKO perfectly estimates at least 27 percent of deployed troops, at least 23 percent of deployed UN police, and at least 57 percent of deployed female peacekeepers attached to MINUSMA in June 2016.

### **UNMISS, March 2014**

We also examine the deployment of peacekeepers across South Sudan in March 2014 to assess the RADPKO methodology. A bulk of peacekeeping troops to UNMISS come from a single contributing country, India; and units of Indian troops vary in size and are deployed unevenly across UNMISS bases. Despite this, we show again that the RADPKO methodology on average generates plausible estimates of troops deployments, relative to GEOPKO estimates,

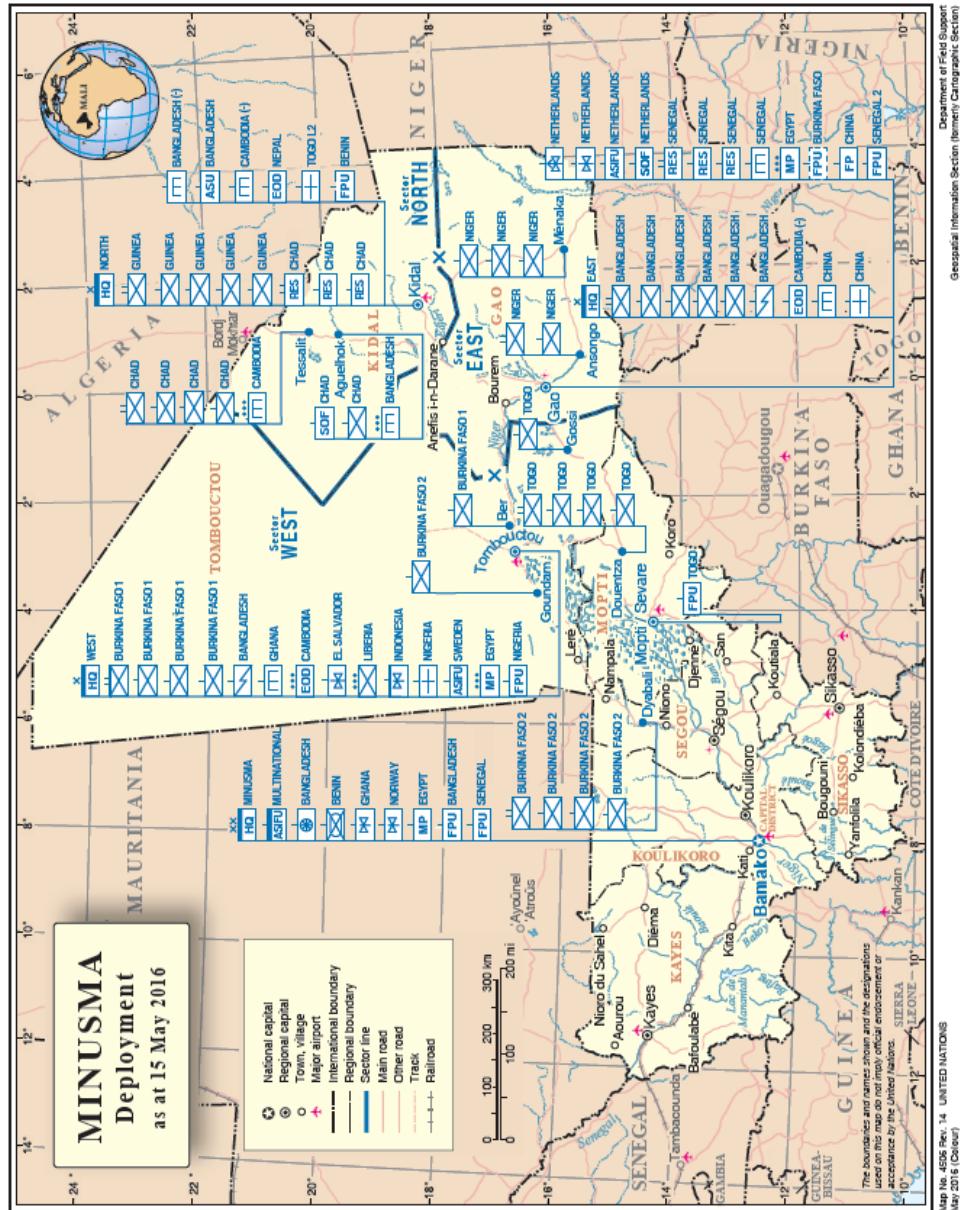


Figure A4: MINUSMA, June 2016 Deployment Map

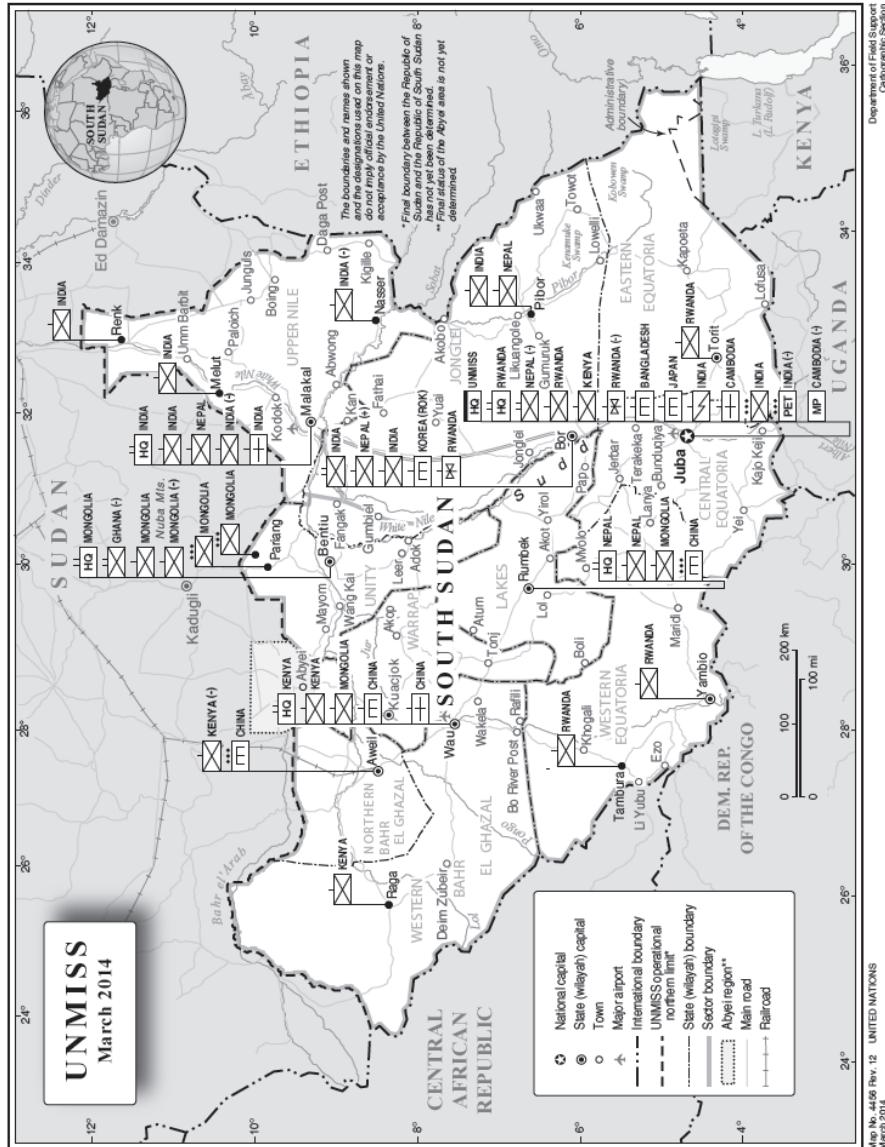


Figure A5: UNMISS, March 2014 Deployment Map

Table A2: Estimates of Troop Deployments, MINUSMA, June 2016

Base	Country	Unit Count (Type)	GEOPKO	RADPKO	Diff.
Dyabali	BFA	3 (Division, Company(x2))	950	468	-482
Lere	BFA	1 (Company)	150	156	+6
Ber	BFA	1 (Company)	150	156	+6
Goundam	BFA	1 (Company)	150	156	+6
Tombouctou	BFA	4 (Division, Company(x3))	1100	624	-476
Gao	BFA	1 (Company)	150	156	+6
Bamako	BGD	2 (Company)	300	236	-64
Aguelhok	BGD	3 (Platoon)	105	118	+13
Tombouctou	BGD	1 (Company)	150	118	-32
Kidal	BGD	2 (Company)	300	236	-64
Gao	BGD	6 (Division, Company(x5))	1400	708	-692

at bases where Indian units are present (see Table A5). Even for other contributing countries that deploy units non-uniformly across bases, RADPKOs estimates appear plausible and retain the advantage of being based on the actual number of troops deployed per contributing country to UNMISS in March 2014 (see Rwanda rows, Table A3).

Table A3: Estimates of Troop Deployments, UNMISS, March 2014

Base	Country	Unit Count (Type)	GEOPKO	RADPKO	Diff.
Renk	IND	1 (Company)	150	157	+7
Mellut	IND	1 (Company)	150	157	+7
Nasser	IND	1 (Company)	150	157	+7
Juba	IND	3 (Company, Platoon(x2))	220	471	+251
Malakal	IND	4 (Division, Company(x3))	450	628	+178
Pibor	IND	1 (Company)	150	157	+7
Bor	IND	2 (Division, Company)	800	314	-486
Juba	RWA	2 (Company)	300	432	+132
Torit	RWA	1 (Company)	150	144	-6
Yambio	RWA	1 (Company)	150	144	-6
Tambura	RWA	1 (Company)	150	144	-6
Bor	RWA	1 (Company)	150	144	-6

The RADPKO methodology also generates perfect estimates of units deployed to UNMISS from the following contributing countries in March 2014: Ghana, Cambodia, Bangladesh, Japan, and the multinational contingent. This means RADPKO captures with absolute certainty at least 26 percent of actively deployed units of troops, at least 76 percent of actively deployed units of police, and at least 43 percent of actively deployed units containing female peacekeepers.

#### A.4 RADPKO-GEOPKO Comparison, Summary

For at least three reasons, we believe that the assumption underlying the RADPKO data does a good job at capturing the dynamics of UN peacekeeping deployment and performs better than any other assumption one must make when working with observational data from archival documents. First, RADPKO will capture perfectly the size and composition of deployed peacekeeping units from contributing countries that only deploy to single bases. In these cases, RADPKO offers marked improvement over other methods which use map symbology that is tied statically to discrete counts of troops to estimate unit size. This is of particular importance for estimating when and where female peacekeepers and UN police are deployed, since a bulk of a mission’s female peacekeepers and police personnel come from smaller contributing countries who deploy to single bases.<sup>1</sup>

Second, we show in the cases above that deployment patterns that could be problematic for our methodology in theory do not seem to skew our base-level estimates of peacekeepers per contributing country and personnel type in practice. More often than not, we are able to mimic the magnitude of deployment one would calculate using the GEOPKO methodology while also producing base-level estimates of peacekeepers that reflect actual deployment statistics.

Third, our methodology allow us to quantify the uncertainty underlying our data and adjust our base-level estimates of peacekeepers accordingly. Ex-ante, we know the types of deployment patterns that could be problematic for our estimation strategy and can systematically detect when these types of deployment patterns occur. Future iterations of the data both will include variables indicating the certainty of our estimates based on these deployment patterns and, with the help of additional coders, will include revised base-level estimates of peacekeepers that pairs map symbology on unit size with monthly deployment reports. It is of note that a methodology relying exclusively on map symbology cannot produce reliable estimates of uncertainty, since we do not know ex-ante the conditions under which a contributing country’s deployed units will match, exceed, or be less than the count of personnel indicated by NATO map symbols.

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<sup>1</sup>For instance, RADPKO offers certain estimates of where female peacekeepers are from Nigeria, Sweden, and the Netherlands in Mali for June 2016: three of the four largest contributors of female peacekeepers for MINUSMA in that month. RADPKO similarly offers certain estimates of where UN police from Bangladesh, Ghana, and the multinatinal contingent are in South Sudan for March 2014; police from these three contributing countries make up about 75 percent of active police attached to UNMISS in the same month.

## A.5 Missingness

Our data, while more granular and expansive than previous efforts in its coverage of peacekeeping missions with a Chapter VII mandate, still suffers from missingness due to the inconsistent publication of mission reports to the Secretary General. In short, we found that mission reports to the Secretary General containing deployment maps were unavailable (1) for the initial months of a mission’s deployment, (2) intermittently throughout the deployment, and (3) for the concluding months of a mission’s deployment. Table A4 displays the number of available reports to the Secretary General—both with and without deployment maps—per mission. We address the intermittent missingness of data by assuming that deployment location data is held constant for the dates spanning those months in which Secretary General reports are published. For example, if UNMIS publishes two reports of the Secretary General—one in Jun-2011, the other in Sep-2011—we assume that the Jun-2011 location of peacekeeping units remains constant in both Jul-2011 and Aug-2011. Therefore, we make another simplifying assumption in constructing the data: the subnational location of peacekeepers changes only in months where PKO missions publish reports of the Secretary General with complete deployment maps.

The implications of the missingness and our assumptions to overcome it are twofold. First, our data likely mutes the level of variation in subnational deployments by holding constant the count of units at UN peacekeeping bases during months with no published Secretary General reports. To the extent that local peacekeeping forces frequently relocate themselves, our data offers a simplified depiction of the location of local peacekeepers. Second, this missingness in our data might mischaracterize the effect of peacekeeping on violence during initial deployment stages. If the arrival of peacekeeping forces incites additional combatant violence against civilians as a means of coercing non-cooperation with peacekeepers, our data likely leads to analyses that could overestimate the positive effect of peacekeeping. Conversely, if the arrival of peacekeepers quickly reduces levels of civilian targeting by substantially increasing the costs of violence, our data may produce analyses that could underestimate the positive effect of peacekeeping. We include the `missing` variable in the data and encourage researchers to make their own coding decisions about including the data or not.

Table A4: Dataset Coverage

Mission	Months Deployed	SecGen Reports	Deployment Maps
ONUB	32	10	7
MINURCAT	40	11	4
MINUSCA	58	19	6
MINUSMA	70	16	13
UNAMSIL	75	25	19
UNMIS	77	20	11
UNISFA	78	30	25
UNMISS	91	24	16
MONUSCO	103	30	13
MONUC	126	34	28
UNAMID	139	52	20
UNOCI	159	34	30
UNMIL	175	33	28

## B Full Results Tables

Table B1: Full Results, Rebel OSV (UCDP)

	DV: Onset of Rebel-OSV (0/1)			
	(1)	(2)	(3)	(4)
Troops (1000s) $_{t-1}$	-0.232** (0.074)	0.154 (0.118)	0.199 (0.15)	0.57** (0.218)
Police (100s) $_{t-1}$	- (-)	- (-)	-0.092 (0.136)	-0.264* (0.103)
Population $_{log}$	-0.338* (0.153)	-0.03 (0.13)	-0.029 (0.133)	0.24** (0.091)
Travel Time $_{log}$	-0.97*** (0.427)	-0.555*** (0.322)	-0.552*** (0.325)	0.77*** (0)
Terrain $_{log}$	2.048*** (0.269)	2.485* (0.227)	2.453* (0.231)	0*** (0.223)
Adjacent OSV $_{log,t-l}$	0.998+ (0.072)	3.171 (0.096)	3.174 (0.128)	2.299 (0.047)
Adjacent Deployment (1000s) $_{t-1}$	-0.129*** (0.189)	-0.096*** (0.227)	-0.08*** (0.229)	-0.042*** (0.204)
Battle Deaths $_{t-1}$	0.001 (0.002)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
OSV Decay	3.375*** (0.27)	- (-)	- (-)	- (-)
Intercept	2.445 (2.871)	-2.18 (2.518)	-2.203 (2.579)	-12.647*** (1.891)
N	51895	95981	95981	36109

Note: + p< 0.1; \* p< 0.05; \*\* p< 0.01; \*\*\* p< 0.001

Table B2: Full Results, Gov't OSV (UCDP)

	DV: Onset of Gov't-OSV (0/1)			
	(1)	(2)	(3)	(4)
Troops (1000s) $_{t-1}$	0.038 (0.09)	0.211 (0.184)	0.11 (0.082)	0.092 (0.109)
Police (100s) $_{t-1}$	- (-)	- (-)	0.161*** (0.042)	0.115** (0.039)
Population $_{log}$	0.269 (0.274)	0.213* (0.088)	0.198* (0.083)	0.285** (0.102)
Travel Time $_{log}$	0.293 (0.862)	-0.656*** (0.289)	-0.693*** (0.297)	-0.175 (0)
Terrain $_{log}$	0.756 (0.564)	1.534*** (0.191)	1.718*** (0.183)	0 (0.174)
Adjacent OSV $_{log,t-l}$	0.933* (0.076)	2.87 (0.155)	2.847 (0.062)	1.769** (0.034)
Adjacent Deployment (1000s) $_{t-1}$	0.175** (0.336)	0.178*** (0.268)	0.089*** (0.262)	0.108*** (0.148)
Battle Deaths $_{t-1}$	-0.018 (0.035)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
OSV Decay	3.276*** (0.599)	- (-)	- (-)	- (-)
Intercept	-12.525* (5.944)	-4.504* (1.875)	-4.162* (1.749)	-7.982*** (1.256)
N	51895	95981	95981	36109

Note: + p< 0.1; \* p< 0.05; \*\* p< 0.01; \*\*\* p< 0.001

Table B3: Full Results, Rebel OSV (ACLED)

	DV: Onset of Rebel-OSV (0/1)			
	(1)	(2)	(3)	(4)
Troops (1000s) $_{t-1}$	0.16 <sup>+</sup> (0.09)	0.215* (0.09)	0.221* (0.104)	0.476* (0.209)
Police (100s) $_{t-1}$	- (-)	- (-)	-0.073 (0.096)	-0.121 (0.082)
Population $_{log}$	-0.049 (0.173)	-0.148 (0.122)	-0.148 (0.122)	0.166 <sup>+</sup> (0.09)
Travel Time $_{log}$	-1.222*** (0.316)	-0.659*** (0.273)	-0.657*** (0.283)	0.499*** (0)
Terrain $_{log}$	2.883*** (0.348)	2.691* (0.298)	2.642* (0.297)	0* (0.237)
Adjacent OSV $_{log,t-l}$	2.492 (0.069)	2.175 (0.071)	2.191 (0.083)	1.586 (0.042)
Adjacent Deployment (1000s) $_{t-1}$	0.05*** (0.281)	0.068*** (0.183)	0.126*** (0.187)	0.032*** (0.168)
Battle Deaths $_{t-1}$	0.001 (0.001)	0.002 (0.002)	0.002 (0.002)	0.001 (0.001)
Intercept	1.752 (3.273)	-0.079 (2.314)	-0.08 (2.335)	-9.906*** (1.866)
N	52287	91404	91404	33396

Note: + p< 0.1; \* p< 0.05; \*\* p< 0.01; \*\*\* p< 0.001

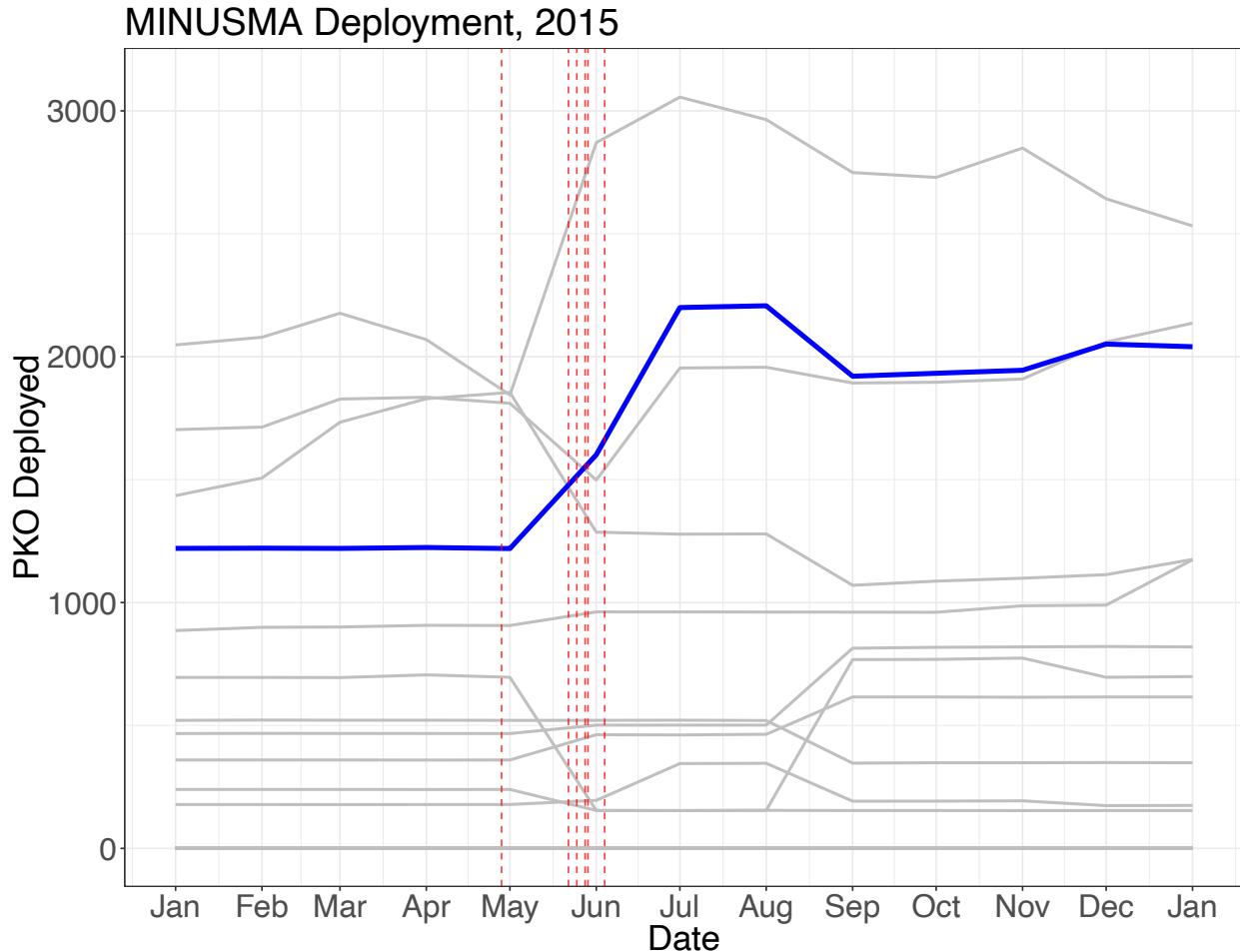
Table B4: Full Results, Gov't OSV (ACLED)

	DV: Onset of Gov't-OSV (0/1)			
	(1)	(2)	(3)	(4)
Troops (1000s) <sub>t-1</sub>	0.082 (0.202)	0.329 (0.22)	0.249** (0.089)	0.315* (0.141)
Police (100s) <sub>t-1</sub>	- (-)	- (-)	0.179*** (0.036)	0.165** (0.057)
Population <sub>log</sub>	0.09 (0.112)	-0.138 (0.085)	-0.149+ (0.082)	0.173** (0.057)
Travel Time <sub>log</sub>	-1.232*** (0.329)	-0.722*** (0.24)	-0.726*** (0.234)	0.051 (0)
Terrain <sub>log</sub>	1.866*** (0.208)	1.526*** (0.162)	1.688*** (0.157)	0 (0.105)
Adjacent OSV <sub>log,t-l</sub>	1.933 (0.221)	2.694 (0.2)	2.657* (0.069)	1.922*** (0.025)
Adjacent Deployment (1000s) <sub>t-1</sub>	0.294*** (0.257)	0.297*** (0.13)	0.152*** (0.131)	0.102*** (0.123)
Battle Deaths <sub>t-1</sub>	0.001* (0)	0.004 (0.003)	0.003 (0.003)	0.007+ (0.004)
Intercept	0.866 (2.197)	1.497 (1.701)	1.625 (1.632)	-6.417*** (0.94)
N	52287	91404	91404	33396

Note: + p< 0.1; \* p< 0.05; \*\* p< 0.01; \*\*\* p< 0.001

## C Additional Figures

Figure C1: MINUSMA Reactive Deployment, Tombouctou



Note: Vertical red lines mark dates of violent events involving MINUSMA troops, as recorded in the ACLED database. Faded grey lines track the deployment of UN peacekeepers to other treated ADM2-units in Mali; the single blue line tracks the number of peacekeepers deployed in Tombouctou cercle.

Figure C2: UN Deployment to South Sudan (UNMISS).

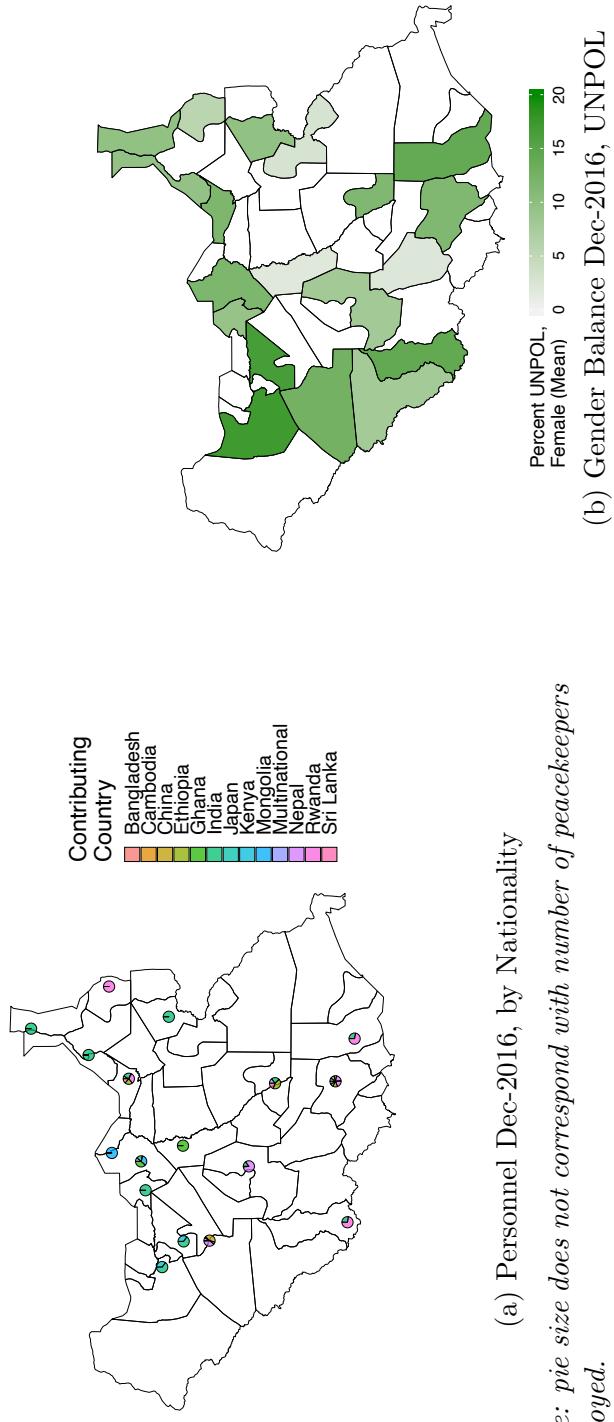


Figure C3: UN Deployment to Mali (MINUSMA).

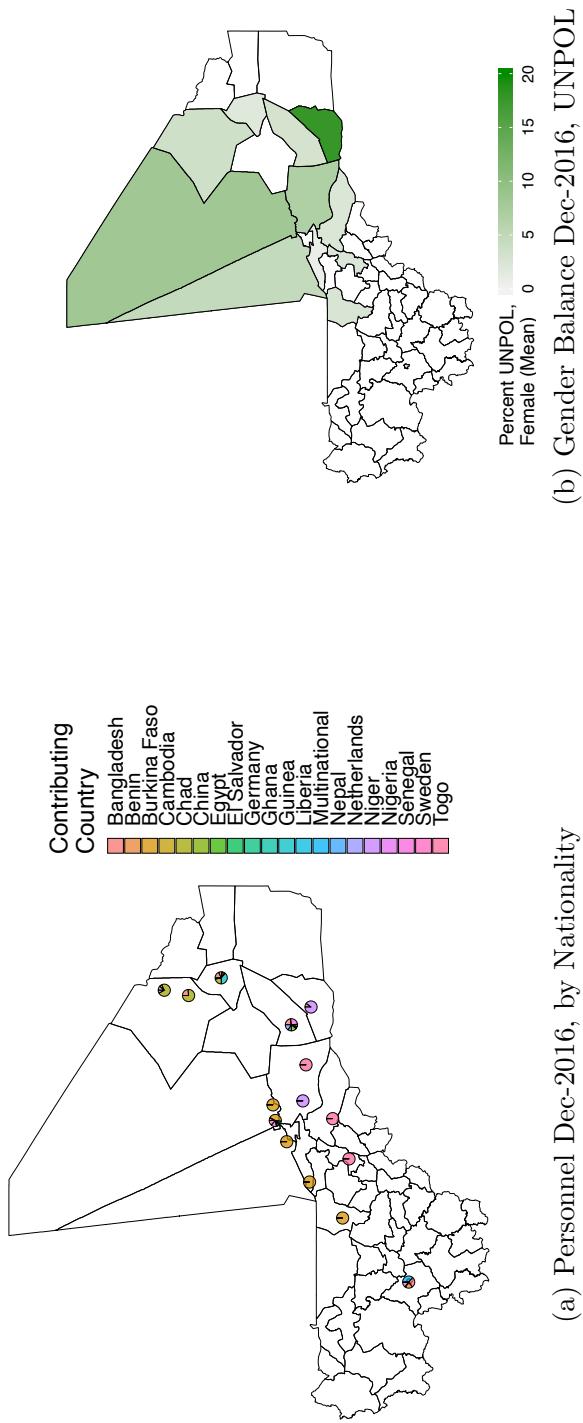
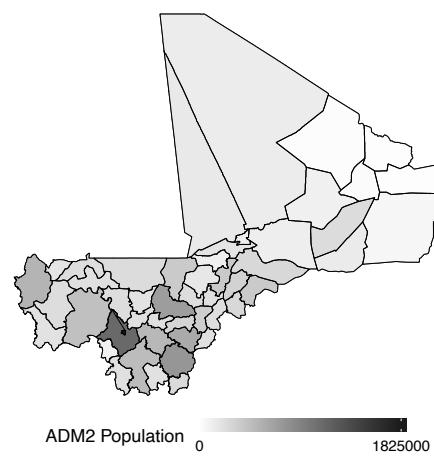


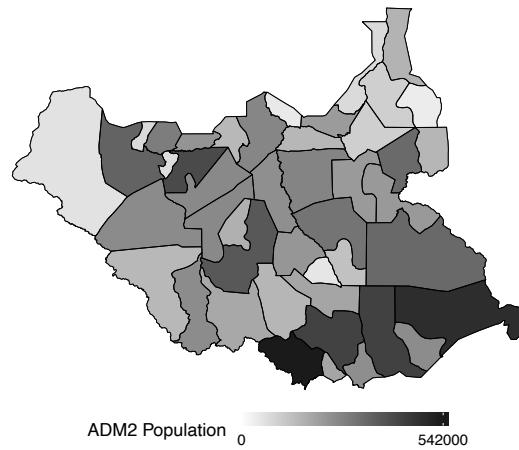
Figure C4: ADM2 Population, pre-Deployment



(a) ADM2 Population, Liberia (2000)



(b) ADM2 Population, Mali (2010)



(c) ADM2 Population, South Sudan (2010)