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Rebel Cooperation with Vaccination Drives in Sub-Saharan Africa: The 'Stationary' v. 'Roving' Distinction and Health Security

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ABSTRACT

In zones of armed conflict there is an elevated risk of the outbreak of communicable diseases. Vaccination drives are key to disease prevention but may be significantly impeded by fighting, undermining health security on a regional scale – or even beyond that, as the COVID-19 pandemic illustrated. To better understand the relationship between insurgency and gaps in vaccination coverage, this article revisits the "stationary v. roving" distinction, often employed in characterizing insurgencies. It seeks to verify if it is truly the stationary nature of rebel groups that determines a readiness to cooperate, to refine our understanding of conflict's impact on the latter. To this end, the article compiles a comprehensive list of instances of insurgent organizations' meaningful cooperation with vaccination efforts from a review of (i) academic literature and other sources; (ii) the VAXXPAX dataset, and (iii) documents retrieved from the World Health Organisaton's IRIS online repository. The emerging case-set is evaluated to see – in a "soft test" – if the theory inherent to the "stationary v. roving" distinction holds up in the Sub-Saharan African context, where it is expected to do well. Some indirect supporting evidence is found, but this is, in the ensuing discussion, revaluated, identifying key challenges to assessing causality behind the assumed "insurgent behavior → vaccination coverage" relationship, with implications for a normative assessment of the issue of who may be suitable partners to cooperate with.

KEYWORDS

Armed conflict; health security; immunization; insurgency; Sub-Saharan Africa; vaccination

Introduction

Immunization by vaccination is an effective and indispensable way of protecting people from illness, hospitalization and death due to infectious diseases. In zones of armed conflict, including in Sub-Saharan African countries, there is an elevated risk of the spread of communicable diseases. Yet it is precisely in the context of armed conflict that vaccination drives often fall short of targets

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due to the impediment effect of combat activity, undermining health security on a regional scale, or even beyond that. It is therefore vital – and the aim of this article – to better understand how the basic character of insurgent groups may influence their readiness to cooperate with vaccination drives, and what the relative significance of that variable may be compared to other factors that also play a role in the emergence of vaccination gaps.

African countries are formally committed to achieving adequate immunization coverage for their populations, most recently through the *Addis Ababa Declaration on Immunisation as a Cornerstone for Health and Development in Africa*, adopted at the 28th Summit of the African Union in February 2016.[1] The document contains a declaration of intent to expand disease surveillance along with vaccination coverage, reaching all hitherto un-accessed or neglected communities. A global commitment exists to help in achieving these goals in the Sustainable Development Goals (SDG) framework. SDG3 includes objectives closely connected to the struggle against infectious diseases. Target 3.2 aims "by 2030, [to] end preventable deaths of newborns and children under 5 years of age." Target 3.3. sets nothing less as a goal than to "end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases." Target 3.b calls for vaccine development, along with affordable vaccines; a key progress indicator is the proportion of vaccinated population in each country.

Vast disparities exist across as well as within Sub-Saharan African countries in vaccination coverage. For instance, DTP3 coverage (the third dose/second booster of Diphtheria, Tetanus Toxoid, Pertussis vaccine) ranged from 93 percent in Addis Ababa, Ethiopia to less than 10 percent in other areas of the country.[2] Among other determinants of health,[3] armed conflict can be a key determinant of such disparities, given that it impedes or disrupts regular access to populations. For instance, a study on the impact of fighting in Nigeria between government forces and Boko Haram Islamist insurgents found that "if ... armed conflict occurs within 10 km from where a child resides, the odds that [the] child receives any vaccination are 47.2% lower."[4] Mezen et al. present similar findings for Ethiopia.[5] Data on "perceived barriers" to vaccination in Nigeria by Apuke and Tunca should be interpreted with this in mind.[6] The problem was strongly manifest during the COVID pandemic, with "50 million people living in areas controlled by NSAGs [Non-State Armed Groups]," including "tens of millions of people along the last mile who may [thus] not be included in national vaccination deployment plans."[7]

Armed conflict impedes vaccination outside the African continent, too. E.g., fighting has in the post-2014 years caused disruption to already-stalling vaccination efforts against polio and measles in eastern Ukraine; an effect aggravated considerably by Russia's full-scale invasion in February 2022.[8] Vaccination-related setbacks result in half a million vaccine-preventable

disease (VPD) deaths annually, according to one estimate.[9] "Pockets of low coverage in conflict-affected areas contribute to VPD outbreaks" in multiple regions, including "in Africa, the Middle East, South Asia and more recently in Eastern Europe," conclude Grundy and Biggs.[10] With a view to this, the Reaching Every District (RED) strategy was launched in 2002, promoted by the WHO, UNICEF and the Gavi Alliance,[11] complemented by strategies to Reach Every Settlement and Reach Inaccessible Children.[12]

Highlighting the extensive list of necessary routine immunizations gives a sense of the challenges involved in a sheer administrative sense – made significantly more difficult when access to an area is actively impeded. Routine Immunisation (RI) extends to a varied set of vaccine types and diseases from country to country. Per the recommendation of the World Health Organization (WHO), RIs should be provided against diphtheria, pertussis and tetanus (covered by the DTP vaccine, in 3 doses); tuberculosis (BCG vaccine, 1 dose); hepatitis B (3 to 4 doses); polio (3 to 4 doses); measles (1 dose); rubella (1 dose) [measles and rubella may be covered together with mumps in the MMR vaccine]; HPV (2 doses, for females); rotavirus (3 doses); along with *Haemophilus influenzae* and *Pneumococcus* bacterial infections (requiring 3 doses each).[13] There are additional recommendations for specific regions and for specific high-risk populations (against diseases such as cholera or yellow fever). On top of this, outreach to difficult-to-access areas often requires the simultaneous use of opportunities for Vitamin A supplementation, de-worming, Mass Drug Administration and screening programs, disease surveillance, pharmacovigilance-related monitoring, and the dissemination of public health guidance. The ability of a health system to do all of this without outside assistance is truly a mark of well-functioning statehood, given that it requires *comprehensive and regular* access to the population of an area. Hence the issue deserves distinguished attention both for studies of modern statehood and state failure, and for studies of rebel governance and its erratic relationship with global governance.

Cognizant of the scale of the related challenges, a WHO document (*Vaccination in Humanitarian Emergencies Implementation Guide*: WHO),[14] describes various immunization strategies aimed at mitigating the impediment effect of armed conflict, including a recommendation of "quick in-and-out operations," across borders if necessary; a "periodically intensified" approach in reaction to outbreak news; vaccinating at transit points as well as upon "entry" or "first contact," e.g., in camps for internally displaced persons or refugees; "community-based" or "CSO" (Civil Society Organisation) involvement as well as partnering with "private, for-profit health service providers" or even a military's "medical service," where applicable; "compensation" to cooperating communities; and, generally, flexibility in relying on fixed sites as well as mobile teams for immunization. Partnering includes the possibility of training others (military personnel, local community members, or insurgents) to carry out immunization. To sum up: for vaccination's purposes,

either vaccinators, or their proxies, or the vaccinees themselves need to move to where immunization will be possible. Concurring as to the need for a pragmatic approach, Guha-Sapir et al. conclude[15]: "Whether or not the humanitarian actors providing health services are in agreement with players such as private companies, rebel groups, religious associations, they should consult them, as far as practicable, in planning vaccination campaigns."

This article is interested in finding out about the determinants of insurgent cooperation with vaccination drives. Besides compiling a basic dataset containing a list of insurgent organizations with a record of such cooperation, we also seek to draw on the prognostic function of the "stationary v. roving" distinction – which is often used in characterizing insurgencies and has major indirect implications for insurgent cooperativeness – to gain better understanding of which groups are more likely to cooperate. Intuitively, this seems useful, given how the terms "roving" and "stationary" refer explicitly to spatial aspects of insurgency-related combat, which may be directly linked to the varied accessibility of populations and the emergence of gaps in vaccination coverage. Further, the distinction is the foundation of a theory concerning the level of rebel interest in governance, which itself should be predictive of a group's degree of willingness to cooperate with immunization objectives.

The following section therefore introduces the concept behind this distinction in detail, with special regard to the Sub-Saharan African context, where its validity is taken for granted by many – to the extent that an empirical review of the inherent theory may constitute a "soft test," i.e., one that the theory is highly likely to pass. Regardless of whether it does so, this should have implications for a normative assessment of the issue of which groups may be suitable partners to cooperate with.

The subsequent section presents a review of (i) academic literature and open sources; (ii) the VAXXPAX dataset (a dataset offering data on vaccination-supporting ceasefires); and (iii) documents retrieved from the World Health Organisaton's IRIS online repository, to assemble a consolidated list of instances of insurgent organizations' cooperation with vaccination drives and related health services. Findings based on the additional consideration of data on vaccination coverage change during conflict offer some indirect evidence of the relevance of the stationary v. roving distinction. Yet, in light of a comprehensive consideration of the variables shaping either insurgent behavior or vaccination outcomes, in the ensuing discussion we formulate several compelling arguments as to why there are key challenges to assessing causality in the assumed "insurgent behavior → vaccination coverage" relationship.

"Stationary" and "roving" insurgents

The distinction between stationary and roving insurgents originates with Mancur Olson's work conceptualizing the emergence of modern states,

along with the "improbable transition" toward accountable democratic forms of rule.[16] With a view to China's history of warlordry, he distinguished between "stationary" and "roving" bandits where the former have an interest in governing the territory,[17] providing for the public good in return for taxing the population at a sustainable rate.[18] The argument can be likened to Charles Tilly's thesis about the role the "protection racket" played in state formation in European history.[19] Meanwhile, roving bandits rely on occasional plunder. Their impact is destructive of economic prospects.[20] Thus, some insurgents become "rulers," while others are "raiders"[21]; they have different time horizons within which they seek to maximize the benefits that are available to them.[22]

Olson thought that all roving bandits, if they are rational, will compete for a chance to advance to stationary banditry. When Mkandawire imported the concept into African Studies, he argued the opposite in the regional context, proposing that African insurgent groups – albeit not without exceptions – "drift" toward roving banditry.[23] This is reminiscent of the argument by Herbst that the relative abundance of land is conducive to (roving) predatory forms of insurgency and governance in Africa.[24]

For Mkandawire, the assumption of the drift rested on two underlying theses, one being that many African insurgencies are conflicts of the urban elite pushed into the rural peripheries of the states concerned,[25] and a related argument concerning the structurally determined rarity of secessionism in the region.[26] Ellis critiqued this proposition questioning its empirical foundations,[27] including for the roving v. stationary distinction. For Mkandawire, however, the latter was more about contrasting archetypes. "[N]o movement completely fits into either category," he argued.[28] Many scholars have subsequently used the concept accordingly, seeing it as useful in interpreting the actions of "more stationary" and "more roving" groups.[29]

Exceeding the dichotomy in empirical investigations, Marks points to the diversity of insurgent resource strategies in a study of the Revolutionary United Front (RUF) in Sierra Leone[30]; de la Sierra finds different insurgent responses to opportunities to extract different types of natural resources[31]; Stewart and Liou hypothesize and evidence a difference in insurgents' approach to controlling territory with or without the presence of their constituent population group[32]; Shire finds,[33] from two case studies of self-defense militias in Somalia, a difference in group behavior in community-sponsored defense and externally funded offense; Nydal conceptualizes a new insurgent archetype of "camping insurgents" as neither fully roving, nor fully stationary, with reference to northern Mali[34]; Arjona focuses on types of "social order," instead of type of governance, to characterize the output of rebel "intervention."[35]

There are also some explicit theories of what makes roving or stationary behavior more likely. For example, Florea finds in an examination of *de facto*

states that "separatists are less likely to provide governance when they have access to lootable mineral resources,"[36] but may do so "when they receive external military support, when peacekeepers are present, when they have access to relatively immobile assets, when they adopt a Marxist ideology, and when they control the territory for a long time." Haass suggests that "when rebels actively compete with a government to establish political authority over territory ... they intensify resource extraction,"[37] and that in this sense it is their motive that leads them toward varying degrees of the exploitation of resources, rather than the supposedly exogeneously given traits of a resource.[38] Beardsley, Gleditsch and Lo propose,[39] meanwhile, that "rebel groups that do not primarily fight for a specific ethnic group, receive outside military assistance, or have relatively weak fighting capacity, tend to fight in inconsistent locations."

Additionally, there is literature that consciously addresses some of the sources above in reflecting on particular groups' relations with local populations, without explicitly referring to the stationary v. roving categorization. For example, van Acker characterizes the PALIPEHUTU-FNL (see the abbreviation written out in Table 1) in Burundi as having developed a rules-based system of taxation and good relations with local civilians (allowing the qualification "stationary").[40] Others offer a discussion of insurgents' approach to popular mobilization independently of discussions deriving from Olson's work, still allowing for an assessment thereof. For example, Kasfir looks at civilian participation in insurgent decision-making and governance in characterizing the Ugandan National Resistance Army,[41] finding that the NRA chose to invest in building relations with the local populace even in newly controlled areas. The Tigray People's Liberation Front (TPLF, Ethiopia) and the Eritrean People's Liberation Front (EPLF) also receive a positive assessment in this respect.[42]

Summing up, lootable natural resources (as an opportunity); the need to intensify resource extraction when existentially challenged in combat (as pressure); low combat-worthiness (as further existential impulse) and fighting outside the territory of a group's ethnic constituency (as a condition permissive of the lack of accountability) may all induce exploitative roving behavior in groups; while the possession of immobile assets (as sunk costs); peacekeeper presence (as a constraint); a governance-oriented ideology (as a motive); fighting for one's own ethnic constituency in its territory (as the bind of collective identity); and community financing (as collective mobilization and agency) may all incentivize interest in stationary behavior and governance. External support shows up as possibly inducing either forms of behavior, mostly as a function, we would argue, of the behavior and motives of the external supporters, who may enforce compliance with certain norms as well as merely subsidize a group relieving it of the need to be responsive to the needs of noncombatants.

Additionally, several critical observations can be made concerning the conceptualization of the roving/stationary archetypes.

Firstly, concerning the scope of validity of the "roving behaviour → predatory violence" assumption: Insurgents may rove but not prey on the population in the areas where they newly enter or transit, as did the NRA of Uganda.[48] On other occasions, roving insurgents may provide selective protection to specific segments of the population, as seems to have been the case with the Movement for Oneness and Jihad in West Africa (MUJAO by its French acronym) as it sided with pastoralist herders in the Gao region of Niger.[49]

Secondly, concerning the threshold of "stationariness:" does a rebel group's organization of the extraction of natural resources necessarily count as governance? A group may tax a population as well as exploit its labor without providing for much in the way of public goods. Named by various sources as providing some governance, the Rally for Congolese Democracy (RCD) in North-Kivu province may be a confusing case as an example of when a lack of substantial representativity and a bad human rights record can characterize even a movement otherwise firmly stationed in a particular area.[50]

Further, focusing on insurgents in the frame of the stationary v. roving distinction may lose sight of the often roving/predatory nature of government forces themselves, illustrated by the phenomenon of "sobels" reported from Sierra Leone in the 1990s – i.e., that of poorly paid soldiers who staged combat in their areas of operation to be able to carry on with illicit activities, including the extraction of lootable natural resources.[51]

As other, similar dichotomies, such as the notion of "old wars v. new wars," or "greed v. grievance" as insurgent motives (see Kaldor,[52] for the former concept, and Collier and Hoeffler for the latter),[53] the stationary v. roving distinction does not do full justice to the diversity of armed conflicts in the vast African continent. When thought of as contrasting archetypes, nonetheless, a working hypothesis following from them may be that "more roving" insurgent groups should be less likely to engage in cooperation with vaccination drives – the more roving they are, the less likely.

The historical record of insurgent cooperation on vaccination

In academic literature and open sources

A particularly useful source on the subject is the World Health Organization's own commissioned history of the smallpox eradication campaign (Fenner et al.;[54] the intensified eradication campaign took place from 1967 to 1980). It provides a country-by-country breakdown of the dynamics of the campaign's progress. Fenner et al. provide more or less detail on at least three instances of insurgent cooperation:

- Over the course of 1967, during cease-fire periods, the Nigerian government and the Biafran side cooperated on transferring vaccine shipments to territory under their respective control, and vaccination teams could carry out work in areas under the control of the Biafran secessionist forces[55];
- In the case of Guinea-Bissau (a Portuguese-held colony till 1974), anti-colonial Leftist rebel forces cooperated with the immunization campaign, sent people to be trained as vaccinators, delivered and administered vaccines, and reported back for smallpox surveillance[56];
- In the first Sudanese civil war, the separatist Anyanya rebels conducted a major campaign of vaccination in their own areas largely on their own, carrying vaccines on foot to outlying settlements, aided in this unofficially by the WHO itself, through vaccine stocks reported by WHO staff as „lost from inventory.'[57] After the end of the conflict (1972), former Anyanya combatants also worked in the assessment of vaccination coverage and in post-vaccination disease surveillance.[58]

Over the 1980s, UNICEF began promoting the concept of children as "conflict-free zones" and "above the political fray," following up on Swedish UNICEF official Nils Thedin's idea to organize Days of Tranquillity for the purposes of child immunization. After the initiative saw success in El Salvador,[59] there was an interest in repeating the achievement in the African context. With the recommencement of fighting in Sudan in 1983, the international community attempted the parallel aerial delivery of aid to areas held by the government side and the South Sudanese-dominated, essentially separatist SPLM/A (Sudanese People's Liberation Movement/Army) in Operation Rainbow in 1986. The negotiations behind the planned operation eventually broke down.[60] In 1989, Operation Lifeline Sudan (OLS) began, based on open cooperation with the SPLM/A in the delivery and distribution of humanitarian supplies, including by having a system in place for clearing the landing of such supplies with all warring parties.[61] This was mistakenly heralded by some as a "first" instance of cooperation between the international community and rebels. Still, incidents impeding vaccination occasionally happened, including in SPLM/A territory.[62] Some even suggest a link between the way OLS functioned and the Bahr El Ghazal famine of 1998, since the latter was conditioned by the channeling of aid toward distribution points controlled by the warring parties.[63]

There was an important veterinary aspect to disease eradication in the above context. Rinderpest, a viral animal disease, was a threat to local food security and livelihoods. The Belgian, Swiss and German chapters of *Vétérinaires sans frontières* (VSF), among a total of 15 NGOs, were contracted to complete its eradication.[64] The program featured a major vaccination campaign (from 1992), as well as efforts to create the basis of a community-

based veterinary service along with surveillance (outbreak reporting, wildlife and clinical surveillance, and serological surveys).[65] The rebel SPLM/A itself had a humanitarian wing, with a network of veterinary coordinators.[66]

Contrary to its bad reputation, the Revolutionary United Front (RUF) of Sierra Leone, a group defying simple characterization, did – in the wake of the 1999 Lomé Peace Accord and before fighting briefly resumed in Sierra Leone – give access to government vaccination teams at least occasionally (three National Immunisation Days were held in 1999, and at least two more in 2000, before renewed combat; IFRC).[67] RUF cooperation extended to providing bicycles for logistics, filling in trenches for easier access to certain areas, and RUF interim leader Brigadier Issa Sesay personally administering a dose of the Oral Polio Vaccine (OPV). This was important, as in RUF-held areas there was a high number of „zero-dose' children.[68] Senessie, Gage and Elm found that „only about half of children under three years received full age-appropriate immunization,'[69] even as immunization programs were not completely interrupted or abandoned. Notably, the aforementioned study was impeded by the fighting when study locations in eastern parts of the Greater Freetown area came under attack by rebels in early 1999, resulting in the partial destruction of the records of the research underway.[70]

After the arrival of COVID-19, on 23 March 2020, UN Secretary General António Guterres called for a global ceasefire that invited all state and non-state actors to cooperate for the sake of pandemic response. As Ossai notes,[71] there is an understanding that health crises may "create opportunities for peace … out of the necessity to manage the crises," even as "they are not a solution to social divides per se and they cause other political and socio-economic problems." Initially, most insurgent groups have cooperated with Guterres' call to some extent, although not without exceptions or limitations,[72] including in Africa. Among those explicitly expressing a readiness to cooperate, based on data from the Geneva Call,[73] we find several African insurgent groups. In the DRC, the *Collectif des Mouvements pour le Changement-Force de Défense du Peuple* (CMC-FDP) signed a unilateral declaration on the Protection of Healthcare in Situations of Armed Conflict, along with the *Alliance des patriotes pour un Congo libre et souverain* (APCLS). In Mali, the *Plateforme des mouvements du 14 juin* entered into a Universal COVID Declaration, committing to curb the pandemic by protecting civil society, transporting medical personnel and enforcing various health measures. In Senegal, the *Mouvement des Forces Démocratiques de Casamance* (MFDC) stated that it would commit to reducing military operations and guaranteeing the safety of health authorities, medical personnel and humanitarian organizations.[74] The Southern Cameroon Defence Forces (SOCADEF) separatist militia also offered some cooperation.[75]

The challenges were daunting, nonetheless. COVID-19 was not merely a health crisis but a comprehensive crisis (and test) of governance,[76]

even in the absence of insurgency. Meanwhile, the International Committee of the Red Cross estimated that tens of millions of people living in insurgent-ruled areas of Africa would not be easily accessed for COVID vaccination.[77] By 2021, when vaccination against COVID began in earnest in most of the countries concerned, cooperation on COVID and other immunization programs was often absent. The United Nations Security Council therefore called for a "sustained humanitarian pause" in its Resolution 2565 in February 2021,[78] with little impact in a world where news of statistically rare adverse effects of COVID vaccination reached most insurgency-struck countries before vaccines did (see, e.g., Oduor,[79] regarding Al-Shabaab's ban on AstraZeneca's Vaxzevria vaccine [in Somalia]), and governments were not always cooperative either (see, e.g., Adepoju,[80] regarding Ethiopia's refusal of humanitarian access to Tigray).

Additions based on the VAXXPAX dataset

The VAXXPAX Vaccination Ceasefires dataset is a product of work by scholars of the Political Settlements Research Programme at the University of Edinburgh who "wanted to understand how ceasefires could potentially support COVID-19 public health responses, including vaccination campaigns." Beyond this, the potential contribution of such instances of cooperation to making peace was also of interest to them.[81] The dataset covers instances of warring parties agreeing to days of tranquility, humanitarian pauses, humanitarian corridors or other, essentially similar initiatives for the purposes of cooperating with vaccination drives.[82]

For the consolidated list of instances of insurgent cooperation in vaccination, which we are seeking to establish, we have imported from this dataset those items where reasonably safely identifiable insurgent parties actively engaged in cooperation. Beyond the hitherto-discussed African cases, the VAXXPAX dataset thus leads to adding cooperation with "days of tranquillity" initiatives by the Northern Alliance and the Taliban in Afghanistan,[83] the FDD and FNL factions in Burundi, the FMLN in El Salvador, by "warring factions" in Lebanon, by the LTTE in Sri Lanka; with "National Immunisation Days" by the MNLF and MILF (indicated as somewhat uncertain) in the Philippines; specifically in vaccination campaigns as such by "moderate rebels" in Syria; and with a "corridor of peace" by the NRA in Uganda (see all abbreviations written out in Table 1).

Additions based on the WHO's IRIS online repository

We used primarily two queries to search the WHO's IRIS (Institutional Repository for Information Sharing) online repository. For the query

"insurgents vaccination" we have retrieved 265 documents, and for "rebels vaccination" an additional 182 documents on July 11, 2023. Most of these originated from the timeframe of 2016 to the present, although the earliest was from 1949.

The earliest meaningful mention of insurgents' behavior toward vaccination was from 1984. A total of 119 documents with relevant allusions to the subjects of interest were retrieved. The overwhelming majority of these documents referred to a negative role played by insurgents and insurgencies. A similarly overwhelming majority of documents contained analysis pertaining to specific locales and specific interest groups – hence the negative mentions of insurgents are analytical statements rather than mere sweeping generalizations.

Some documents are duplicates. With these eliminated, for the query "insurgents vaccination," a total of 4 specific positive mentions were found concerning insurgents' role; out of those, two relate to Afghanistan,[84] one to Sri Lanka,[85] while "unofficial [vaccination-related] truces" are mentioned in a grouped reference to Cambodia, Iraq, India, Myanmar, Turkey, several Latin American countries, "and elsewhere."[86] There may be two additional positive mentions, to Aceh in Indonesia and to Nepal, but linguistic formulation leaves a lack of clarity – a document concerning Aceh seems to imply the use of satellite phones borrowed from the combatant parties (Indonesian military and insurgents) for communications; another document concerning Nepal alludes to "programmes of immunization ... [that] were allowed to continue."[87]

For the query "rebels vaccination," a total of 7 positive mentions were found (without-duplicates count). Successful agreement with rebel groups in Western Darfur (Sudan) is mentioned by one document, in contrast with no such agreement for Southern Darfur.[88] Grouped references are contained by one document that characterizes health services provision positively or somewhat positively (that is, even if they were found poor overall) for UNITA, the Northern Alliance, SPLM/A and Eritrean separatists.[89] Other documents concern the already discussed cases of Sudan and the Philippines, among others.[90]

As before, with the VAXXPAX dataset, we have only imported for incorporation into the next section's consolidated list those mentions that were found to allude to reasonably safely identifiable insurgent actors.

An integrated set of instances of insurgent cooperation in vaccination

The list of insurgent organizations identified as having cooperated with vaccination drives at any point in any active way, based on our literature review, additions from the VAXXPAX dataset and a search of the WHO's IRIS repository is presented in Table 1.

Table 1. A consolidated chronological global list of identifiable cases of insurgent cooperation in vaccination, from 1967 to the present. African cases are highlighted in bold. Due to the uneven granularity of the data on specific cases, "some health services" under "scope of cooperation" may be more or less regular or extensive than participation in an occasional or stand-alone vaccination drive. Cooperation with eradication would usually (but not always) be interpreted as cooperating in post-vaccination surveillance, too.

Country	Conflict and timeframe	Insurgent/rebel organisation (where plausibly or accurately identifiable)	Scope of cooperation
Nigeria	**Biafra War, during the course of 1967**	**Biafran (separatist) Armed Forces**	**Unimpeded transit of smallpox vaccine shipments**
Sudan	**1st Sudanese civil war (1955–1972)**	**Anyanya**	**Smallpox eradication**
Portuguese colony of Guinea-Bissau	**Colonial war of independence (1963–1974)**	**African Party for the Independence of Guinea and Cape Verde (PAIGC by Portuguese acronym)**	**Smallpox eradication**
Angola	**Angolan civil war (1975–2002)**	**UNITA**	**Some health services**
Mozambique	**First Mozambican civil war (1977–2002)**	**RENAMO**	**Some health services**
El Salvador	Salvadoran civil war (1979–1992)	Farabundo Martí National Liberation Front	DTP3, measles and polio vaccination
Uganda	**1986, during Ugandan civil war (1980–1986)**	**National Resistance Army (NRA)**	**Corridor of peace for medical supplies and vaccines**
Lebanon	1987; during the Lebanese civil war	„all warring factions'	Vaccination against the main childhood diseases
Sri Lanka	LTTE insurgency, 1983–2009	LTTE (Liberation Tigers of Tamil Eelam)	Malaria control and routine immunizations
Sudan	**South Sudanese secession, 2nd Sudanese civil war (1983–2005)**	**Sudan People's Liberation Movement/Army (SPLM/A)**	**General (DTP3, measles, maternal tetanus immunization), polio eradication, rinderpest (veterinary disease) eradication**
Ethiopia	**Eritrean war of independence**	**Eritrean People's Liberation Front (EPLF)**	**some health services (1961–1991)**
Iraq	Reference document from 1997; under the Northern Iraqi No-Fly-Zone regime	presumably: the Kurdistan Democratic Party (KDP) and the Patriotic Union of Kurdistan (PUK)	Polio eradication
Myanmar	Reference document from 1997	Karen National Union, and possibly others	Polio eradication
Somalia	**Reference documents from 2006 and 2011 (including: Somaliland MICS, 26–30)**[43]	**Somaliland authorities (*de facto* state)**	**Some routine immunizations**
Philippines	16 March 1994, National Immmunization Day (NID); part of 1993–1995 3-year immunization program relying on NIDs	„armed political dissidents,' „some rebel groups' (there were multiple insurgencies at the time, between 1989 and 2012: Abu Sayyaf (ASG), Bangsamoro Islamic Freedom Fighters, Moro Islamic Liberation Front, and Moro National Liberation Front factions; note: it is highly uncertain if all four actively collaborated with the NID initiative)	Polio, measles, maternal tetanus toxoid vaccination, de-worming, pregnancy care, vitamin A provision
Afghanistan	Pre-2001 resistance against Taliban advances	Northern Alliance	Some health services

(*Continued*)

Table 1. (Continued).

Country	Conflict and timeframe	Insurgent/rebel organisation (where plausibly or accurately identifiable)	Scope of cooperation
Sierra Leone	**Post-1999 (Lomé Peace Accord)**	**Revolutionary United Front (RUF)**	**National Immunisation Days (partially completed)**
Burundi	**2001; during Burundian civil war (1993–2005)**	**National Council for the Defense of Democracy – Forces for the Defense of Democracy (FDD), Forces nationales de libération (FNL; formerly Parti pour la libération du peuple Hutu, or PALIPEHUTU); the FDD also 'supplied health workers for the needs of the communities within its operating areas'**[44]	**Days of Tranquillity – polio and measles vaccination, vitamin A provision**
East Timor, DTP3, BCG, measles, polio	1999	„pro-independence and pro-integrationist movements'	
Afghanistan	Post-2001 Taliban insurgency	Taliban	Polio and cholera vaccination, vitamin A provision
Sudan	**„Southern Darfur,' during the Darfur conflict, June 2004**	**„rebel forces;' presumably: Justice and Equality Movement & Sudan Liberation Movement**	**Measles vaccination**
Syria	2013–2021, during the Syrian civil war, including its more intense and later quasi-frozen stages	National Coalition of Syrian Revolution and Opposition Forces; YPG (Yekîneyên Parastina Gel, or People's Defense Units); „broadly speaking . . . even the Islamic State'[45]	Polio, cholera, and measles vaccination
Mozambique	**Second Mozambican civil war (2013–2019)**	**RENAMO, 'vaccination campaigns continued unabated'**[46]	**Vaccination**
India	KRA insurgency (1999—)	Kuki Revolutionary Army; 'announced cash rewards to the first three villages in Kangpokpi district that achieve the target of fully vaccinating their population'[47]	COVID-19 vaccination

An interesting finding from the resulting list, and the review process that led to it, is the slightly confusing issue of government recognition. Various sources may refer to a recognized government as an insurgent actor (e.g., the Northern Alliance was effectively the fighting force of the internationally recognized government of Burhanuddin Rabbani, as opposed to the unrecognized Taliban, and yet it was described as the insurgent party at times). Or vice versa, they may refer to an insurgent actor as government (as in the case of Kampuchea/Cambodia, where the exiled government of the Khmer Rouge and its allied factions was the internationally recognized one, and this contributed to drawing out the process of certifying Kampuchea/Cambodia as smallpox-

free, leaving it as the last country to make that list even as it was not the actual last country with cases of smallpox.[91]

Another key finding is the less than complete but not insignificant congruence of the (positive and negative) examples of stationary and roving insurgencies used by the sources in the literature quoted in the literature review earlier on and the actual cases of insurgent cooperation with vaccination drives in Table 1. Biafran and Eritrean separatists or the SPLM/A, typically considered as having been stationary and having cooperated with vaccination efforts, certainly constitute an important overlap. Interestingly, there seems to be no record of active vaccination-related cooperation by the Congolese RCD, or the Oromo Liberation Front and the TPLF in Ethiopia. Meanwhile, the RUF's occasional/limited cooperation is not entirely unaligned with its mixed assessment, owing in large part to the varied record of its strategy and behavior in different stages of its trajectory.

Using data from the WHO Immunization Portal, available starting from 1980, it is possible to verify if insurgent cooperation may have had a positive impact on country-wide progress in some of the above cases. Such data obscures subnational trends. Caveats apply accordingly. It is not possible to isolate causality in terms of a positive impact of insurgent cooperation reliably, even as the overall picture that emerges may be informative. Table 2 thus offers an overview of whether there was increase, decrease or stagnation in BCG, DTP 1st and 3rd dose and measles vaccination 1st dose coverage in given periods in particular countries with insurgent cooperation – and for Mali and Nigeria as cases that featured no such cooperation. Time frames are chosen to reflect when the impact of insurgent cooperation assumably began, based on the earlier research that produced the data for Table 1. Change is then

Table 2. Select data on vaccination coverage (WUENIC) in African countries with a record of insurgent cooperation, and from Niger and Mali as countries without it. Source: WHO Immunization Data Portal. Data available only from 1983 for Angola; and from 1981 for Mozambique; cells with data reflecting negative change and stagnation highlighted in gray.

Country	Time period	BCG, change from start year to end year	DTP 1st dose, change from start year to end year	DTP 3rd dose, change from start year to end year	Measles-containing vaccine 1st dose, change from start year to end year
Angola	1983–2002	25%→76%	25%→65%	6%→47%	26%→59%
Mozambique	1981–2002	46%→82%	79%→88%	56%→76%	32%→77%
Uganda	1986–1988	51%→70%	45%→67%	21%→38%	27%→49%
Sudan	1986–2005	54%→72%	65%→88%	14%→78%	11%→69%
Sierra Leone	1999–2001	73%→63%	68%→58%	43%→38%	62%→50%
Burundi	2001–2005	87%→89%	90%→96%	81%→87%	73%→87%
Sudan/ Darfur	2003–2006	69%→77%	83%→91%	69%→78%	65%→73%
Mozambique	2013–2019	93%→93%	93%→91%	85%→88%	86%→87%
Mali	2012–2014	81%→87%	75%→73%	65%→66%	67%→61%
Mali	2018–2022	83%→83%	82%→82%	77%→77%	70%→70%
Nigeria	2009–2015	76%→53%	63%→42%	73%→49%	64%→42%

observed between that point in time and the end of the civil war in question. The Darfur conflict is covered only up to the 2006 peace agreement. WUENIC (WHO and UNICEF Estimates of National Immunization[92]) vaccination coverage data is used consistently throughout.

Table 2 thus paints an overall positive picture of progress being possible in countries affected by insurgency, *perhaps* not unrelated to insurgent cooperation. A negative assessment of the Revolutionary United Front may once again seem warranted in light of the above data, although the way official and survey data have been corrected for the WUENIC estimates may reflect bias (assessing this is beyond the scope of this article). Partial negative change (i.e., not across the board) is also present in Mozambique during the Second Mozambican Civil War, but it is small and occurred at a high level of coverage. For the unique *de-facto*-state case of Somaliland, Multiple Indicator Cluster Surveys from 2006 (for all of Somalia) and 2011 (for Somaliland specifically) allow for an imperfect sub-nationally focused observation, showing little change from the nationwide 2006 benchmark (+0.8%) in BCG coverage; positive change in DTP 1st dose coverage (+9.4%); and negative change in DTP 3rd dose coverage (−1.2%). No data is available for measles, while polio 1st dose vaccination coverage dropped from 52 percent to 33 percent.[93] A mixed picture, although it is worth noting that the surveys were carried out involving Somaliland's own Ministry of National Planning and Development – the survey itself may be seen as evidence of the benevolence of the nominally insurgent and *de facto* state party involved. Overall, most of the cases with recorded insurgent cooperation from Africa show improvement in vaccination coverage. In contrast, the data shows near-infinitesimal decrease in overall vaccination coverage for the four types of vaccination in Mali, related to the first of two major rounds of fighting (2012–2014); and clear deterioration in Nigeria for the peak period of the Boko Haram insurgency (2009–2015).

Having found that, there remains a need for a careful discussion of the implications of this with a view to the more nuanced arguments put forward in the literature using the stationary v. roving distinction.

Discussion and assessment

Interestingly, Table 1 shows as many as 13 cases of insurgent cooperation from the African context – more than from all other continents combined (11). This indirectly goes against Mkandawire's (and others') assumption that African insurgencies may "drift" toward roving and a decreasing interest in governance, especially if we infer that vaccination coverage data validates to some extent that there may have been an actual positive impact from insurgent cooperation in these cases. Objections to such an

assessment may be raised, nonetheless. That there is interest in cooperation with vaccination drives, does not necessarily imply interest in governance, and the latter in turn does not imply stationary behavior. Meanwhile, the totality of the variables shaping insurgent behavior and vaccination outcomes ought to be comprehensively considered – the related arguments are summarized below in four main points, constituting necessary caveats.

Firstly, the regional case count (13 African cases against 11 from elsewhere) has to be viewed in proportion to the sum total of African insurgencies – and Africa's share out of the world total. Given that "more than thirty African countries experienced one or more nonseparatist conflicts since 1960,"[94] we are only talking about a minority of all African insurgencies above, with secessionist insurgencies – those more likely to be stationary in nature – overrepresented in this particular set. Were we to apply a more comprehensive system of distinction that has been influential in the literature, by Clapham,[95] between secessionist, liberationist, reformist and warlord types, the thirteen cases above capture mostly those groups which are more likely to have formal structures, discipline and ideology in the first place, conducive to both the readiness and the ability to cooperate with vaccination drives (at least 11 of the 13 cases being secessionist, liberationist or reformist insurgencies).[96] Such movements were more common and dominated the landscape of political violence in the decades just before, during and after decolonization. Many contemporary groups are essentially different in this respect, and this may be reflected in that the two cases in Table 2 with decreasing vaccination coverage are both more recent (post-2000) ones.

In other words, it may matter much more what the groups concerned want and how they organize themselves than whether they engage in mobile warfare. In fact, most of the insurgent organizations concerned above have engaged in mobile warfare at least occasionally, needing to move across vast stretches of terrain facing similarly behaving adversaries.

Secondly, cooperation with vaccination drives is but one aspect of what an armed group can do to provide some kind of public good, and a contribution to it can be accomplished in multiple ways, depending on the circumstances. While a stationary group may be appreciated for entering into an agreement to do nothing to impede vaccination, a weak roving group can offer to refrain from attacking vaccinators without this being similarly strongly appreciated or registering in media coverage. Meanwhile, an insurgent group may offer meaningful cooperation on occasions, for particular days or periods, but this may be negatively compensated for by its otherwise destructive impact on health services.

Thirdly, if a vaccination drive does not cover an area, it is not necessarily because of a rebel group's actual targeting of vaccinators, or a record thereof.

Possibilities as to why a vaccination drive may not cover an area, for reasons other than insurgents' direct targeting of vaccinators, may include the following, conceptualized using a mix of inductive and deductive reasoning (with reference to specific examples mentioned in the case of the former):

- Vaccinators moving together with military forces and ending up indirectly targeted[97];
- Vaccination-related infrastructure (e.g., cold chain elements) being destroyed as collateral damage due to fighting[98];
- Vaccinators' own security assessment questioning the feasibility of vaccination in a given area based on anticipated – rather than experienced – risk;
- A political assessment being made against seeking cooperation with a particular insurgent group;
- A vaccination point operating in the vicinity of, or within, a government facility being indirectly targeted for that reason;
- Government troops initiating operations in an area where vaccination is due, leading to vaccination being canceled because of the ensuing combat;
- Government forces infiltrating a vaccination team, with the vaccination team ending up being targeted for that reason.[99]
- Government refusing permission to vaccinators to access a given area where insurgents are present.[100]

As already visible based on the above considerations, governments' role is very significant, and the above scenarios do not exhaust all possibilities. It is not unprecedented for a violent non-state actor to take matters into its own hands to provide for the vaccination of a neglected population (see, e.g., Arathi,[101] regarding gang actions to provide for yellow fever vaccination in *favela* Slagueiro, in Rio de Janeiro, Brazil).

At the same time, in an area where insurgents opposed to vaccination are present, hit-and-run vaccination or vaccination by trained community members may make a difference in spite of insurgent will, thus leading to even more confusion regarding the reverse-attribution of causality based on the "level of vaccination coverage at point t_1 in time → assumed prior insurgent behaviour from t_0 to t_1" line of reasoning. It is also possible that insurgents refusing to enter into a formal vaccination-related agreement may choose not to impede vaccinators, as is manifest in some cases in high vaccination coverage in spite of heavy insurgent presence (e.g., in Colombia).[102]

Fourthly, the relationship between insurgent violence and vaccination gaps is not (or, more precisely, does not have to be) linear. Mass indiscriminate insurgent violence can cause population displacement to safer areas, where camp populations may be more easily accessible via transit and entry-point vaccination than they would have been by door-to-door/mobile-team

vaccination in the context of low-intensity conflict. That is, even as camp conditions are usually far from ideal and can give rise to disease outbreaks.[103]

Conclusion

The findings of the article confirm that cooperation with insurgents for the purposes of child immunization and other major vaccination drives is not merely possible, but occurs with some regularity in fact, with major implications for health security and related policies. With a view to the stakes involved, it was pertinent to examine the issue of what types of insurgencies may be most likely candidates for such partnering for the sake of disease prevention.

For the empirical grounding of our inquiry as to the relevance of the stationary v. roving distinction in this regard, we have assembled and discussed here a global dataset regarding examples of insurgent cooperation with vaccination efforts, having drawn on several sets of sources (academic literature and other open sources; the VAXXPAX dataset; and the WHO IRIS online repository). The resulting list of cases showed an extensive record of insurgent cooperation in the Sub-Saharan African context, which is remarkable in itself. From an evaluation of the cases concerned, including in light of data on vaccination coverage change, some indirect evidence was found in support of the thesis that stationary insurgents may be more likely to cooperate. This is, to some extent, a questionable assessment, nonetheless, once other variables shaping insurgent behavior and vaccination outcomes are also taken into consideration. What may matter much more is what insurgents want (their ideology and long-term objectives) and how they organize themselves (their structure, coherence and discipline). Well-organized insurgencies with long-term plans do not raid even when they rove, as seems to have been the case with the NRA of Uganda or the TPLF in Ethiopia[104]; poorly organized insurgencies may be abusive even when stationary, exemplified by the Congolese RCD.[105]

Finally, the article also pointed to several important complications involved in addressing causality behind vaccination outcomes – the latter are not necessarily a function of insurgent behavior, and not necessarily a result of the direct targeting of vaccinators, even when insurgent behavior does play a role. Further, and paradoxically so, the relationship between insurgent violence and vaccination gaps is not necessarily linear, e.g., if the former results in displaced but accessible populations.

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94. Morten Bøås and Kevin C. Dunn, *Africa's Insurgents: Navigating an Evolving Landscape*. (Boulder, Co.: Lynne Rienner, 2017), 2.
95. Christopher Clapham, *African Guerrillas* (Indianapolis: Indiana University Press, 1998), 6–7.
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Disclosure statement

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