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Human Security in Cambodia: A Statistical Analysis of Large-Sample Sub-National Vulnerability Data



Photo: Dominik Landwehr

Taylor Owen
Aldo Benini

Summary

Since the 1998 election violence, the national security situation in Cambodia has improved markedly. Aside from misplaced anxiety about the Thai border, little threat is perceived from neighboring countries, and for the first time in decades there is little chance of civil war or revolution.

This being said, Cambodians remain insecure. There are still dire poverty, extremely high rates of communicable diseases, high violence rates, a heavily landmined countryside, unexploded ordnance (UXO) from US carpet bombing and other combat, as well as the skewed demographic transition caused by the genocide.

If the traditional notion of security is used, Cambodians must be deemed secure. If the concept of human security is used, their situation is far more perilous.

With the goal of measuring and analyzing Cambodia human insecurity, we have collected a large amount of data down to the local (1,600 communes) level. At our disposal is the largest existing geo-referenced database of Cambodian security and vulnerability data.

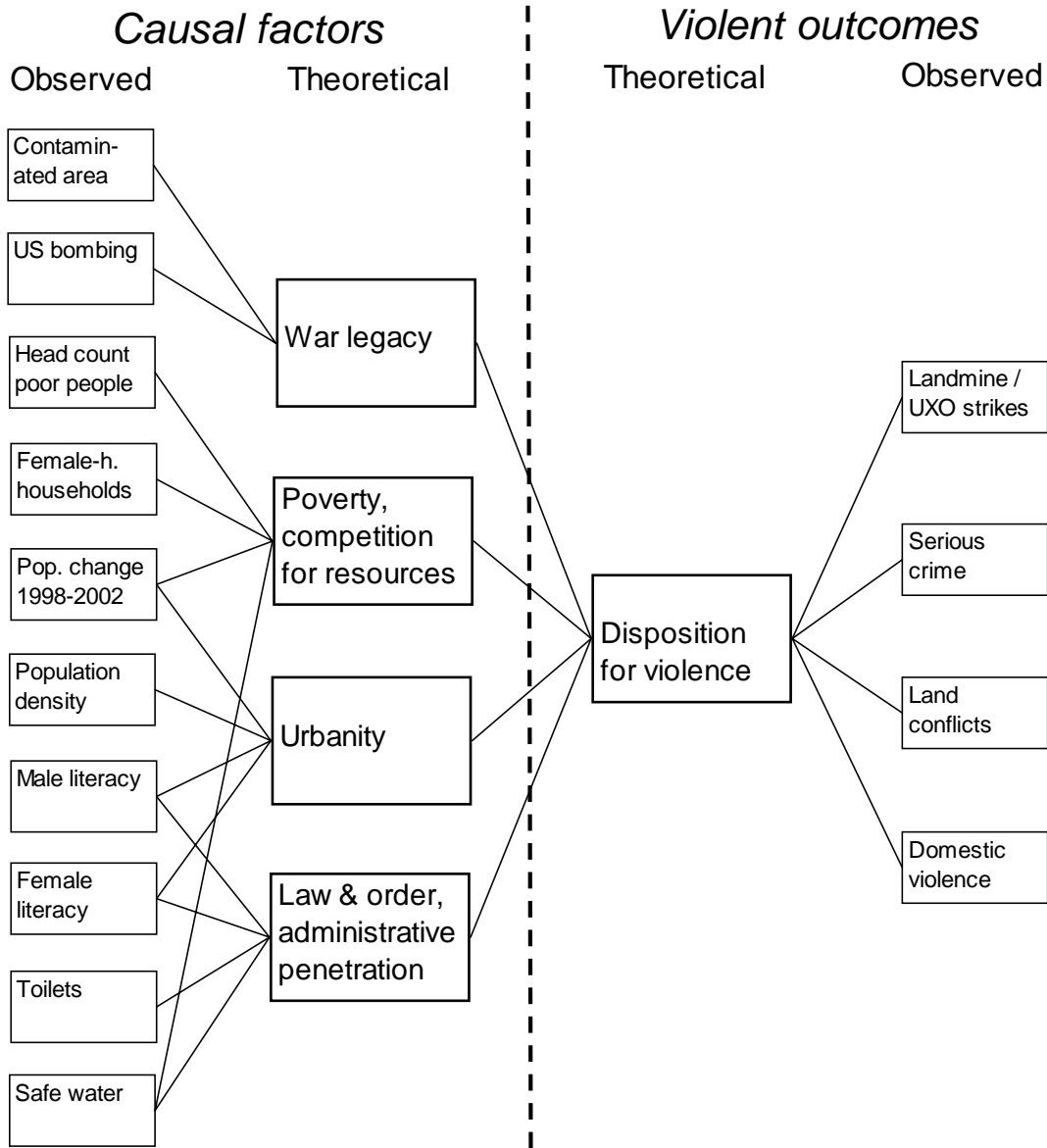
With this we hope to study not only the presence of individual human security threats, such as poverty, violence, or landmines; but also the interaction between them. This will aid our understanding of insecurity and can be used to enhance the monitoring capacity for post-conflict development assistance.

Such large complexity needs reduction. Motivated by likely policy relevancy and good data, we investigate the distribution of violent events that threaten human security. Instead of treating all indicators on an equal footing, we focus on a search for associations between types of violence “on one side of the equation,” and socio-economic and war-legacy conditions liable to foster or temper violence on the other. Some of the socio-economic variables speak to multiple concepts; we connect them with observed violence through two layers of unobservable concepts. A graph on the next page illustrates the approach.

We study four types of violence: landmine and UXO strikes (most of which are victim-actuated), as well as serious crime, land conflicts, and domestic violence (perpetrated by contemporary agents). “Serious crime” lumps together murder, kidnapping, robberies, and theft, much of which obviously is violent. Using different types of regression models, socio-economic and war determinants are statistically significant for all types of violence. Also, we study serious crime, land conflicts, and domestic violence in various combinations, as well as in terms of a common underlying factor. The interpretation of these results in terms of unobservable constructs, however, is less certain and requires a leap of faith.

Three major findings emerge:

- Access to safe water dampens violence. This effect is strong on all types of violence except the victim-actuated landmine and UXO strikes. Provision of safe water technologically goes beyond community self-help; therefore — this is a key assumption — the fraction of households enjoying safe water stands proxy for the cumulative effects of development agencies and for the law-and-order pre-conditions for development.



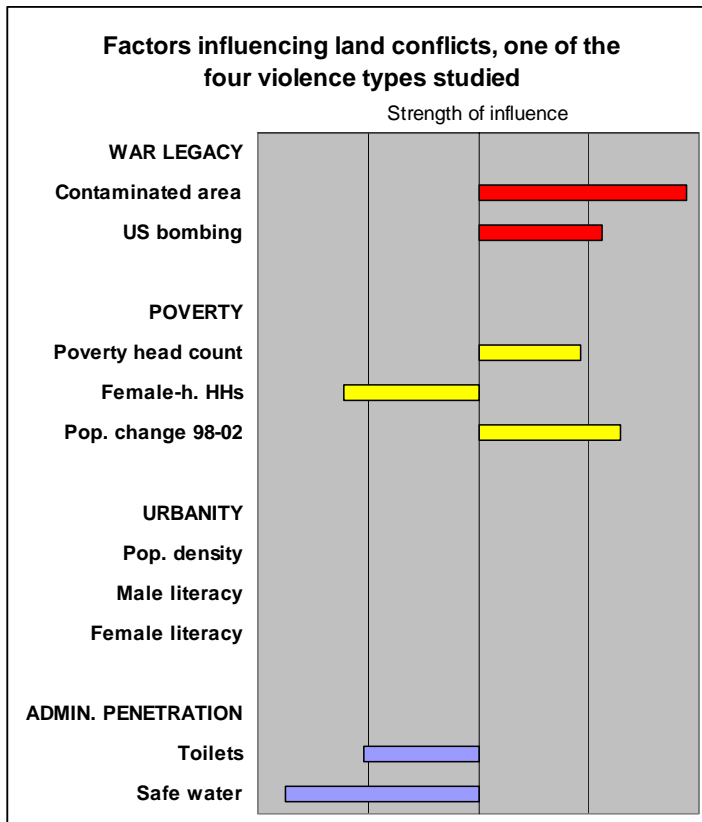
- Second, the magnitude of the area that local informants claim to be contaminated with landmines and UXO is positively associated with violence of all types, not only the obvious munitions strikes. These cross-violence effects call for a non-physical interpretation of the contaminated-area effect. We take the area as a measure of community disruption during the war rather than primarily as a physical hazard. On top of the magnitude-of-area indicator,

the US bombing intensity goes hand in hand with more frequent contemporary land conflicts, suggesting that the normative fabric of society remains more tenuous in areas that suffered extraordinary dislocation and destruction.

- Third, severe poverty breeds violence. The effect is very sensitive to the measure used. The simple headcount-based poverty rate is significantly related to violence only concerning land conflicts — poorer communes, all other things being equal, see their people fight more over land — and, less conclusively, domestic violence. This changes dramatically when using a measure that gives greater weight to the poorest — the so-called poverty severity. Poverty, then, is strongly related to violence of all kinds. Ultimately, this may suggest that policies that effectively address the subsistence need of the poorest will contribute to greater stability for all — even if this is a group that presumably is not politically influential.

Our models also include a few variables that may be interpreted as indicators of urbanity. Overall, their effect on violence is feeble. Poverty/competition for resources and law-and-order/administrative penetration appear to exert stronger influence on levels of violence than urbanity, with its associated density and education measures, does. By way of example, we graph the relative influence of the various observed variables, grouped under four headings, on one of the four types of violence studied — land conflicts.

A number of limitations need to be signaled. Given the data, the analysis is cross-sectional; this prevents controlling for endogenous effects. Such effects have to be assumed in Cambodia.

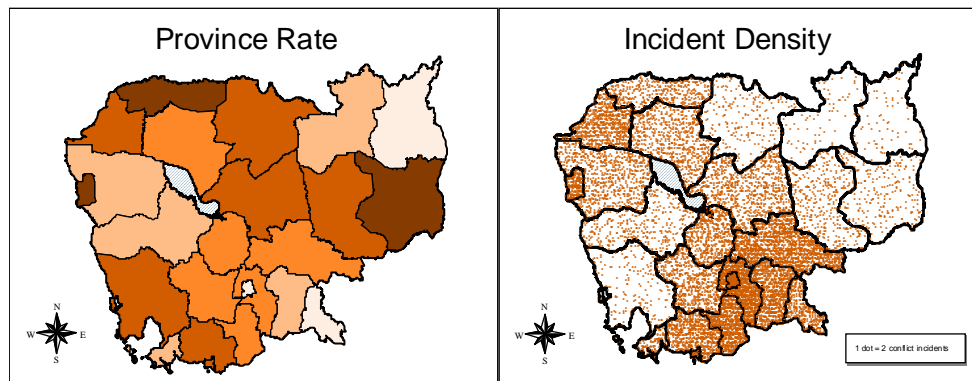
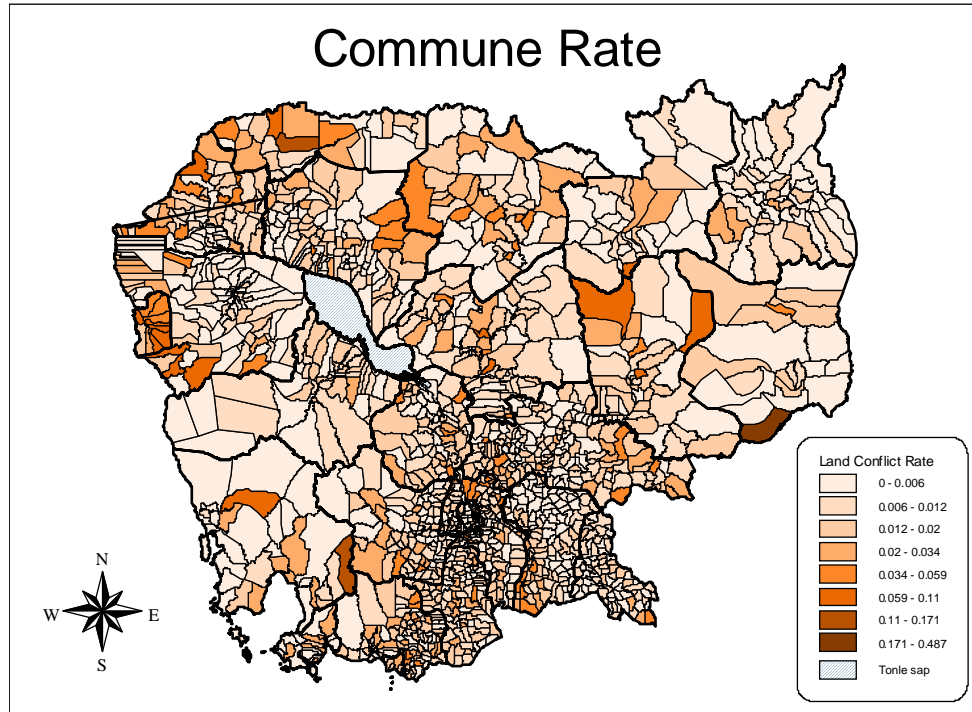


Notably, areas with high levels of violent crime have deterred the work of development agencies; therefore, administrative penetration and violence are in a two-way causal relationship.

Note the significant negative effect of the fraction of female-headed households on land conflict rates. One possible interpretation is that in communes with a lower proportion of adult males, the pool of potential adversaries is smaller.

Strength of influence is expressed as dimensionless z-scores, with intervals of two between gridlines. For co-variates with $p > .10$, the score is set to zero for better visual clarity.

Conflicts Over Land



The two province-level maps at the bottom illustrate the contrast between the conflict rates (rated to population) and the density of incidents (the ratio of incidents to area). Provinces with the highest rates are on the borders with Vietnam and Thailand. The provinces showing the highest density of land conflicts are in the densely populated provinces in the Southeast, plus two in the Northwest. Similar contrasts were found for serious crime and domestic violence. This may have policy implications. The problems may be most prevalent in certain regions of the country, but most incidents, in absolute numbers, occur in others, notably in the Southeast.

No account of violence in Cambodia is complete without considering also the victims of landmine and UXO strikes. We use data on contaminated areas and on landmine and UXO victims for a two-year period from the Landmine Impact Survey and munitions data from the Indochina Bombing Data project. The victims are, as expected, found predominantly in less densely populated areas (mines may deter settlement) and may be harmed more often by mines than by UXO. However, there are questions about the reliability of this data and our ability to attribute areas and bombing loads to the communes.

Even more ambitiously, one would wish to see the demographic imprint of war and genocide isolated from such effects as migration and incorporated into a more sophisticated approach. This would aim at estimating the effects of a very violent past and those of contemporary socio-economics, separately as well as in interaction. Our data do not allow us to separate lingering genocide effects from more recent migration effects.

The violence is spatially correlated, with high-violence communes often bordering on other high-violence communes, and vice versa. Therefore, the problem arises under what conditions factors such as safe water access remain significant. Their influence may disappear when violence in neighboring communes or unobserved, yet spatially correlated other factors are taken into account. To test for that contingency, we run spatial regression models on violence from contemporary agents (in other words, not on victim-actuated landmine and UXO strikes). These models require data transformations that may bias some of the findings. With this statistical contingency in mind, we find that the effect of safe water access does persist when spatial effects are considered.

This is a very preliminary study on human security in Cambodia. It has detected structure in data that was collected from eclectic sources. Consistent geo-referencing to an accepted community gazetteer lets these elements talk to each other. Some of our results may contradict received wisdom about Cambodia, and some may ultimately inspire rethinking of certain development and security policies. For example, by merging landmine victim data with data on other types of violence, it becomes obvious that domestic violence and land conflicts are much larger problems than landmine and UXO strikes. At the same time, they are patterned also by the legacy of long wars, of which contamination with explosive remnants is an integral part.

While a good number of strongly significant relationships spring out of our GIS and regression frameworks, the search for a compelling theoretical interpretation and for repeated measurements over time, enabling a more dynamic view, must go on.

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