Mapping and Managing Recent Political Violence in Bangladesh

Introduction

Bangladesh has been widely considered to be among the poorest countries in the world, with 32% of the population living below the national poverty line of $2 a day. While the country has remained a hot spot for various development organizations and project to be implemented, an issue that has been overlooked is it's contribution to establishing South Asia as the second most violent place on earth in terms of conflict (instead of crime). Guided by recent literature on conflict and development, I have conducted a spatial analysis of violent incidents in Bangladesh from January 2015 to October 2016 with poverty data. The goal of this project is to further understand the connection between violence and poverty in developing countries by looking at how it is both clustered and distributed, and to examine the discrepancies between different forms of political conflict: violence against civilians and riots/protests.

Data and Methodology

To map violence, I used data from Armed Conflict Location and Event Data (ACLED), which was collected from information provided by local newspapers and divided by month (from January 2015 to October 2016). It 's attribute included spatial information such as latitude and longitude, as well as the event type and actors involved. For poverty, I constructed a data set from a table in the World Bank authored report, "Poverty Maps in Bangladesh 2010: Technical Report." The data was divided by upazila (sub-district) and showed a "poverty cluster" that reflected the percentage of households bellow the national poverty line based on responses to the 2010 Household Income and Expenditures Survey. (HIES) To spatially analyze this data, I used a variety of spatial analyst and spatial statistics tools in ArcMap including: Kernel Density, Moran's I, and Directional Distribution. Each dataset was geocoded using the "display XY" function and then joined to the administrative boundary layer (from GADM). I conducted an attribute query to create layers for violence type by year to use for creating density rasters with 0.05sized pixels.

Figure 1: Violence and Poverty

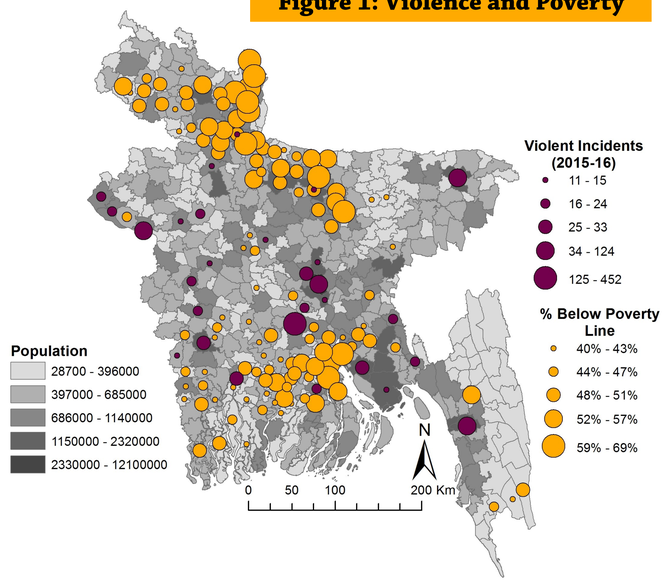


Figure 2: How is it Clustered?

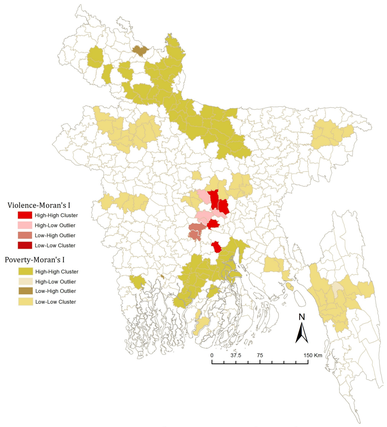
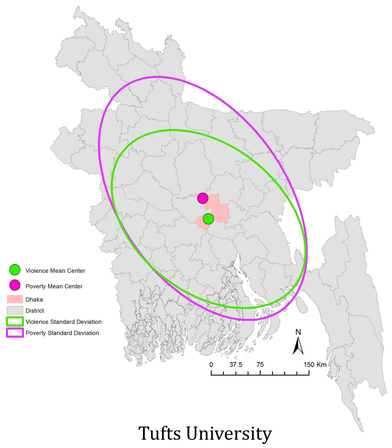


Figure 3: How is it Distributed?



Cartographer: Natasha Khwaja
Data Sources: ACLED, World Bank, GADM
Coordinate System: GCS_WGS_1984

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Limitations

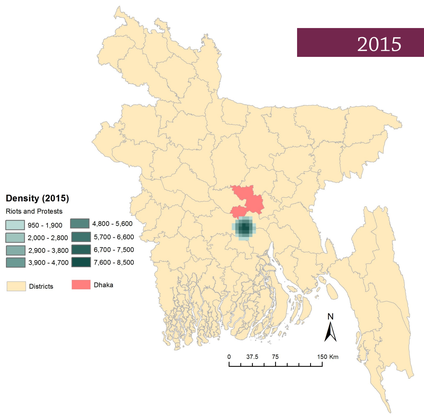
There are several significant sources of error with this project, largely because of the limitations surrounding data from developing countries. The first issue was with the ACLED dataset, which because its information is from newspapers, it excludes the potentially vast number of violent incidences that were not reported in the press. This is especially relevant in the case of Bangladesh given its "not free" press freedom status in the 2016 Freedom in the World Report. Additionally, I had to manually edit the poverty data so that the spellings of upazila (sub-district) names would match the district layer, so they could be joined. I used inference to change around 60 names in Excel, but both these issues present substantial accuracy errors. Thus, an alternate goal of this project is to demonstrate the necessity to decolonize data collection in order to conduct more effective research on developing countries.

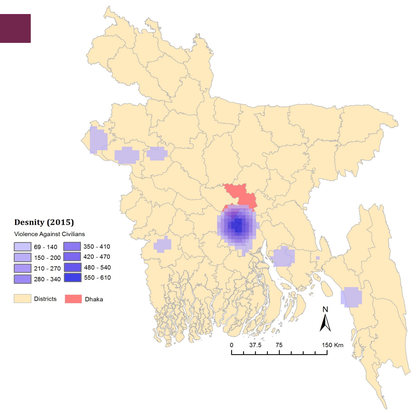
Discussion and Conclusions

My initial hypothesis for this project was that there would be a clear correlation between high violence and high poverty. This, however, was not the case, as demonstrated by Figure 1, where visual analysis shows almost an inverse correlation. Spatial analysis using directional distribution demonstrates that violence and poverty do occur in similar patterns throughout the country (see Figure 3), but this is disputed by Figure 2, in which a cluster-outlier analysis using Moran's I reveals little overlap between the two issues. Thus, my focus turned to analyzing the violence on its own, differentiating by type -riots/protests and violence against civilians- and year-2015 and 2016. A spatial analysis using kernel density illustrates that violence is largely concentrated south of the Dhaka capital district, with violence against civilians being much more pervasive that riots/protest by civilians. 2016, however, saw an increase in the spatial distribution of violence, posing a potential new threat to stability and development. A directional distribution analysis further substantiates this by showing that while the mean center remains the same, violence in Bangladesh is becoming more spread out and unpredictable, and therefore more difficult to manage. Also troubling is the increase in violence against civilians, which indicates, as the literature supports, that poverty will continue to persist unless this is mitigated.

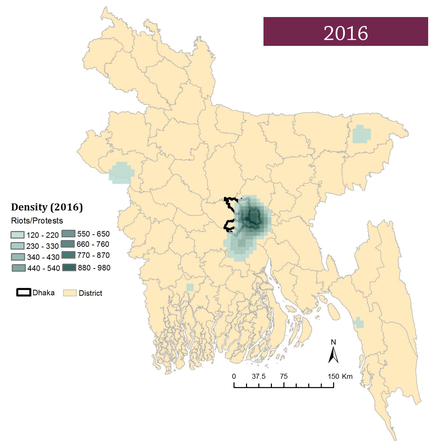
Type of Violence by Kernel Density (events per sq. mile): Riots/Protestors vs. Violence Against Civilians

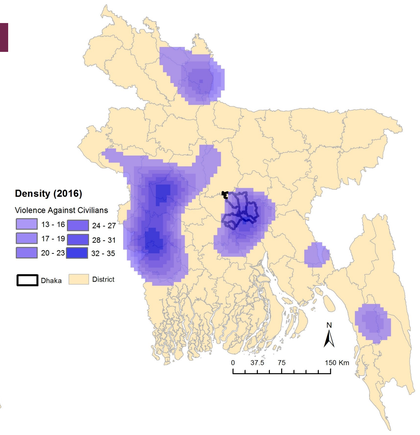
2015





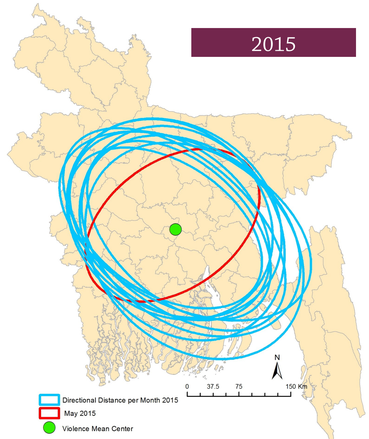
2016





Mean Center and Directional Distribution

2015



2016