

# Analyzing the Aftermath of Kenya's 2013 Election

## A Study Using Uchaguzi Crowd Mapping Data and Demographic Spatial Analysis

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### Abstract

The highly disputed 2007-08 Kenyan election erupted in conflict after the reelection of incumbent President, Mwai Kibaki and resulted in over 500,000 displaced persons, 1,000 killed persons, alarming rates of rape and sexual attacks, and hundreds of burned homes. In light of Kenya's 2013 election in March, this project connects, protects, and empowers Kenyan voters in an attempt to stop political violence and corruption in Kenya. Uchaguzi and Ushahidi crowdmapped the 2013 Kenyan citizen election responses and action using Twitter, texts, Facebook, their web forum, and e-mail. The goal of their project was to positively affect elections and protect the vote before and after elections. My project analyzes geolocated citizen reports provided by Uchaguzi and specific demographic information to try and learn more about Kenyan election responses. The ultimate goal is to contribute to stability in Kenya through transparency and societal accountability. This demographic data includes county population, population density, voter registration information, education level rates, electricity access, and poverty rates. Understanding correlations between Kenyan demographics and violence, corruption, and/or peace could help citizen action groups target instability and protect the rights of citizens before conflict arises. Since this project attempts to show potential demographic relationships between societal unrest/violence and election irregularities/corruption/electoral malpractice, I focus on citizen reports that reflect the presence of these two factors. The results show that there is no correlation between societal unrest and voter registration, poverty rate, education level, or access to electricity. There is however a strong correlation between Election Irregularity and Total Population and Population Density and Unrest and Total Population and Population Density. It is clear that using demographic information to gain insights into societal reactions is an effective tool for predicting geographical areas of focus for electoral malpractice and violence.

### I. Introduction

Political changes are often followed by strong societal reactions. These reactions can be full of jubilation and support for their newly elected leaders expressed by parades and parties, or they can be filled with anger and result in violence, protest, and demonstrations. In December of 2007 Kenya held a Presidential election in which their incumbent President, President Mwai Kibaki was reelected. The result of this election led to large scale societal conflict. The election was laden with corruption and governmental inefficiency and resulted in refugees and violence. In March of 2013 Kenya held their first Presidential election since 2007. Due to the serious implications of Kenya's last election organizations and governments across the globe kept a watchful eye on this election. An organization named Uchaguzi fought against corruption and violence in this election Kenya using a crowd mapping technique. They gathered geolocated electronic and cellular on-the-ground reports from Kenyan citizens, mapped them in real time, and displayed it all publicly to add transparency and social pressure to Kenya's 2013 Presidential Election. I gathered citizen reports for a two day span starting on March 4 at 6:00AM EAT until March 6 at 6:00AM EAT for demographic analysis. This study focuses on election irregularities and acts that show unrest. Kenyan demographic information analyzed against Uchaguzi citizen reports should uncover important evidence regarding the root causes of societal responses to Kenyan elections and political change.

### II. Literature Review

The Literature examined for this project is focused on the previous election. What happened in the last election and what were the causes of violence? On December 27, 2007 Kenyans began voting for their new President in the General Election (Kabukuru 2008, 20). The results of the election found only a couple hundred thousands votes between the two leading vote earners, Ralia Odinga of the Orange Democratic Movement with 4,352,993 votes and President Mwai Kibaki of the Party of National Unity winning with 4,584,721 votes (Kabukuru 2008, 20). It is said that there was massive fraud and corruption within the election as there was, "unusually high voter turnout, lack of access to voting centers, names missing from the registers, questionable voting hours, and party agents and police officers killed" (Karmung and Klopp 2007, 11). Additionally, the Electoral Commission of Kenya (ECK) is said to have manipulated the votes in favor of the presiding government, Kibaki (Karmung and Klopp 2008, 11). The Chair of the ECK, Kivuitu is quoted having said "that he had no clue as to who exactly won the election (Kabakuru 2008, 20). Ndungu (2008) writes that both parties engaged in "electoral malpractice" and that the tallying of votes was "inaccurate" and made it difficult to confirm the election results (114). Violence erupted in Kenya due to the presidential election and its election of incumbent, President Mwai Kibaki (Ndungu 2008, 114). Experts agree that the conflict that ensued post-election was the result of two main factors: 1) the inefficient and irregular electoral process and 2) historical ethnic issues stemming from long standing inequality (Ndungu 2008 and Karmung and Klopp 2008). Electoral fraud and corruption in the 2007-08 election was exacerbated by long-standing historical injustices on other ethnic groups in Kenya. President Mwai Kibaki's ethnic group, the Kikuyu, has historically dominated the country's political and economic environment (Kabukuru 2008, 21-22). Kikuyu's dominance has contributed to a class divide between rich and poor and this divide greatly contributed to the violence after the 2007-08 election (Kabukuru 2008, 21-22). In his previous term as President, Mwai Kibaki promised constitutional changes that would result in greater equality among all Kenyan citizens (Karmung and Klopp 2008, 14). However, these constitutional changes did not positively affect the poor and the young and Kibaki did not fulfill his constitutional change implementation promises (Karmung and Klopp 2008, 14). As a result, Kibaki's reelection left the under-privileged ethnic groups and population groups angry. Anger and violence erupted because Kibaki's previous term did not address dire inequality issues and many believed that he was reelected illegitimately. Citizens say that the violence had political motives (Gettleman 2008). The crisis resulted in over 1,000 persons killed, 500,000 misplaced, rapes, sexual assaults, arson, protests, and more (Gettleman 2008 and Ndungu 2008). This study holds weight for the new election as Gettleman (2013) notes that the causes for conflict in Kenya are elections and ethnic tensions, two factors that are still present in Kenya today.

### III. Methodology

- The first step in this project was to gather crowd mapping data from Uchaguzi's website. To do this I had to go to Uchaguzi's RSS Feed. From here I collected all citizen reports starting at 6:00AM on March 4, 2013, the opening of the polls, to exactly two days later at 6:00AM on March 6, 2013.
- Second, I engaged in an extremely labor intensive extraction of each Uchaguzi feed page of interest. I saved the pages as RSS files. An RSS file is based on XML. In order to map this data I had to use XSLT (Extensible Stylesheet Language) to transform the data into a Microsoft Excel readable format.
- Then, the Microsoft Excel file that I created was transferred into ArcMap 10.1, a Geographic Information Systems (GIS) mapping software.
- Once I had the Uchaguzi data points, I collected Kenyan geographic shapefiles from Virtual Kenya, the World Resources Institute, and Colorado State University. I joined the Uchaguzi data Excel file to a Kenyan County shapefile and created the Uchaguzi data point shapefile.
- Using demographic data from the Commission on Revenue Allocation I created Microsoft Excel spreadsheets that I was able to join to Kenyan geographic shapefiles on ArcMap 10.1. This demographic data included education rates, electricity access, population density, poverty rates, voter registration, and total population. Then, I connected the demographic data to the Uchaguzi shapefile which allowed me to see connections between Kenyan demographics and 2013 Kenya election citizen responses.
- I created choropleth maps of each demographic category to further analyze the county demographics.
- After creating usable demographic shapefiles I categorized the citizen responses into three groups: unrest, peace, and electoral irregularity
- Unrest consists of categories such as: violence, threat of violence, riots, bombings, weapon presence, hate speech, fear and tension, mobilization abductions protest, and violent protest. Peace consists of: civilian peace efforts, police peace efforts, and those tagged "everything is fine." Election Irregularity included: counting and results issues, polling station problems, staffing issues, and voting issues. This was especially labor intensive as I went through over 2,000 citizen reports to classify them in the correct category.
- Afterwards I ran a Spatial Join between the Uchaguzi Report shapefile and the county layer to gain a "count" of the number of each category of Uchaguzi report within each county in Kenya. I used this count as my measure to discover correlations between Uchaguzi report type and county demographics.
- Lastly, I ran regression analyses for each of the demographics and county Uchaguzi report counts to find the correlation coefficient of each relationship between the demographic data and the categorical Uchaguzi report count in each county.

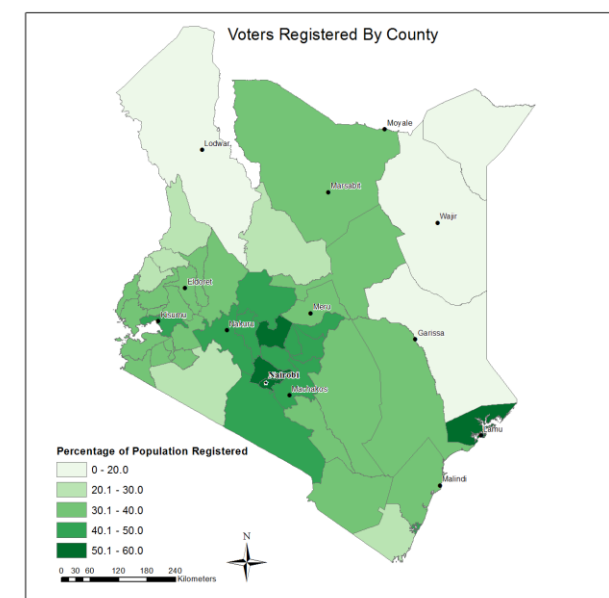


Figure 1

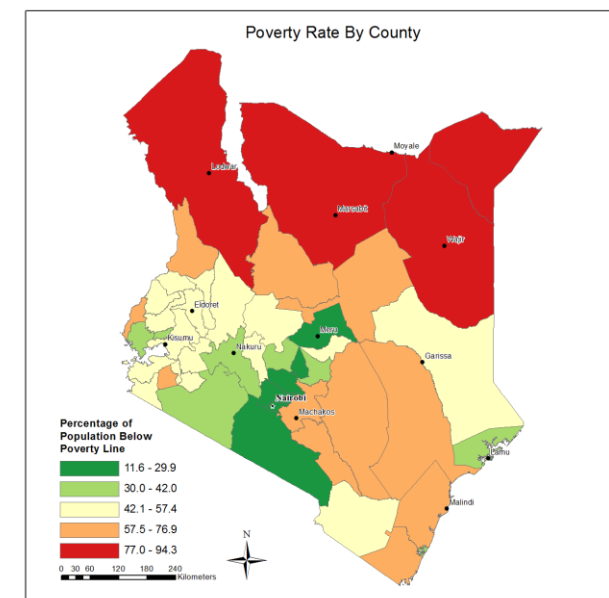


Figure 2

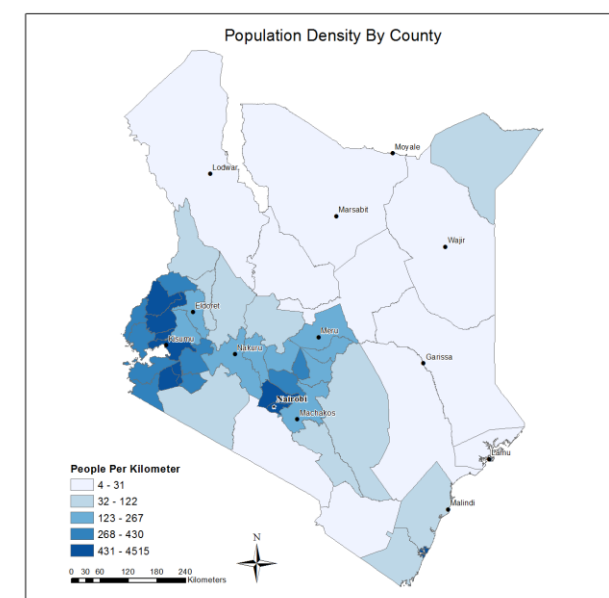


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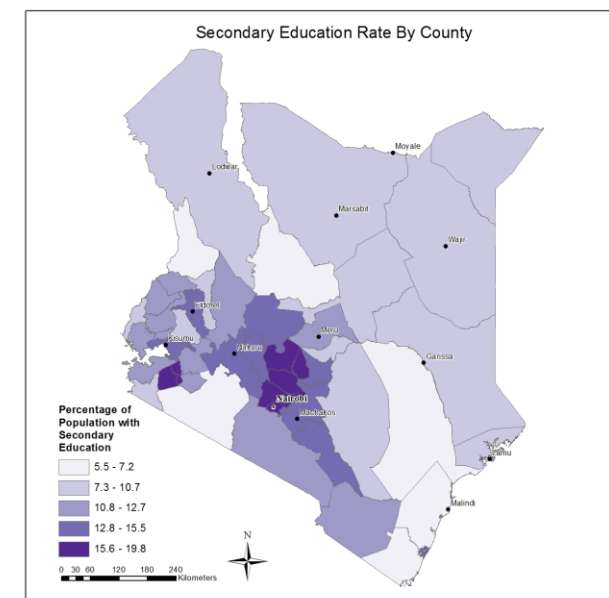


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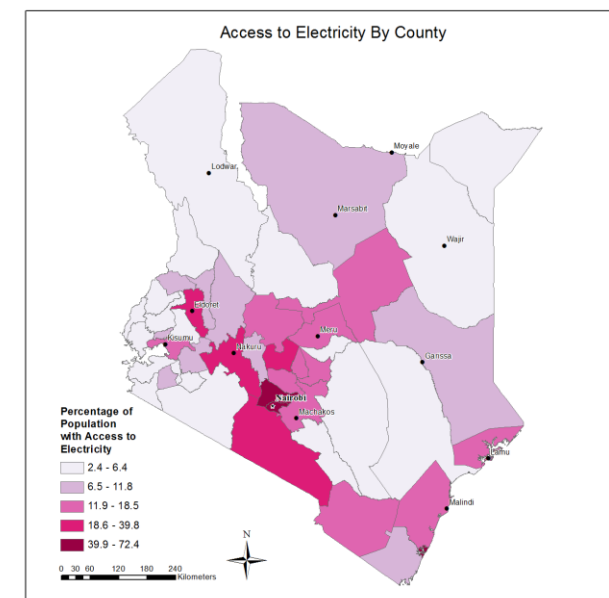


Figure 5

### IV. Results and Discussion

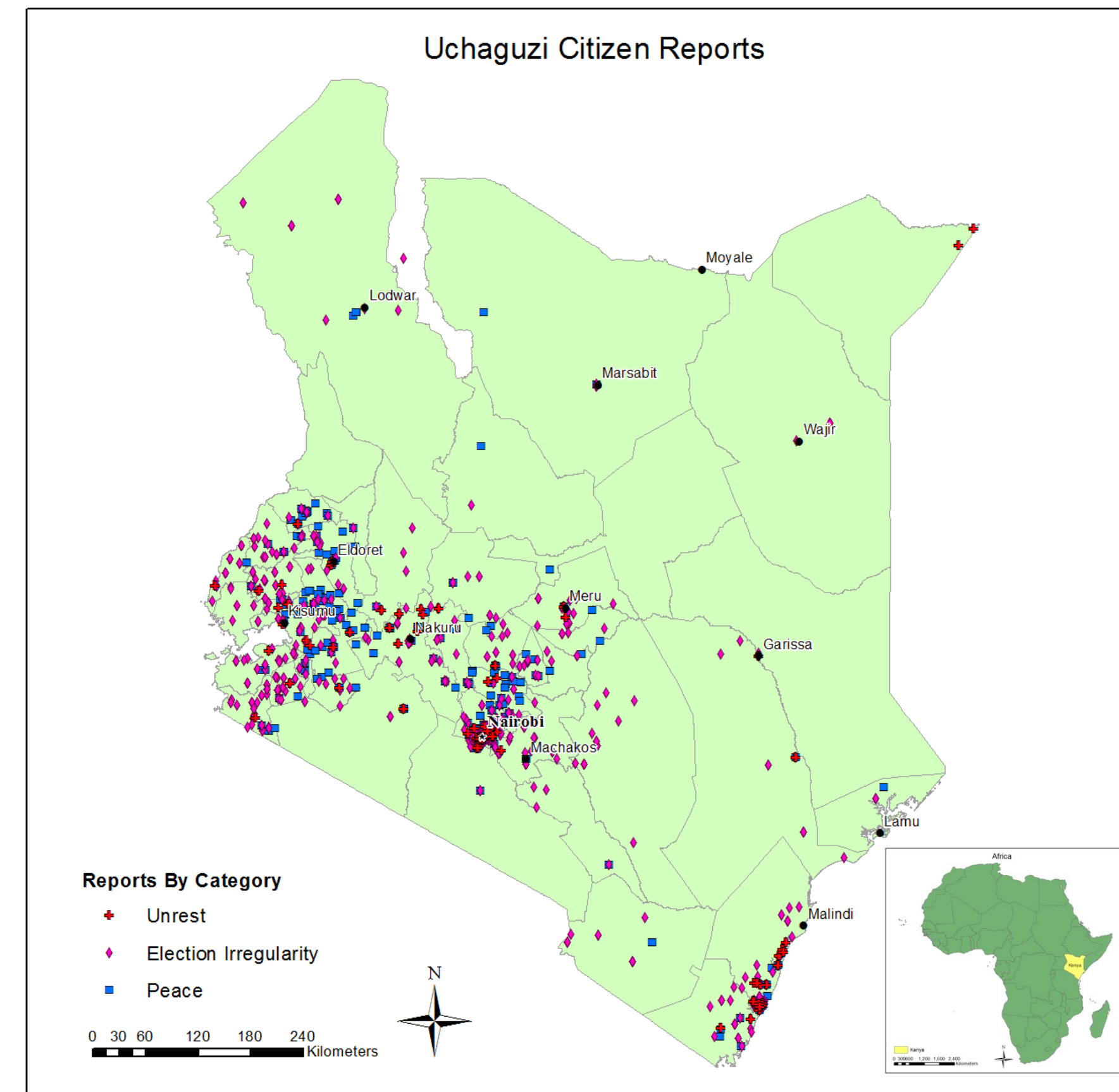


Figure 5

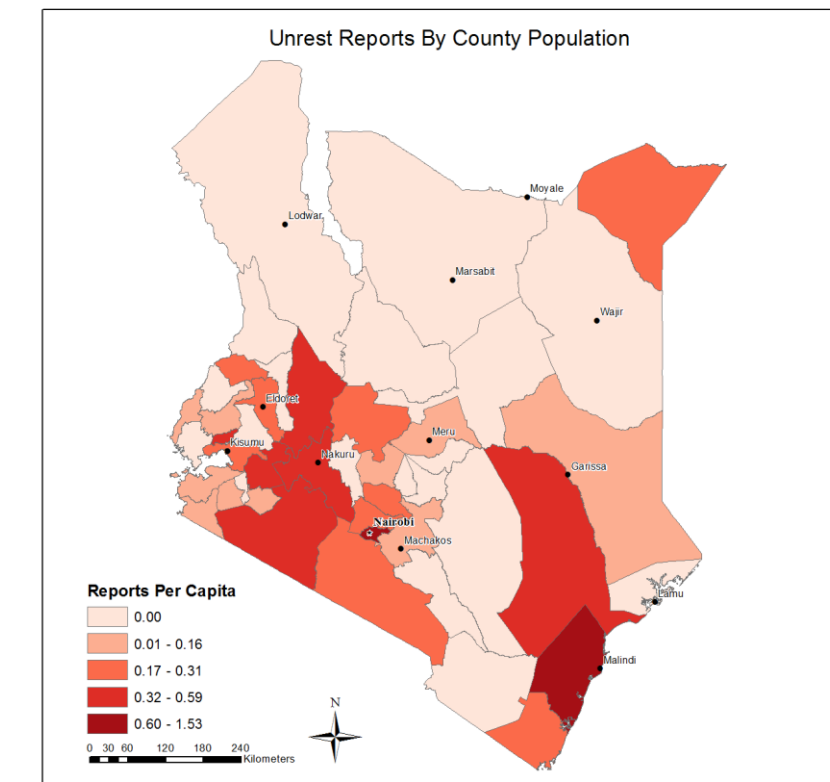


Figure 6

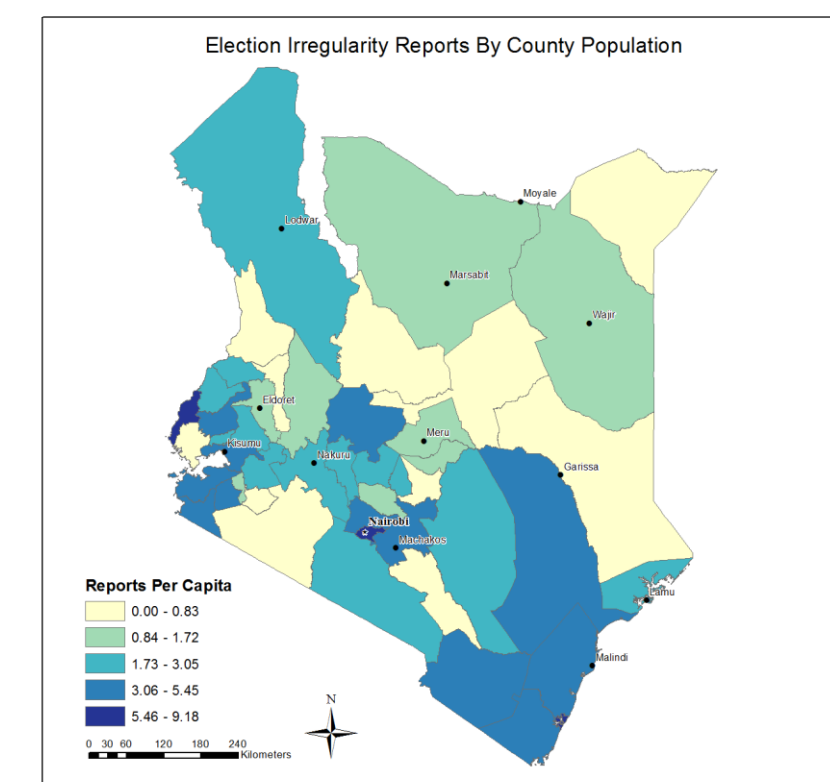


Figure 7

### V. Conclusion

The results of this study show that total population and population density show strong correlations to the Unrest and Election Irregularity category counts in Kenya's 47 counties. There are weak to no correlations found between education rates, poverty rates, access to electricity data, and voter registration figures.

Interesting findings from the analysis include finding the densely populated counties of Nairobi and Mombasa. Nairobi has 4,515 people per kilometer and a total of 3,138,369 people in the county. Mombasa has 4,292 people per kilometer and a total of 939,370 people. Interestingly, Nairobi has the highest amount of Election Irregularity and second most Unrest reports per capita in the county and Mombasa had the second most Election Irregularity and third most Unrest reports per capita.

There are other counties worthy of inquiry in each category. In Election Irregularity, the county of Busia is found to be the third highest in count per capita even though it is the 25<sup>th</sup> most populated county in the country. In Unrest, Kilifi is the highest in count per capita even though it is the 8<sup>th</sup> most populated county in Kenya and there are 29 counties that are more densely populated in the country.

Of additional interest is the county of Tana River. This county was cited as a county of interest in Gettleman's (2013) article as a result of frequent violence in the 2007-2008 election. It is the fifth highest in Unrest reports per capita and 9<sup>th</sup> most in Election Irregularity reports per capita even though it is the second least populated county in the country with 240,075 people and the third least densely populated county in the country with 6 people per kilometer.

It should be noted that this election has resulted in much less conflict and there appears to be much less corruption in this election than the one in 2007-08. Although his study only shows two days of citizen reports the overall number of incidents, especially violent incidences, is much lower than in the 2007-08 election.

### VI. Future Research

Future research should be focused towards further stream lining the Kenyan democratic process. More demographic data, especially ethnic and land ownership data, could be analyzed to discover more about the foundations of violence and electoral corruption in Kenya.

### VII. Acknowledgements

Special acknowledgements to Mike Winiski for his internet coding abilities, Geographic Information Systems know-how, data extraction expertise, and willingness to help whatever the time of day or night.

Also, a thanks to Uchaguzi for their valiant work to increase transparency in Kenya's 2013 election and for providing the crowdsourcing data that made this project possible.

### VIII. References

- All maps are created with The Economic and Social Research Institute ArcDesktop 10
- Figures 1, 2, 3, 4, 6, and 7 data sources 1) county level shapefiles from the Voter Registration maps from the Maps Division of Virtual Kenya (2013), 2) the major towns shapefile from the World Resources Institute GIS Division (1999), 3) demographic data derived from the Commission of Revenue Allocation's "Kenya County Fact Sheets" (2011).
- Figure 5 data sources 1) county level shapefiles from the Voter Registration maps from the Maps Division of Virtual Kenya (2013), the major towns shapefile from the World Resources Institute Geographic Information System (GIS) Division (1999), 3) citizen report data points from Uchaguzi (2013), and 4) the African Country shapefile from Colorado State University GIS Training and Applications Department (1998).
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