LIVESTOCK RAIDING AND RAINFALL VARIABILITY IN NORTHERN KENYA

Carol R. Ember, Teferi Abate Adem and Ian Skoggard

Human Relations Area Files at Yale University

Presented at the meetings of the Society for Anthropological Sciences, Charleston, SC, February 16-20, 2011

Rainfall Variability and Livestock-Related Violence: Any Link?

- We explore possible answers to this question through a contrastive analysis of time series data on rainfall variability and livestock-related violence in Turkana district for the years 1998-2007.
- We will explore how results compare with previous work in neighboring Marsabit district
- Our focus is on Turkana pastoralists

Existing Arguments

- Two major, but contrasting, arguments:
  - Humanitarian organizations and climate change advocates link the causes of livestock raiding to resource scarcity, suggesting that it has become more lethal lately because of frequent droughts (e.g, OCHA 2008; Smith 2009).
  - Over ten years of research by Witsenburg and Adano (2009) in Marsabit district provides empirical evidence, suggesting a counter argument, i.e., "…livestock raiding is more violent in wet seasons, when water pasture and water are abundant..."
- What does the evidence from Turkana suggest?

The Evidence from Marsabit

- Summarizing, Witsenburg and Adano (2009: 525) reported that:
  - 1) wet years were more violent than drought years
    - In drought years, they noted, people were more inclined to cooperate in sharing wells and pastures than fight.
    - Conflicts over resources were often triggered by the failure of local institutions for cooperation and resource sharing (not by scarcity as such).
  - 2) human deaths from livestock raids peaked in the main rain season (April to June), and increased again when the small rains come (October-December)

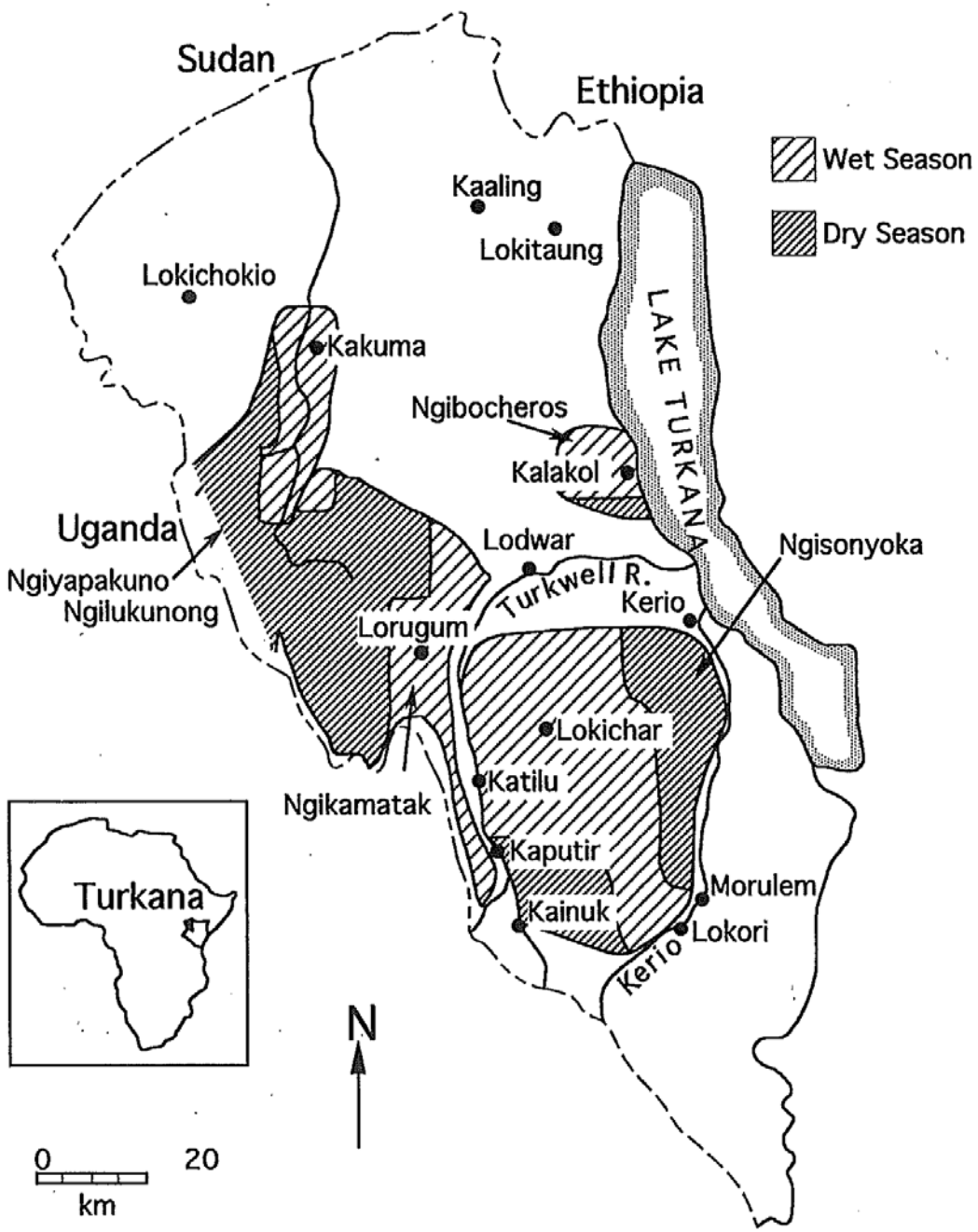
Explaining the Marsabit Findings

- Witsenburg and Adano (2009) explain this pattern as follows:
  - The livestock are stronger, fatter and fit for long treks during the wet season.
  - The wet season has higher availability of:
    - vegetation and surface water for the animals
    - thicker vegetation for hiding attackers
    - more young men to engage in raiding

About the Turkana

- The Turkana are a Nilotic-speaking pastoral people living in the arid and semiarid rangelands of northwestern Kenya.
- Like other pastoralists, they run the risk of losing their livestock due to natural disasters, (drought, disease, etc) and raiding.
- Strategies for minimizing this risk include herd diversification and moving frequently.
- Mobility decisions are greatly related to three major factors: rainfall pattern, herd composition and security concerns (McCabe 2004).

- The two slides show that the Turkana move their herds not only to different places in the dry season, but expand their range significantly during drought years.


Sudan
Ethiopia
Wet Season
Dry Season
Kaaling
Lokitaung
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LAKE TURKANA
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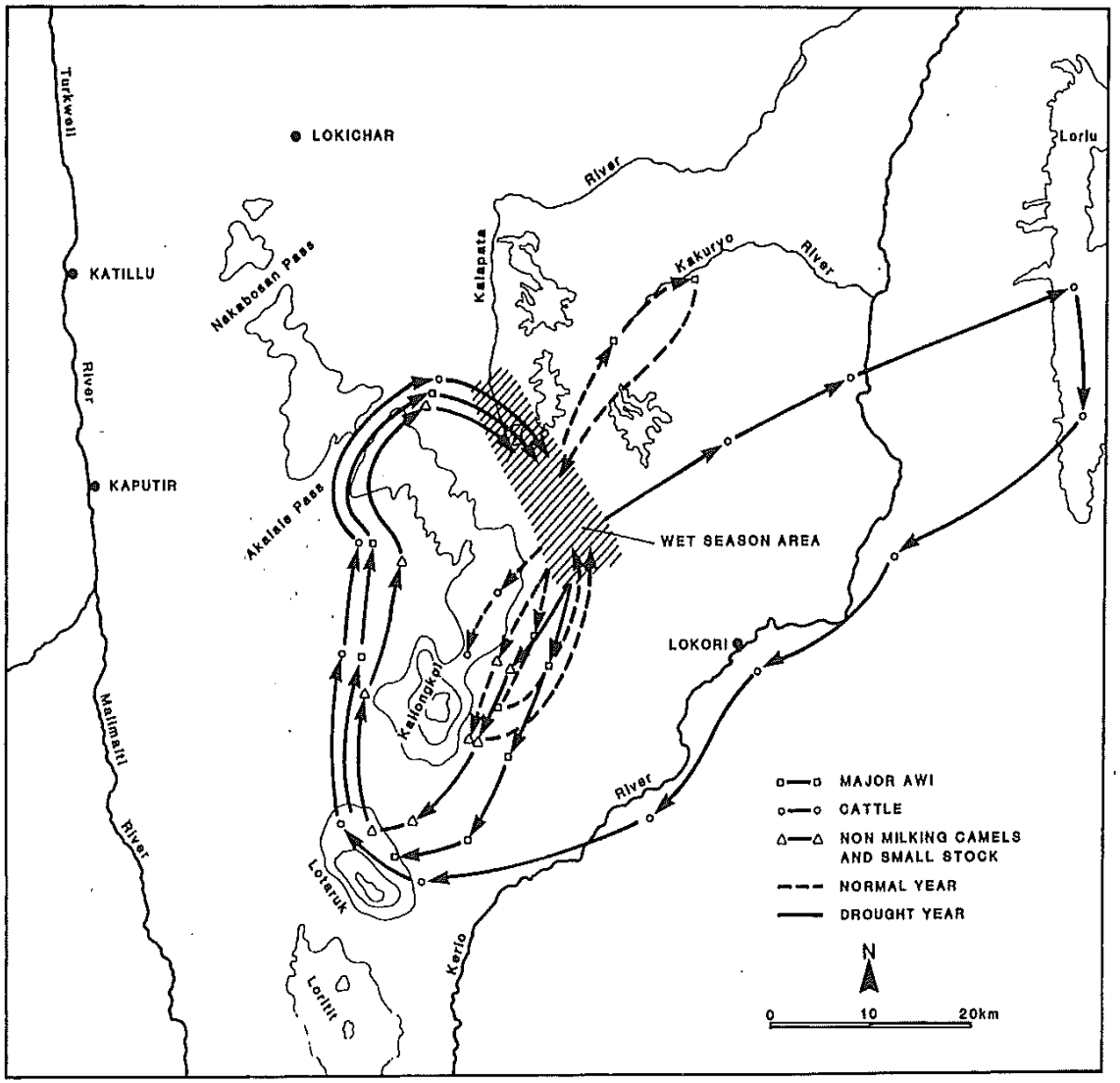


Map 10.6. Ngisonyoka migration: Normal and drought years.
(From McCabe 1994, in African Pastoralist Systems: An Integrated Approach, *edited by E. Fratkin, K. A. Galvin, and E. A. Roth, p. 80. Copyright © 1994 by Lynne Rienner Publishers. Used with permission.)*

Methods: Data Collection

- Database source: Lexus/Nexus http://www.lexisnexus.com
- Category sources: Newsletters, Aggregate News Sources, News Transcripts, Newswires, Major Newspapers
- Time period: 1998-2007
- Search: All news reports include “Tur*ana”
- Results: Initial search typically yielded about 500 reports per year

Methods: Data Processing

- For this paper we narrow reports to livestock-related incidents if all of the following were satisfied:
  - Socially-organized violence of some kind involving Turkana, either as attackers or attacked
  - Incident occurred in Turkana District or in border localities
  - Incident involved actual or attempted raid of livestock
- Data collected: Date and place of incident, names of parties, number deaths and wounded, number livestock stolen, property destroyed, people displaced, weapons used, and atrocities.

Methods--Analysis

- We focus on the number of casualties during livestock raids as a measure of intensity rather than on the number of livestock raids for two reasons.
  - First, we suspect that incidents are under-reported since reporters are likely to focus on larger events.
  - Second, just as Witsenburg and Adano (2009) found, the correlations are much lower for events than for intensity.
- If the Witsenburg and Adano (2009) findings held up for Turkana, we would expect the most intense livestock raids in the wetter months and years.

Analysis of Monthly Rainfall

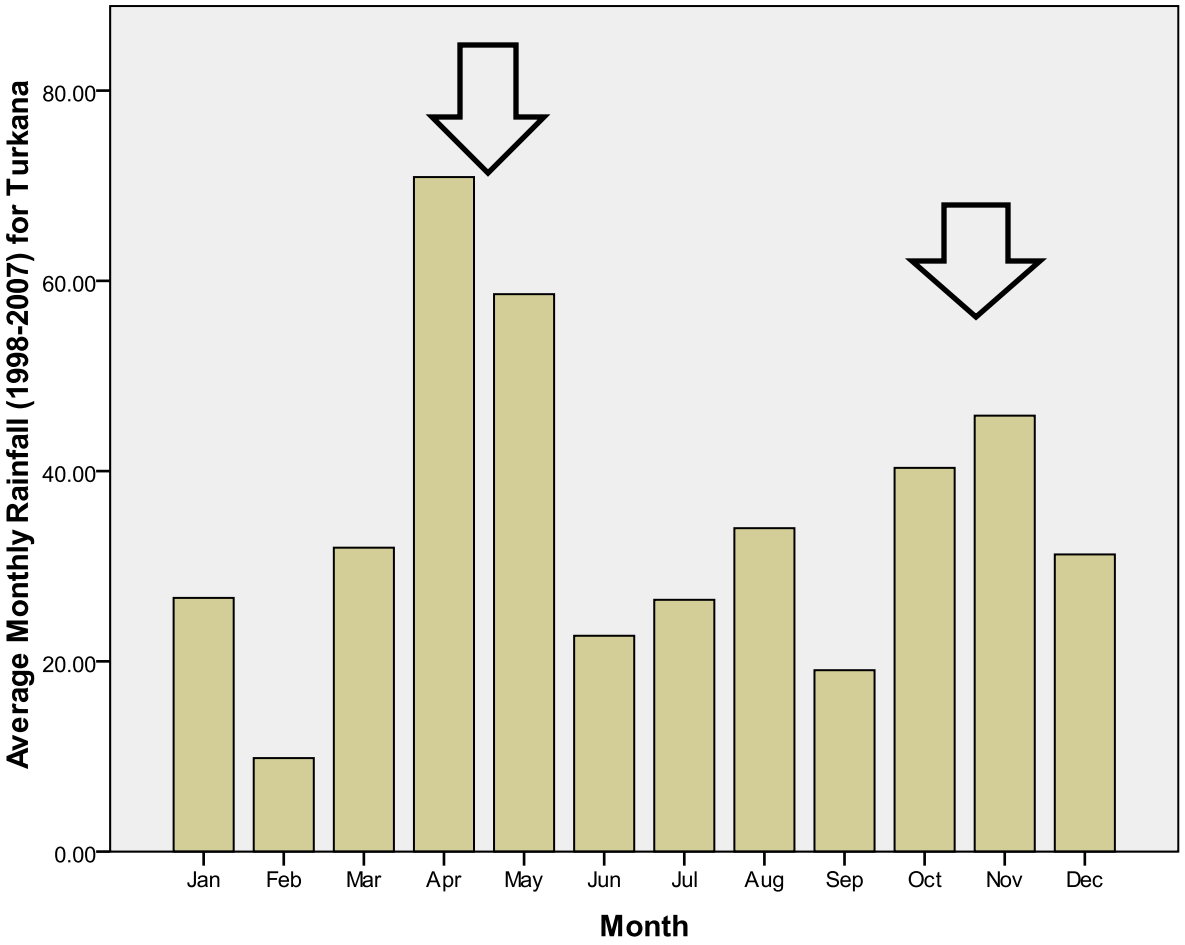
Do more intense livestock raids occur in wetter months?

Our short answer is no.

Our findings suggest a very different pattern from Marsabit and towards the end of this presentation we try to speculate why that might be so.

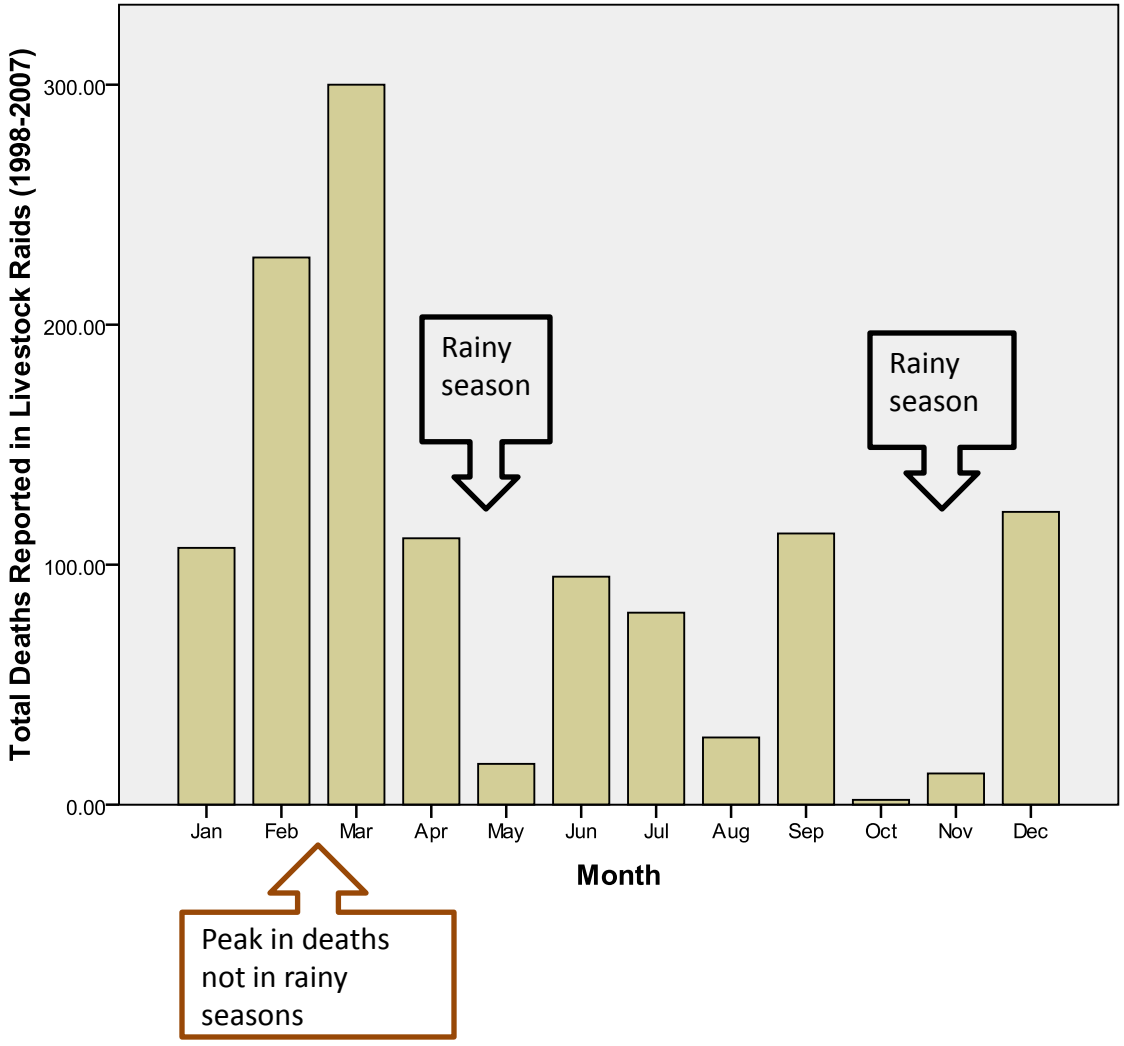
Monthly Rainfall
The “long” rains in Turkana country typically peak in April and May and the “short” rains peak in October and November. The “long” rains have more rainfall than the “short” rains.

Monthly Rainfall in Turkanaland (1998-2007)



- The next slide shows the number of deaths during livestock raids and arrows pointing to the rainy seasons

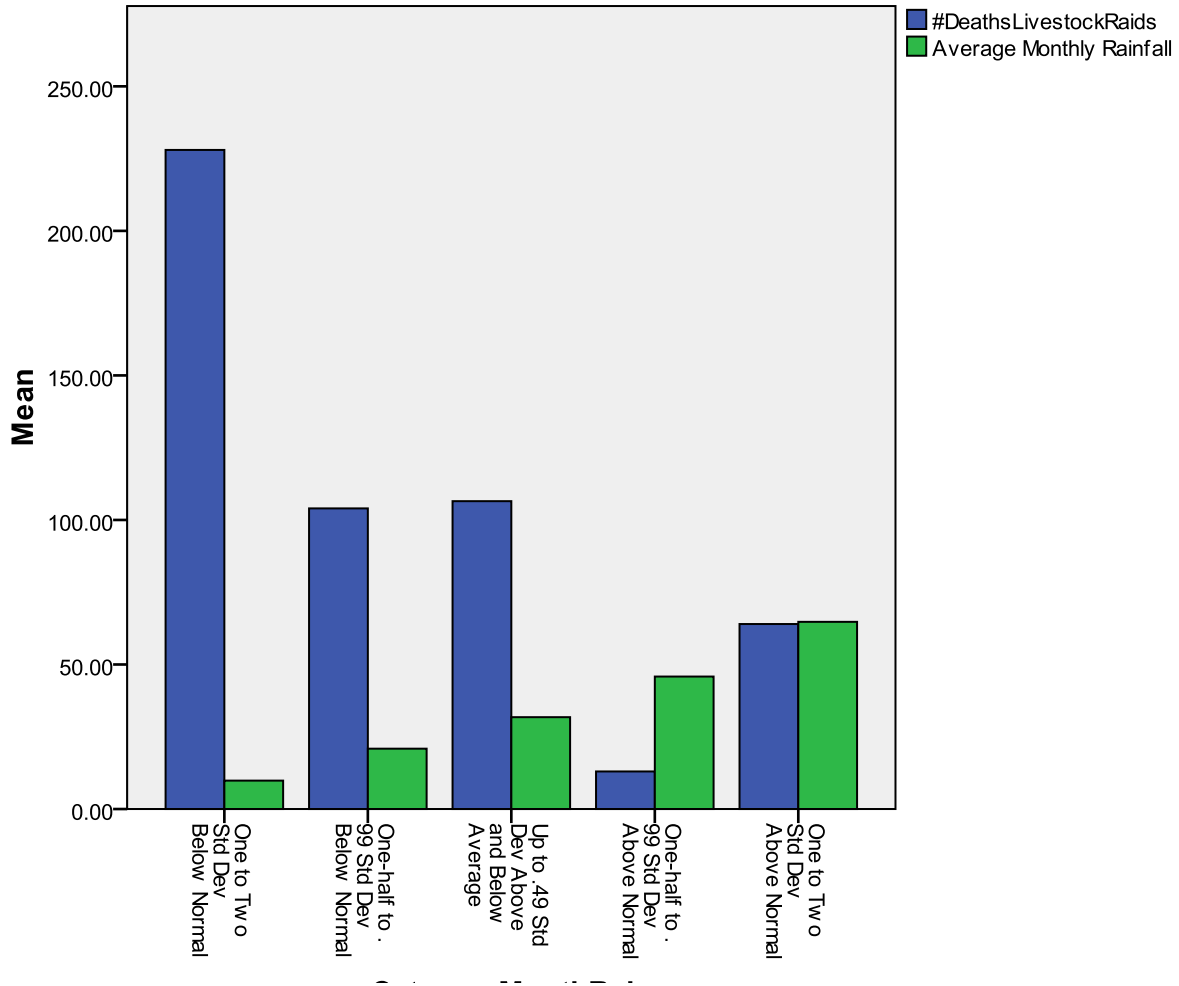
Total Deaths Reported in Livestock Raids in Turkanaland by Month (1998-2007)



Analyzing Relationship between Wetness of Month and Violent Deaths in Livestock Raids

- Correlation is -.41 between the average monthly rainfall and violent deaths in livestock raids (not sign.)
- Relationship is not quite linear as shown in next graph where months are ordered by how much they depart from the average monthly rainfall across the time frame

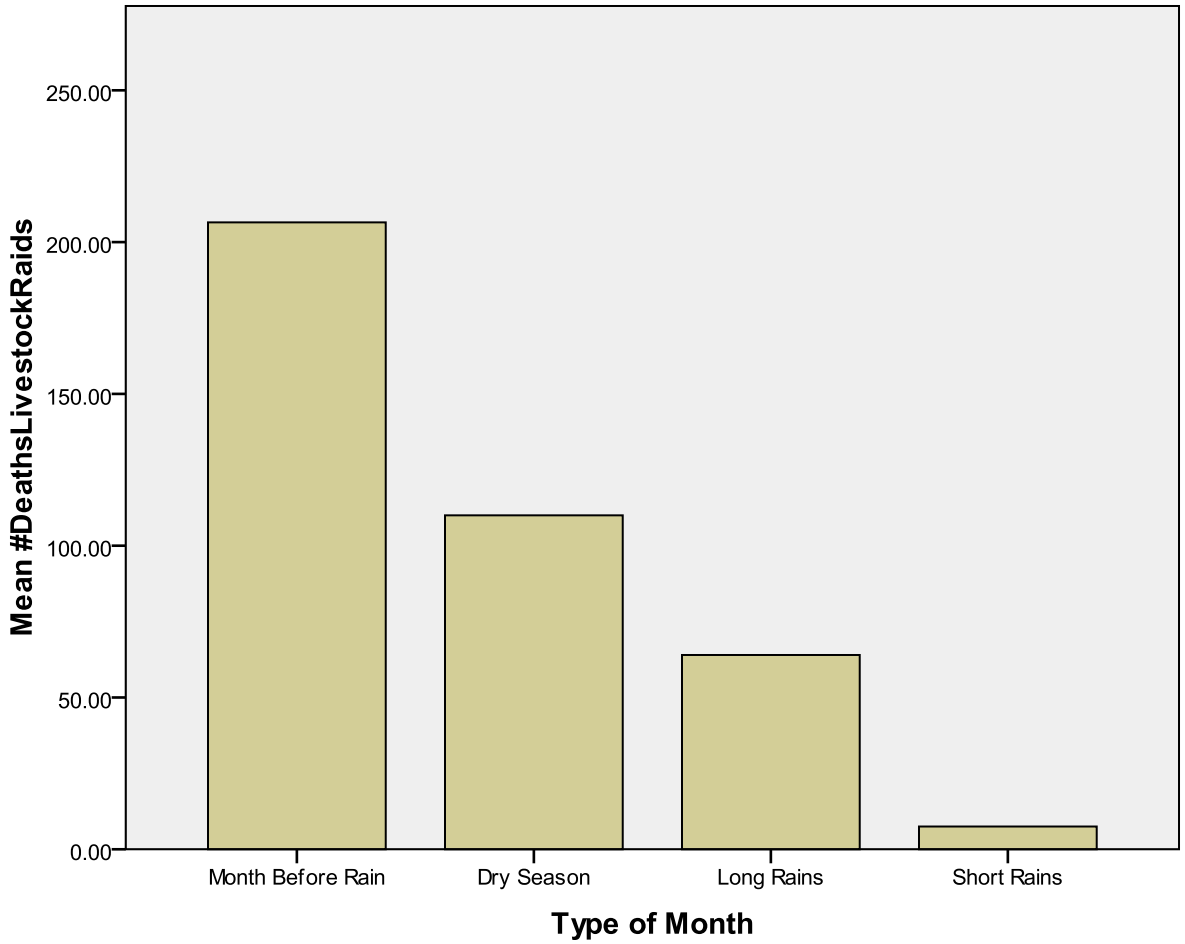
Months in Green (ordered by deviation less than normal on the left) and Number of Deaths in Livestock Raids (Blue)



Category of Month

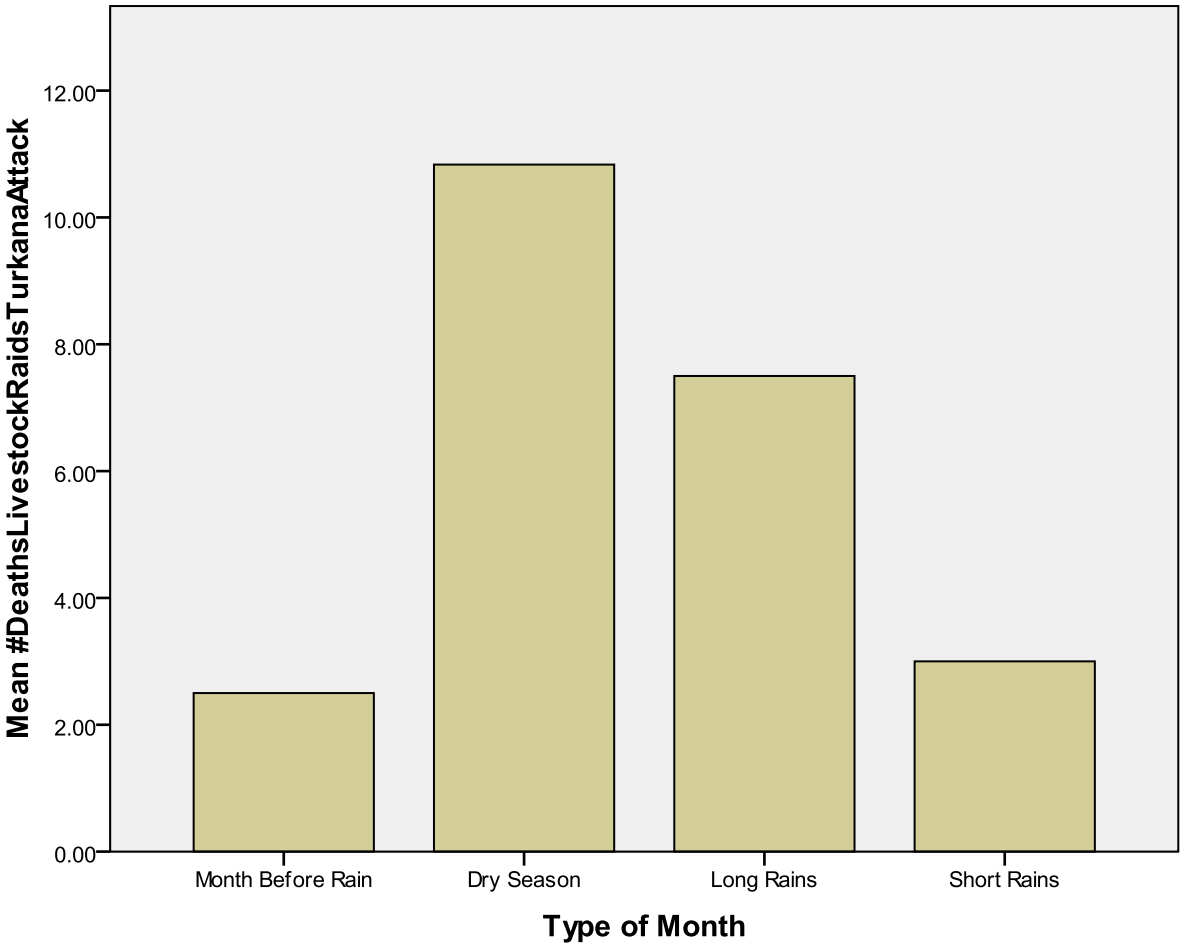
- The following slide shows the “category” of month, rather than the average rainfall.
- Why?
  - There is one seemingly anomalous month—March. March is overall an average rainfall month, but it has the highest number of deaths, more than February (the driest month). Unfortunately, we do not have rainfall by the day of the month, so we do not know when the rainy season typically starts in March. If the rainy season starts the end of March, it can look like an average month, but the first part could be the dry season and the second part the rainy season.
  - However, we can look at the dates of violence in March. Most of the reason that March is high in livestock raid deaths is from 4 incidents that occurred between Pokot and Turkana in March 8-10, 1999. The number of deaths was 101 during that time. On March 15, 1999 there were 50 more deaths. It is quite possible that it was still the dry season at the beginning of the month. If that were the case, March 1999 would not be an anomaly. In fact, the preceeding months, Dec 1998, Jan 1999, and February 1999, were all much drier than normal for those months (-2.5, -2, and -1.5 standard deviations below normal), so the pastoralists may have been quite stressed at the beginning of March.
- The Witsenburg and Adano (2009) paper suggested that pastoralists may “restock” at the beginning of the rainy season. If the rains started in March, that could explain March being higher than April and September being higher than October. To examine this possibility, we have categorized months as follows: Month Before Rain; Dry; Long Rains, and Short Rains.

Type of Month by Deaths in Livestock Raids



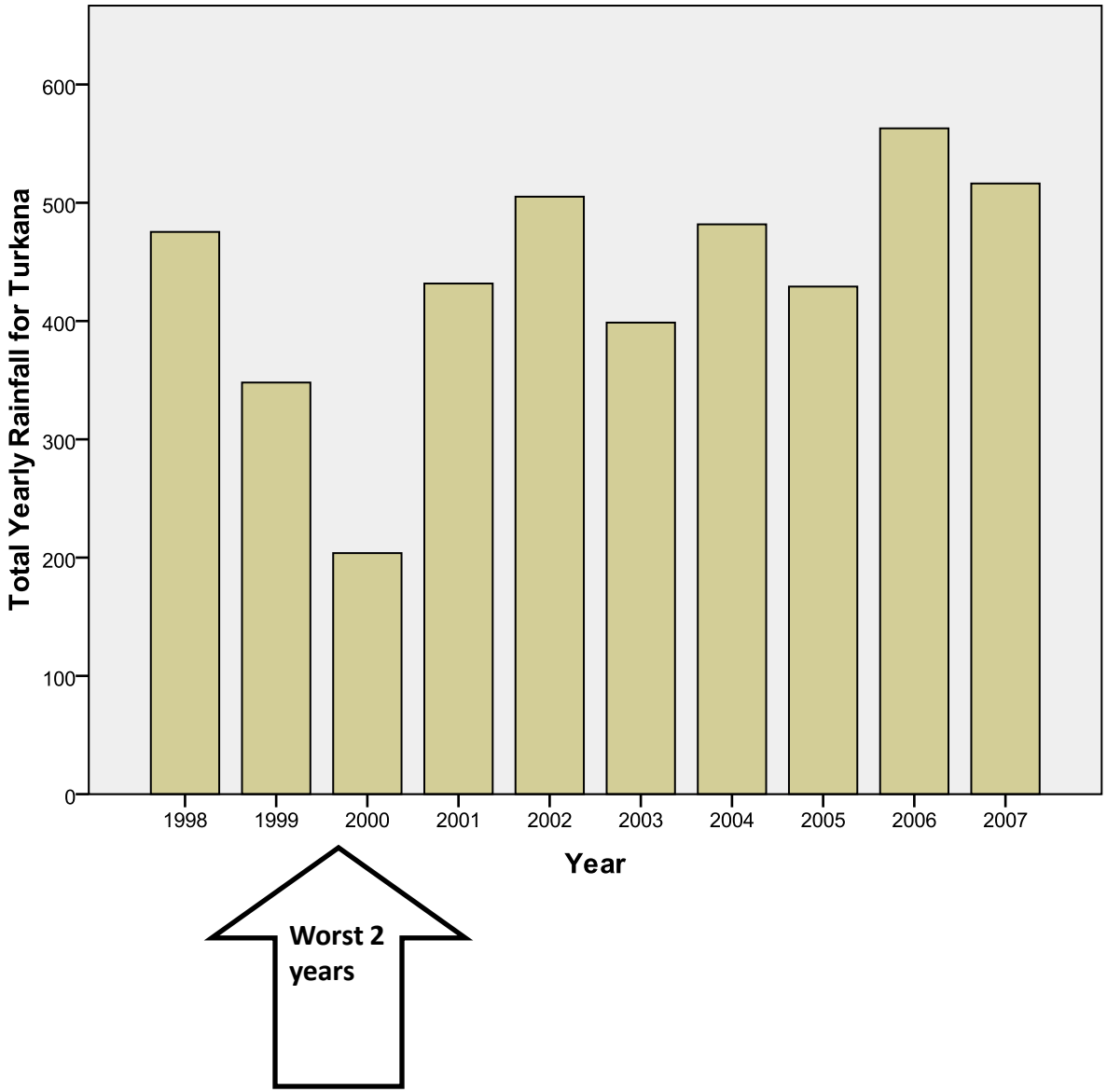
- The graph looks as if the Witsenburg and Adano (2009) “restocking” idea might be correct. However, this finding may be largely due to Pokot strategies, not Turkana.
- If we just look at instances where the Turkana are attackers, the dry months emerge as the months with the highest number of deaths.

Type of Month by Deaths in Livestock Raids Limited to Turkana as Attackers

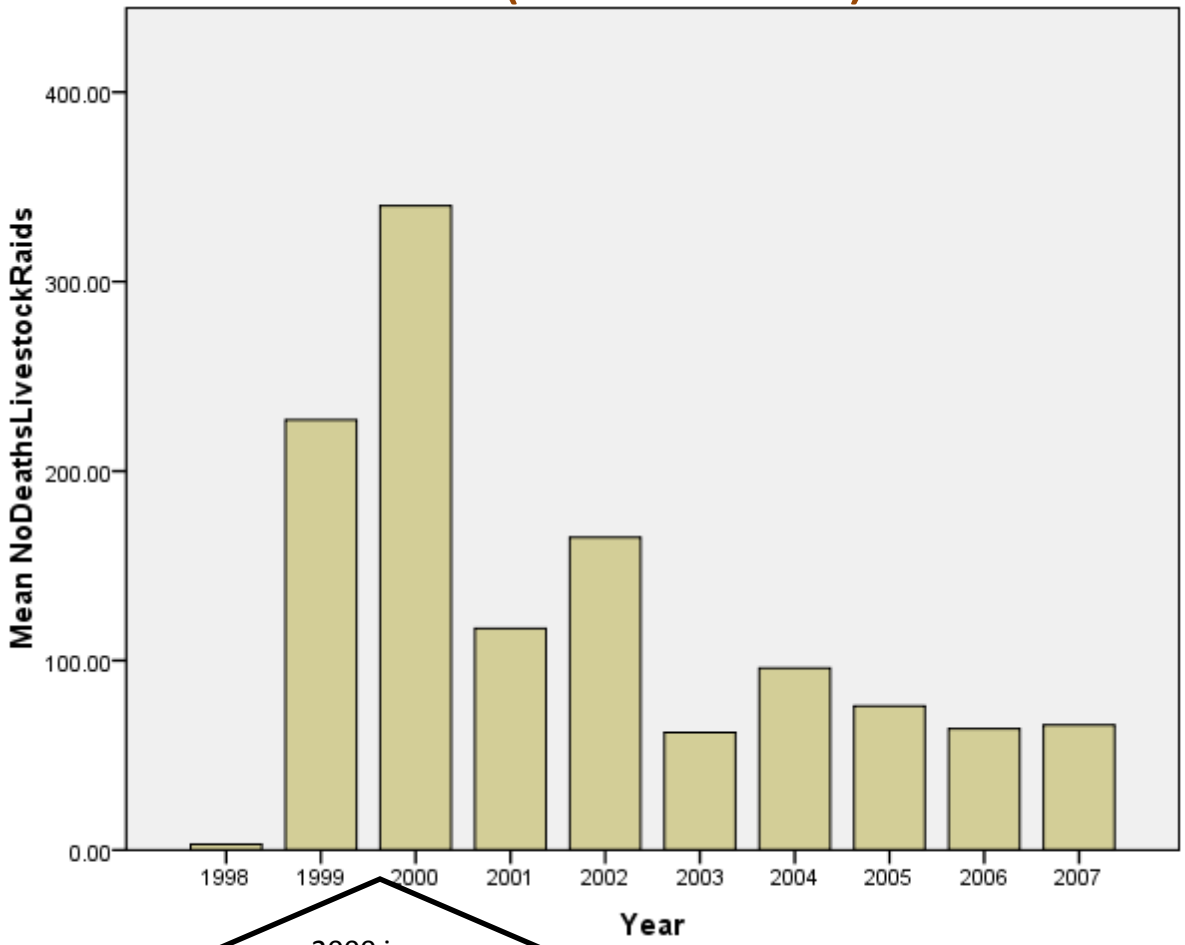


- Let us turn now to total yearly rainfall
  - How does variation in intensity of violence correspond to rainfall?

Rainfall by Year for Turkanaland (1998-2007)



Livestock Raid Deaths by Year for Turkanaland (1998-2007)

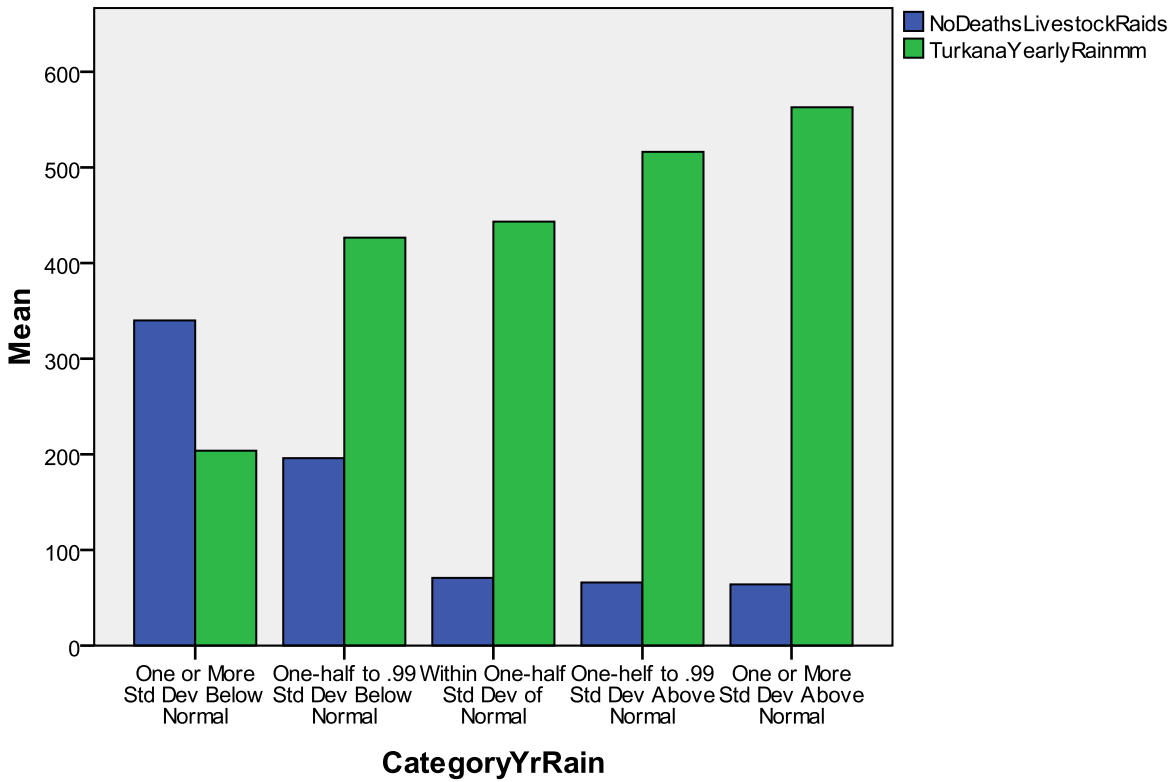


Analyzing Relationship between Wetness of Year and Violent Deaths in Livestock Raids

- Correlation is -.79 (p=.006, two tails)
  - Relationship is significant
  - Opposite from findings in Marsabit—the drier the year, the more intense the violence

- The graph below graphically shows the trend in casualties and rainfall years grouped by the number of standard deviations below and above normal rather than by date. The green bars represent the rainfall. Notice that as the rainfall trends up, the blue bar (number of deaths) trends down. However, the graph suggests that as the rainfall approaches normal or better than normal, the level of violence from livestock raids appears to level off.

Years (1998-2007) in Green (ordered by deviation from normal) and Number of Deaths in Livestock Raids (Blue)



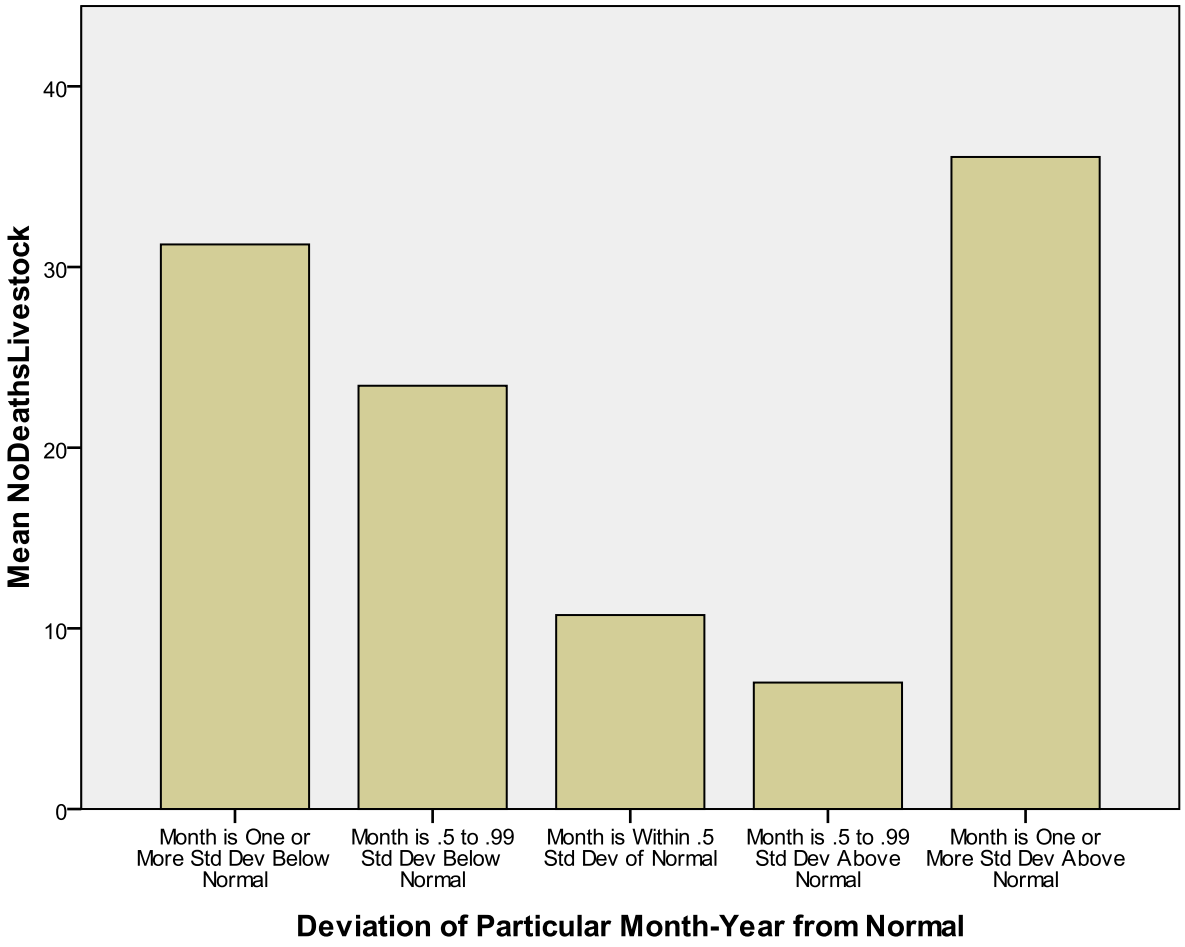
- The data so far suggest that the drought year may be a more important driver of livestock violence than the dryness of the month.
- A drought is an unpredictable event; a dry month is more predictable.
- Pastoralists adapt their seasonal round to changes in the weather, moving their animals to different econiches when the weather changes. But when the weather becomes unpredictable, pastoralists may need to invoke more and riskier contingency plans.
- Even with contingency plans, the risks during drought are inherently more dangerous because pastoralists may need to move further afield and to areas that may be contested. Even if they are not the attackers, they may provoke attack in these attempts to find appropriate water and pasture for themselves and their herds.

Looking at Months and Years Together

- Another kind of unpredictability
  - What if a dry month is much drier than it normally is, or much wetter?
  - Does unpredictability of a particular month drive the violence in any way? That is, are the particular months with the violent episodes (e.g., Jan 2000), much worse or better than they are expected to be?
  - To examine this question, we take each month and year over the 10 year period that had at least one violent livestock episode and we rate the number of standard deviations away that month/year is from a normal month in an average year
  - Does more deviation from expected predict intensity of violence?

Looking at Deaths in Livestock Raids and Deviation of Particular Months in Particular Years From Normal

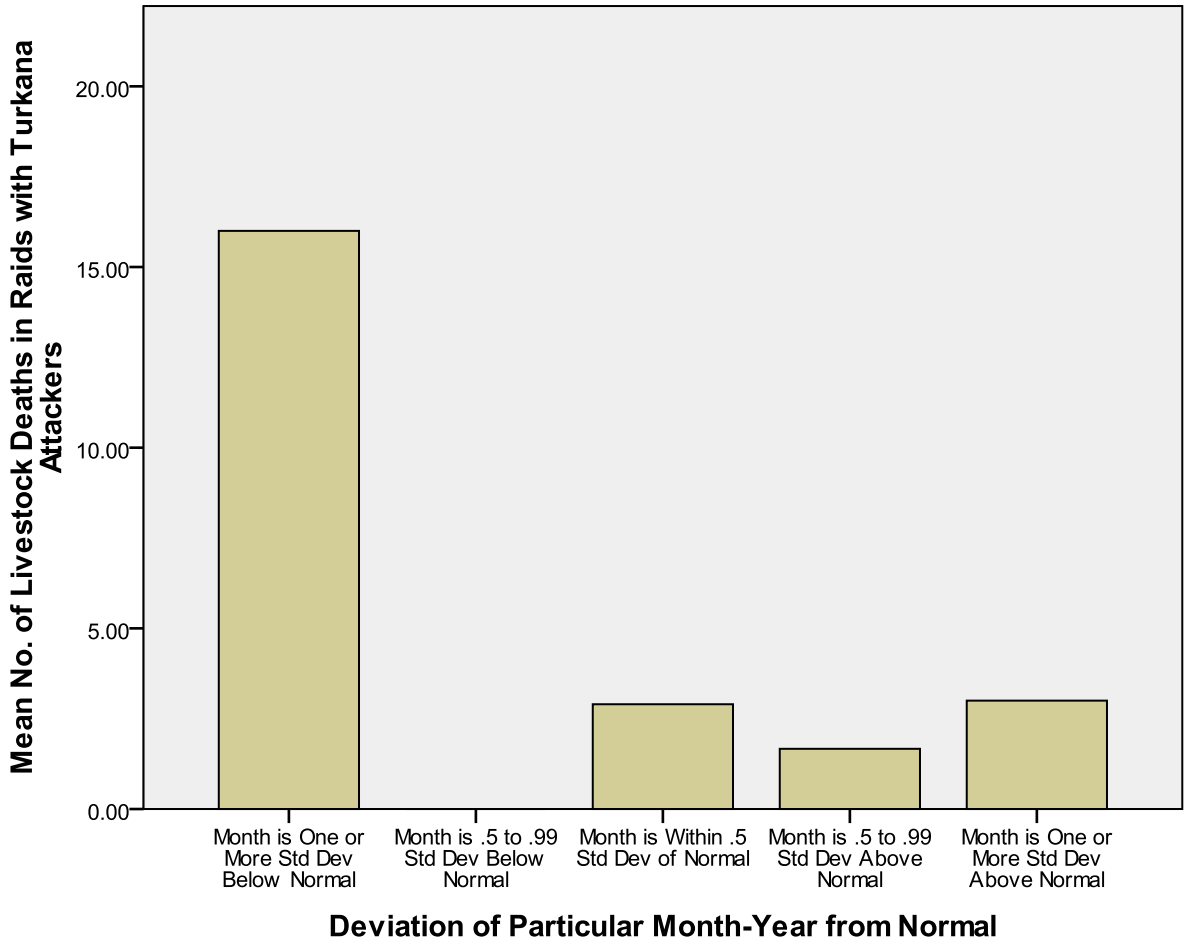
Graph looks bimodal—excessively drier or wetter than expected seems to have more intense violence



- The above pattern looks bimodal—wetter than normal and drier than normal have more livestock raid violence
- Now let us limit incidents to only those where Turkana are attackers
- In the next slide, the pattern looks different
- Wetter than expected month/years **do not** have more violence during livestock raids
- Only the drier than normal months do. These are likely the months that produce the most stress on the Turkana to find enough pasture and water.

Looking at Deaths in Livestock Raids and Deviation of Particular Months in Particular Years From Normal—Turkana as Attackers

Turkana pattern is different —their attacking is likely in drier than normal months and years



Conclusions

•Results are generally opposite from Marsabit—in general, the drier the month or year, the more intense violence in livestock raids in Turkanaland

•Broadly these results support the argument that it is resource scarcity that primarily drives livestock raid violence

As a next step we need to try to explain why the results are different in the two Districts (Marsabit versus Turkana)

•Some preliminary ideas

- •Livelihood and mobility differ considerably in the two districts—Turkana are much more mobile and are more livestock dependent than the ethnic groups around Marsabit Mountain who have more agriculture

- •Months of scarcity may differ—for Marsabit, food may be more scarce in the rainy seasons before harvest; in Turkana, scarcity may be worst when pastureland is scarce in the dry seasons.

Acknowledgements

This research was supported by the Office of Naval Research ONR under MURI grant no. N00014-08-1-0921 to George Mason University with a subaward to the Human Relations Area Files (PI: Claudio Cioffi-Revilla; co-PIs: Carol R. Ember, Sean Luke, and Kenneth De Jong). The opinions, findings, and results are those of the investigators and do not reflect the views of the sponsors.

Current HRAF Team: Carol R. Ember (co-PI), Teferi Abate Adem, Ian Skoggard, and Eric C. Jones.

We specifically thank:

- Sophie Skoggard, for her work collecting and summarizing violent episodes from Lexus/Nexus
- Kate Cummings for entering the data into a database
- Brittany Burke for helping to locate places of conflict from Google Earth
- Atesmachew Hailegiorgis and Chenna-Reddy Cotla for extracting rainfall data from NASA which is archived and distributed by the Goddard Earth Sciences Data and Information Services Center
- A.J. Faas for summarizing statistics across all the data points, and identifying the grids for Turkana.