

Vulnerability Among Pastoralists: Evidence from Kenya and Ethiopia

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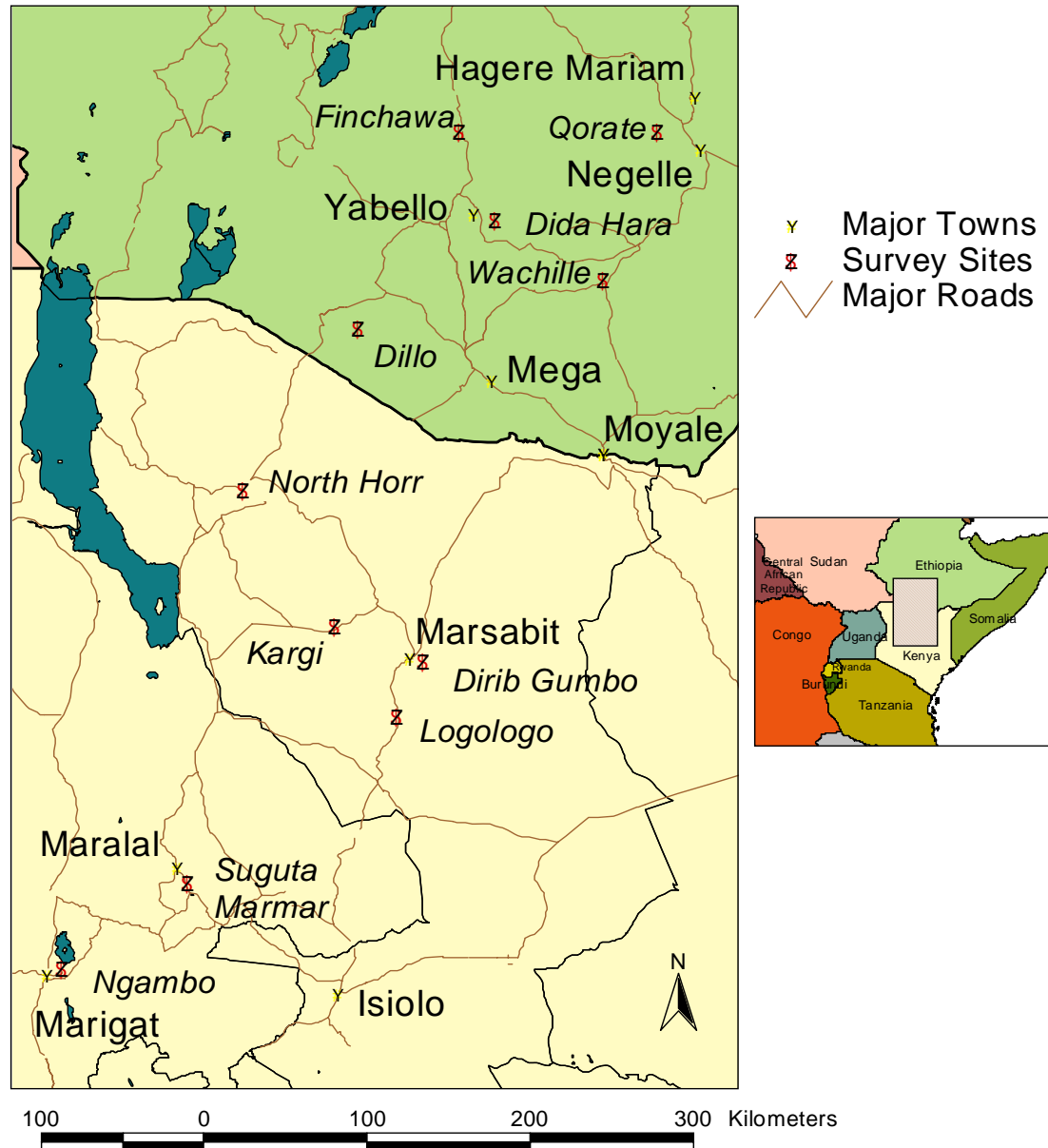
This presentation draws on the author's own work as well as invaluable contributions by Chris Barrett, Cheryl Doss, Solomon Desta, Peter Little and Travis Lybbert.

- Report on risk ranking exercise.
- Describe in depth two aspects of vulnerability among pastoralists: income vulnerability and asset vulnerability.
 - Draw on evidence gathered in Northern Kenya and Southern Ethiopia.
- Describe the different types of vulnerability from a research perspective.
- Indicate how the distinction matters for policy purposes.

Data sources for this presentation

- Sample of 88 Gabra households in two communities in northern Kenya over a four year period.
- Ongoing panel study begun in 2000 of 330 households in 11 communities in Kenya and Ethiopia with the PARIMA project. Funded by the Global Livestock Collaborative Research Support Program of USAID.
- Sample of 55 Borana households in four communities in Southern Ethiopia over a 17 year period.

Survey Sites in Southern Ethiopia and Northern Kenya



Vulnerability among Pastoralists

- What do people say they are worried about when you ask them?
- Risk rankings from the PARIMA survey.
- Developed list of common concerns through open ended work.
- “which of these you are afraid could affect your household in the coming three months”.
- Allowed them to say “not a concern” and they could add others as well.

Risk ranking in overall order: 1 is highest rank, 11 is lowest rank.

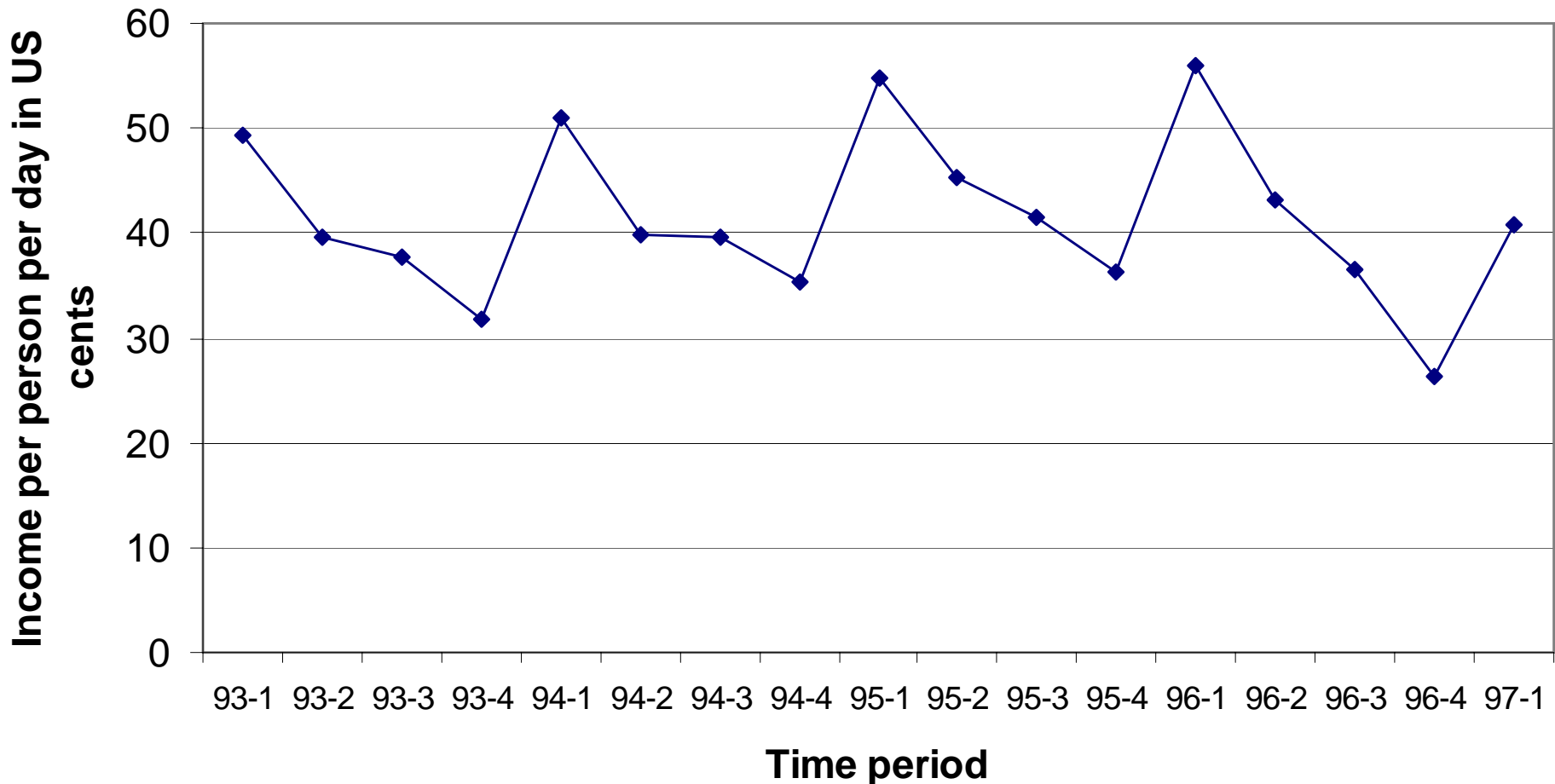
- 1) Not enough food for people
- 2) Human sickness
- 3) Animal sickness/ death
- 4) Not enough pasture for animals
- 5) High prices for things you buy
- 6) Low prices for things you sell
- 7) No buyers for things you sell
- 8) No water for animals
- 9) Animal loss due to theft / raiding
- 10) Insecurity / violence / fights
- 11) Crop failure

- We are currently analyzing variation in these ranks:
 - across time,
 - within and across households,
 - Within and across communities
- There is large variation and this analysis should help identify patterns.
 - Men rank the risk of animal loss due to theft or raiding much higher than do women (other things held equal).
 - The rank of animal sickness or death is decreasing in herd size but increasing in the share of income derived from livestock. (other things held equal)

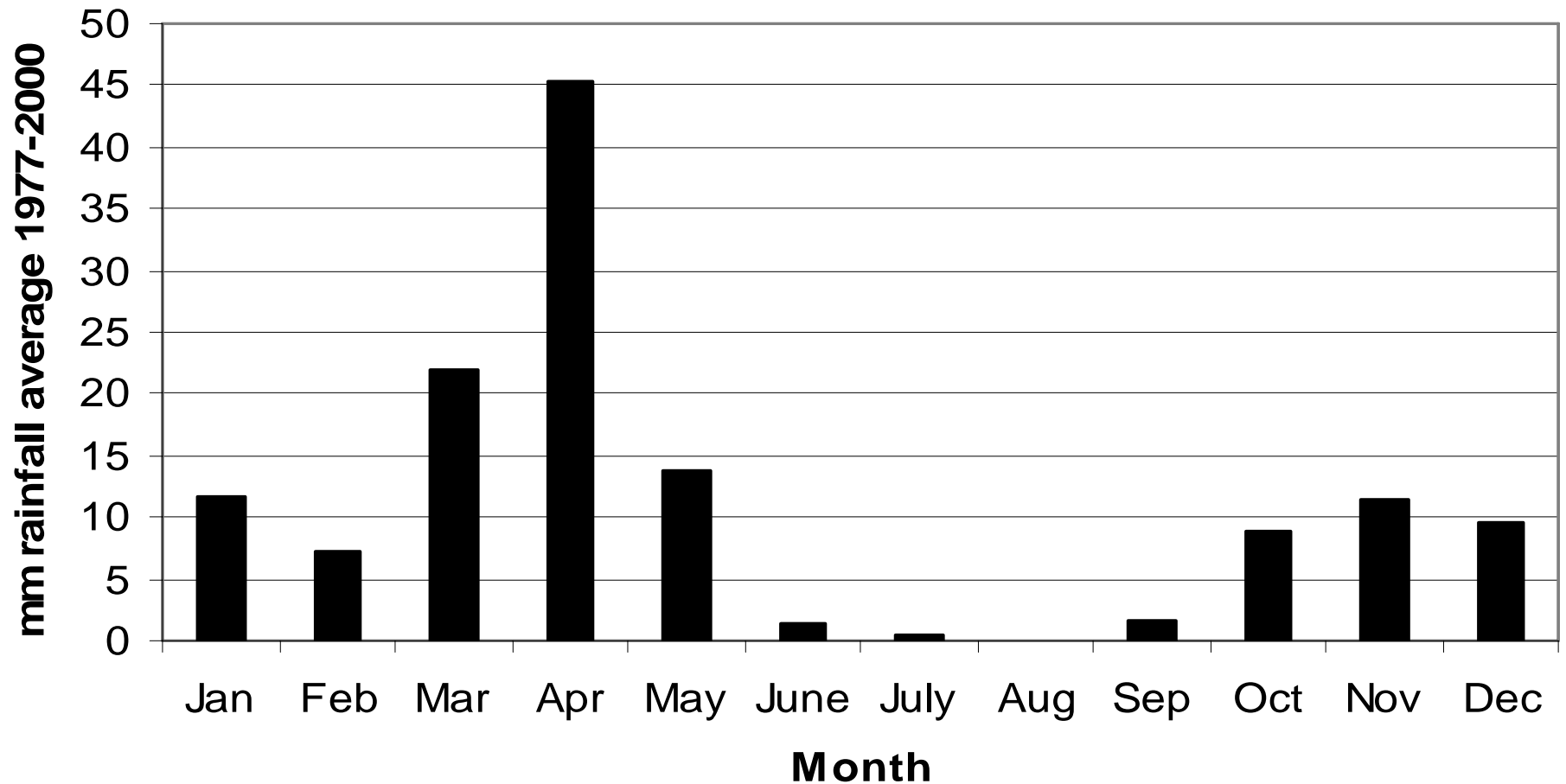
- Today I want to focus on issues surrounding the first concern: not enough food for people
 - What influences vulnerability to food insecurity at the household level?
 - What can we learn from this that helps to inform policy that reduces vulnerability?

- Analyze a measure of income that adds the cash value of all home consumed goods to cash income and remittances.
- In the Gabra data set I will rely on below,
 - 72% of this income is obtained by milk produced from the household herd (12% of which is sold and the remainder is home consumed),
 - 14% is from the sale of animals,
 - 13% is from home consumption of slaughtered animals,
 - 1% is from skin and hide sales, gifts and remittances.

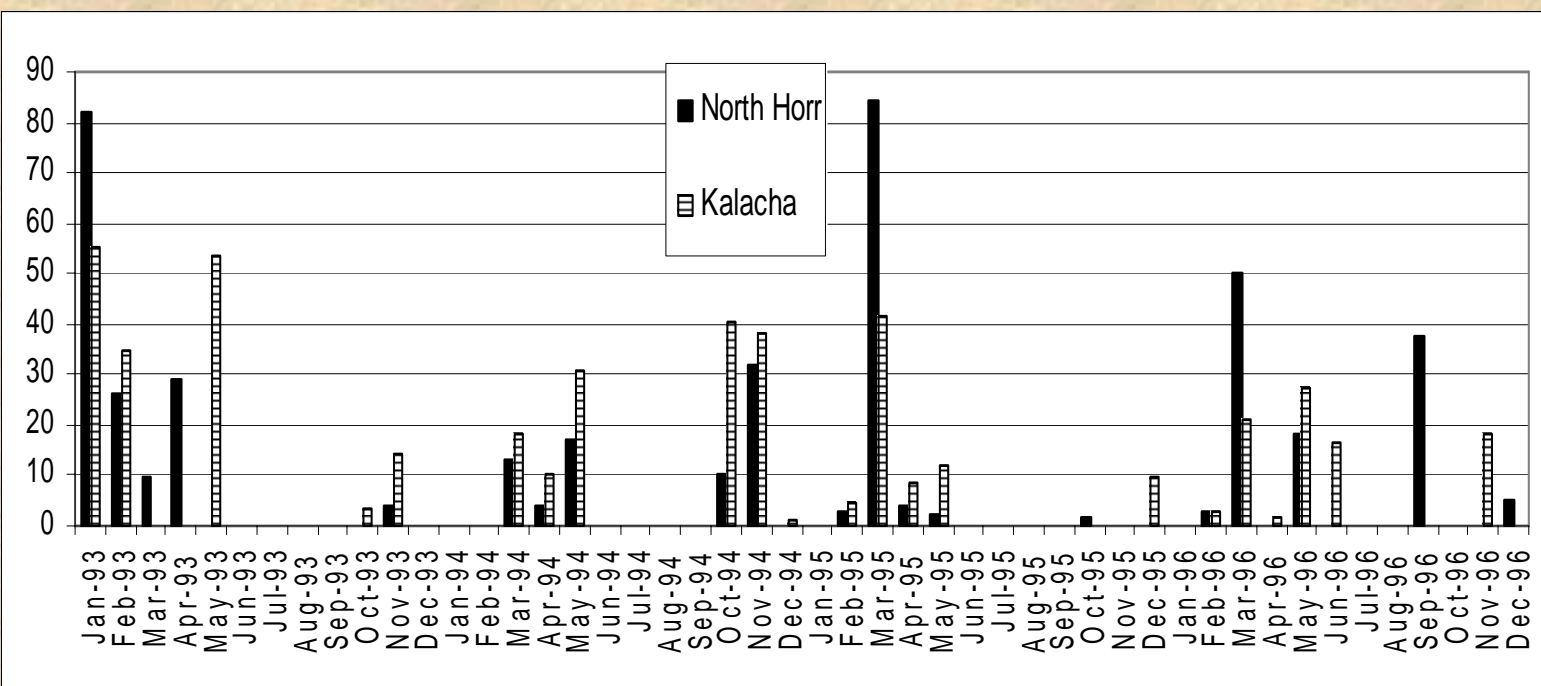
- Average household income is highly variable over time periods.
- Clear seasonality (1 is the long rains, 3 is the short rains, 2 and 4 are dry seasons).
- Slow upward shift of the cycle.



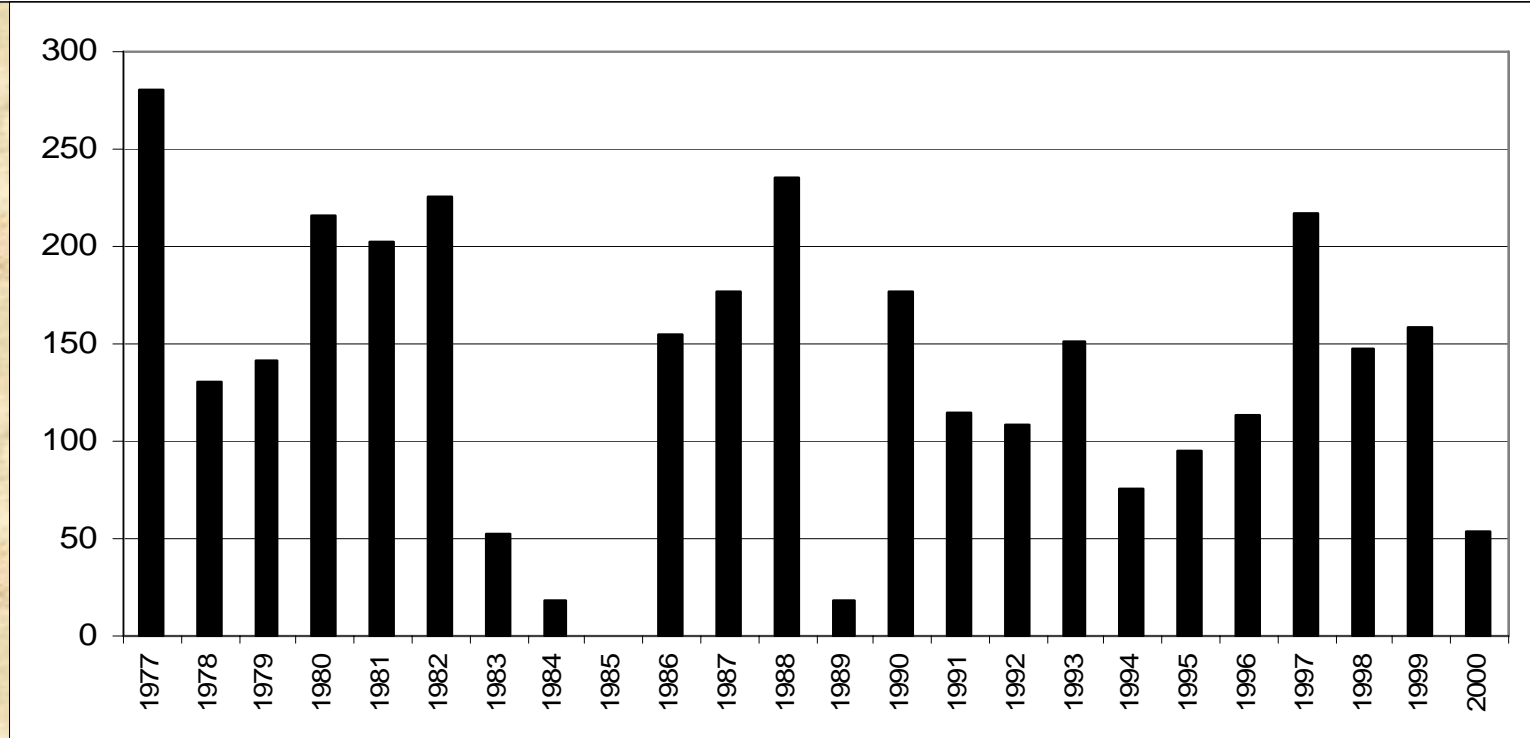
Seasonal pattern reflects bi-modal pattern of rainfall in this area: Average monthly rainfall in North Horr in mm, 1977-2000 data.



But also note spatial variability: Kalacha and North Horr (about 50 km apart)



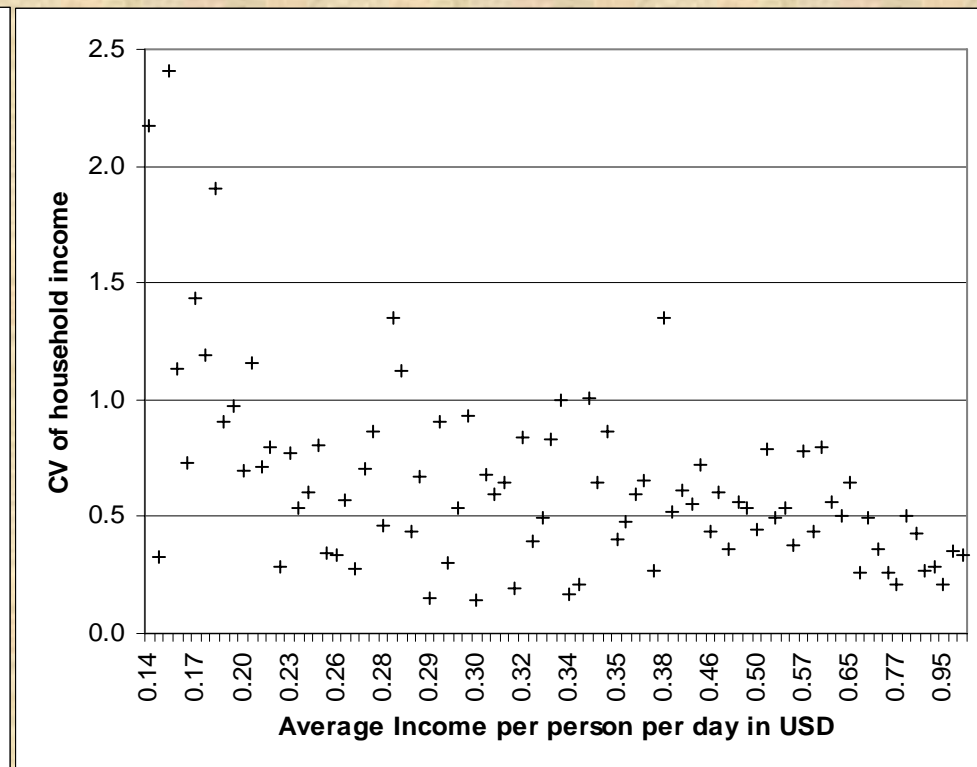
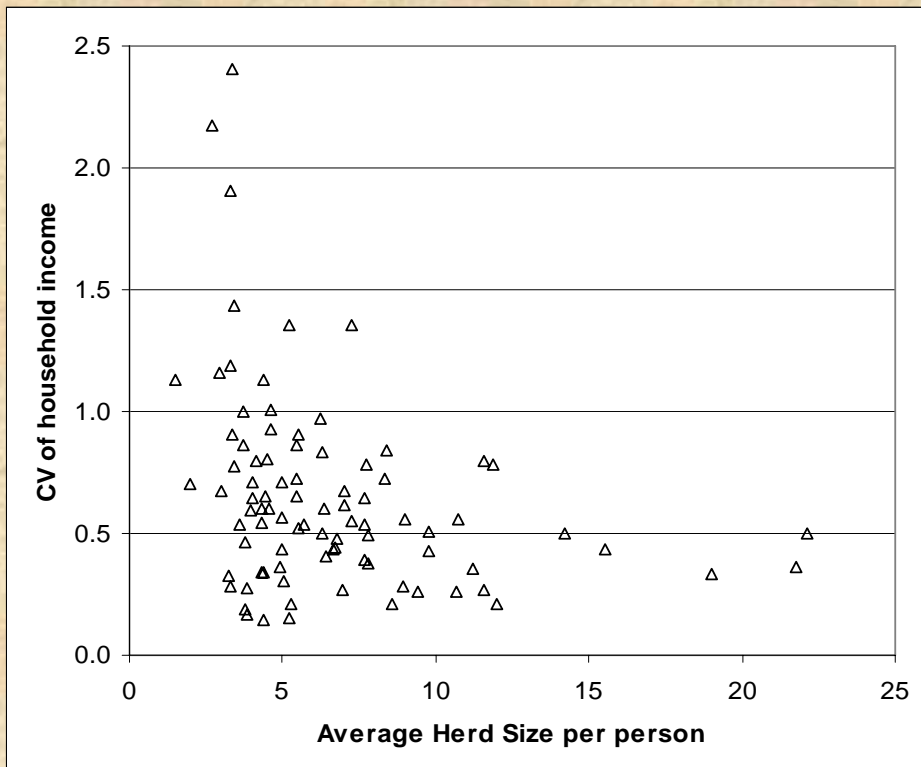
And annual rainfall variability are pronounced



Clearly, this is a highly variable production environment due to rainfall fluctuations.

Contrast households by income variability over time under the assumption that higher variability is “bad”.

CV of household income is a decreasing function of both average herd size and of average income level



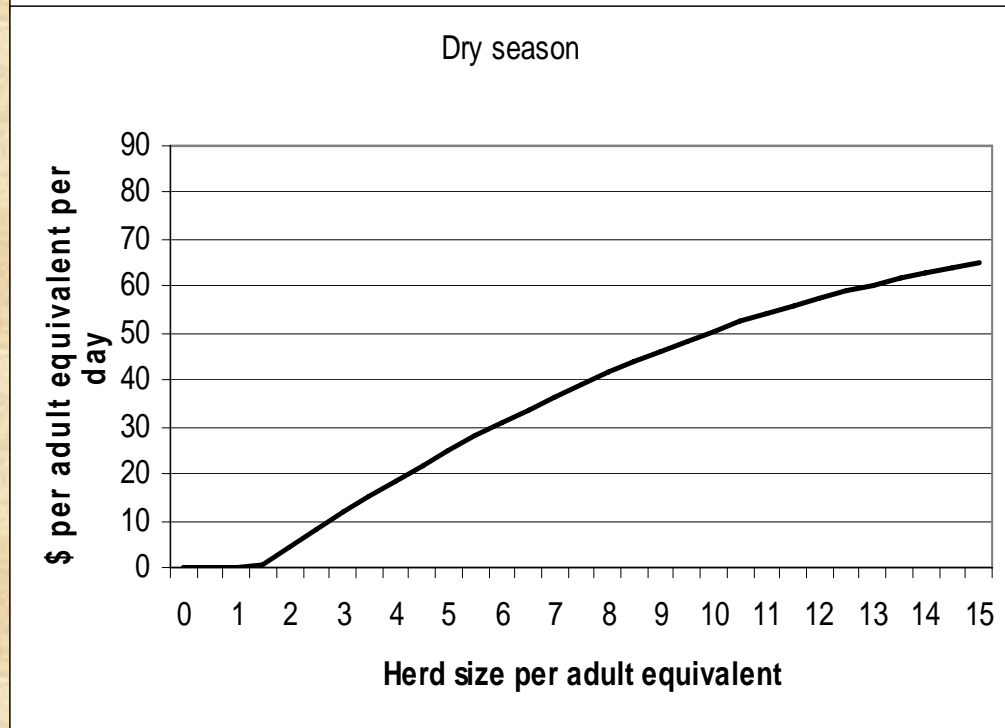
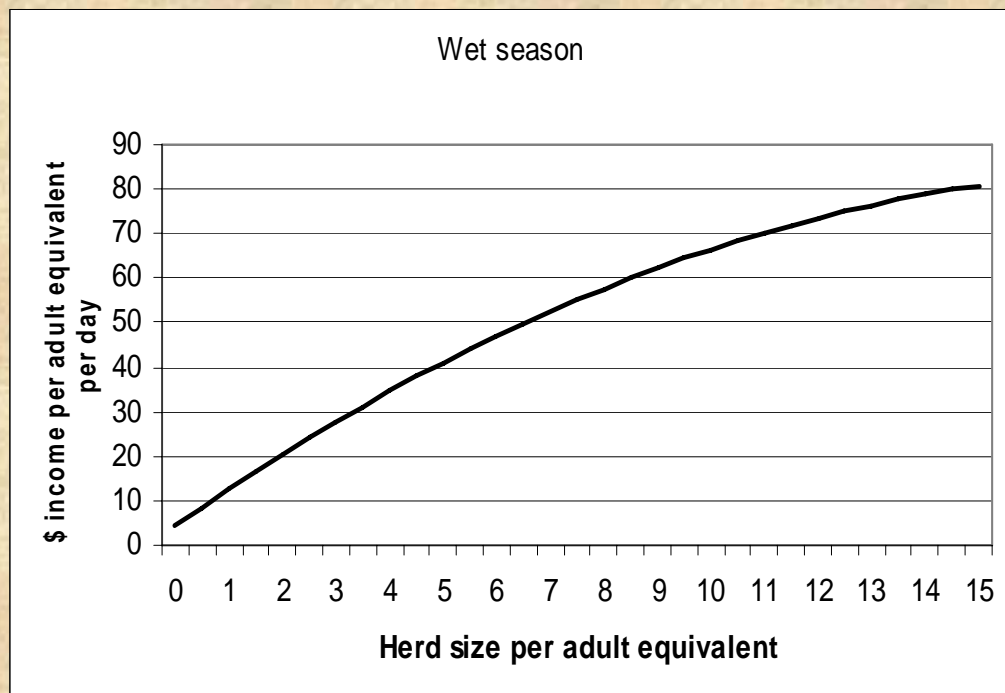
- Asset poverty can be viewed as “structural poverty”.
 - the assets of a household are below a threshold that generates expected income above some defined poverty line.
- Income poverty can be viewed as “transitory poverty”.
 - The observed income level is below a threshold in a given time period.
- Vulnerability to these different types of poverty differs.

- In pastoral areas, the key asset is livestock.



This makes asset poverty simpler to analyze than in other settings, but there is broad applicability of this approach

- Regression analysis allows us to trace out the relationship between herd size per adult equivalent and expected income.
- Threshold using a \$0.50 per person per day poverty line:
 - wet season 6.5 animals
 - dry season 9.5 animals



Contrast income poverty with asset poverty.

- 69% income poor in wet seasons and 77% in dry seasons
- 64% asset poor in wet seasons
- 83% asset poor in dry seasons
- Households that are income poor but not asset poor more common in the wet season.

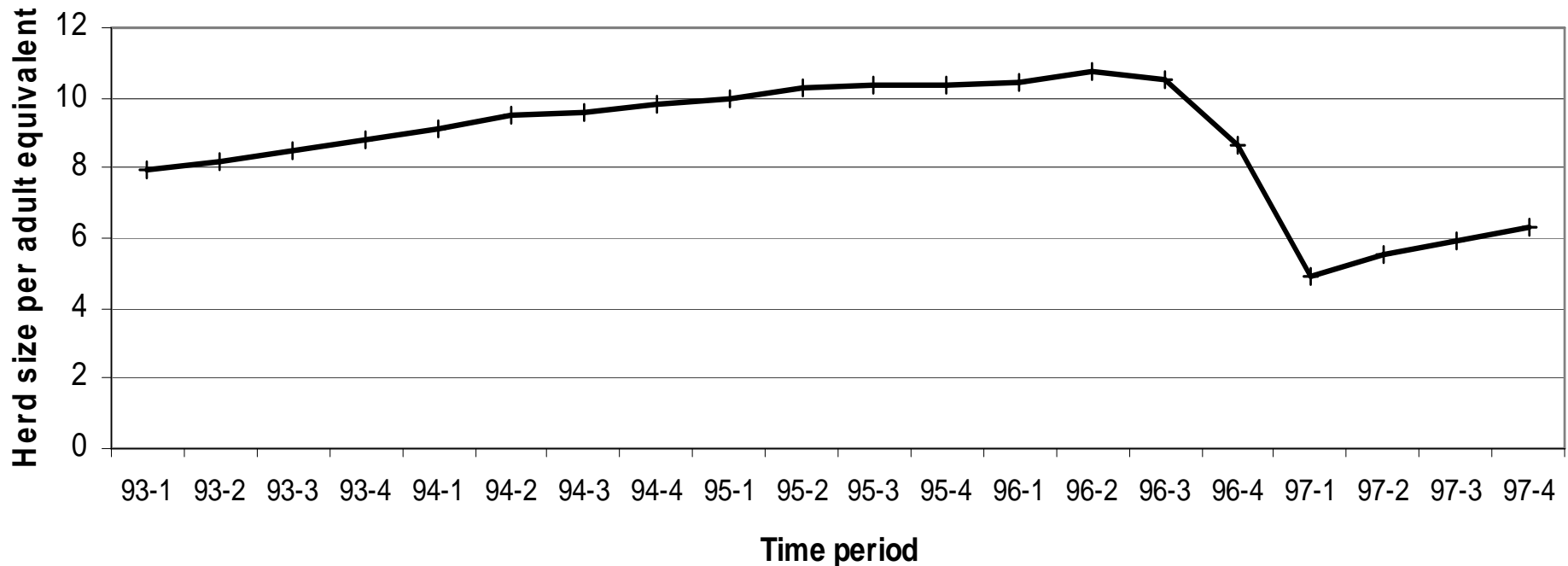
WET SEASON	Asset poor	Not asset poor	DRY SEASON	Asset poor	Not asset poor
Income poor	55%	14%	Income poor	72%	5%
Not income poor	9%	22%	Not income poor	11%	12%

Percent of households over four years that were:

INCOME POVETY LINE	Always below	Sometimes below	Never below
Dry Season	49%	45%	6%
Wet season	6%	85%	9%

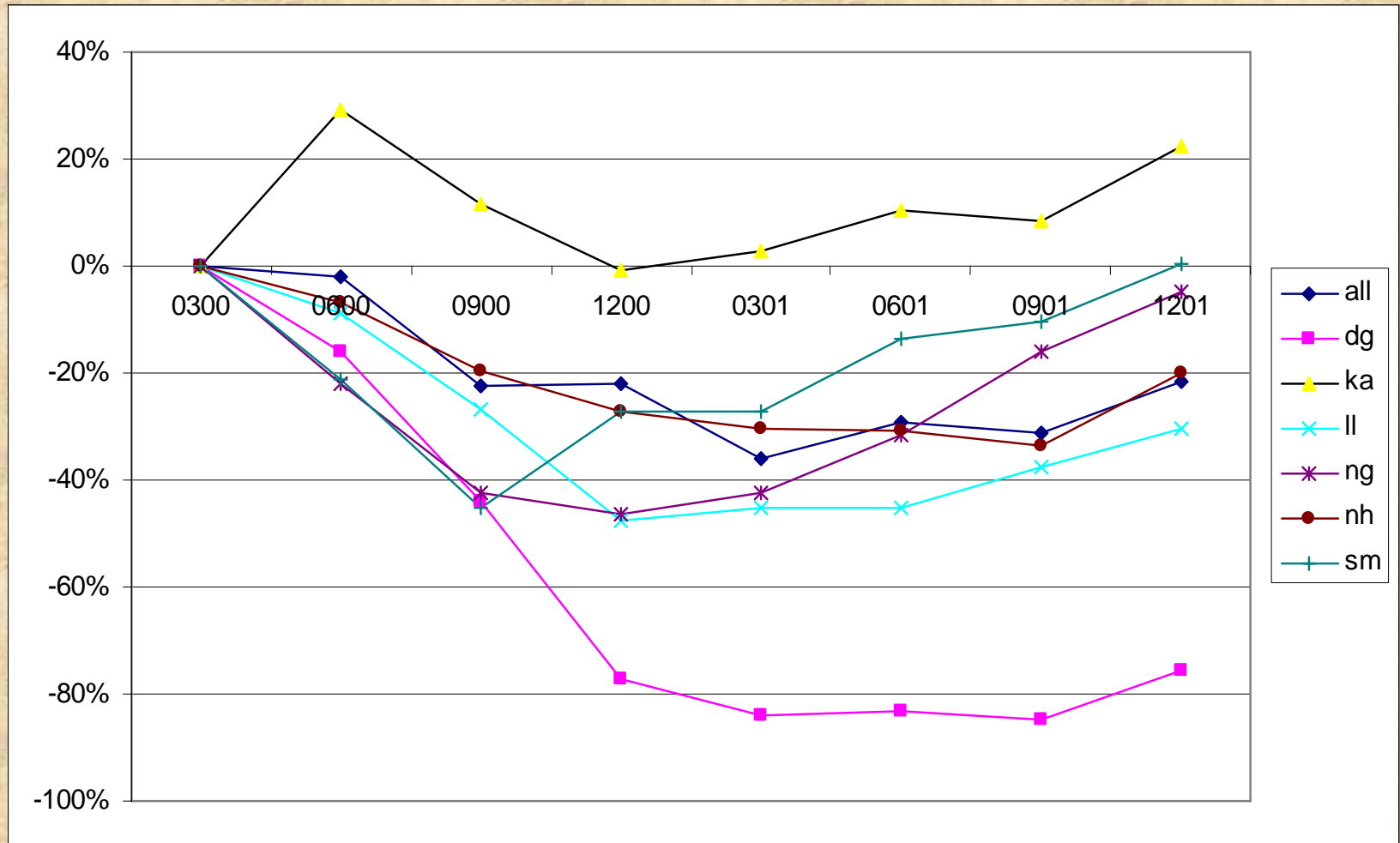
ASSET POVERTY LINE	Always below	Sometimes below	Never below
Dry Season	71%	27%	2%
Wet season	43%	46%	11%

- Herd dynamics play a critical role in household vulnerability.
- Average household herd size changed dramatically over time (35% increase to max, 55% decrease from max).
- The late 1996 loss to the average herd corresponds to a 34% drop in expected income.

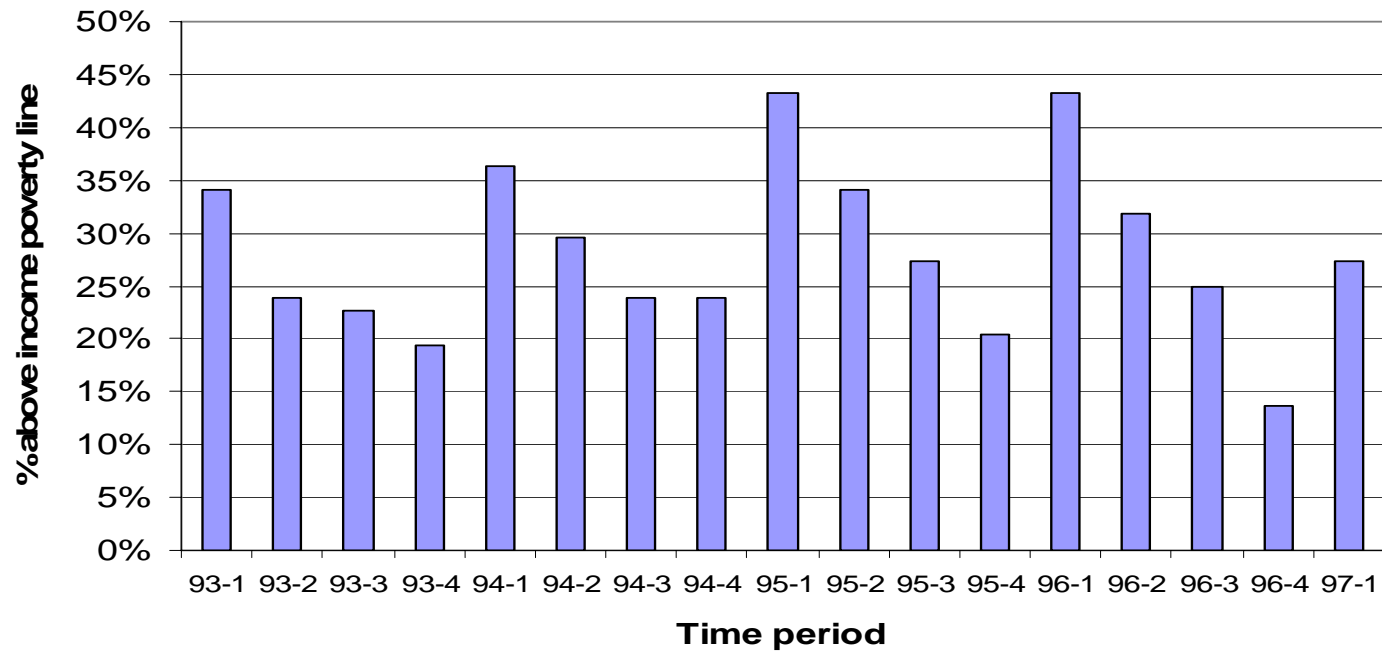
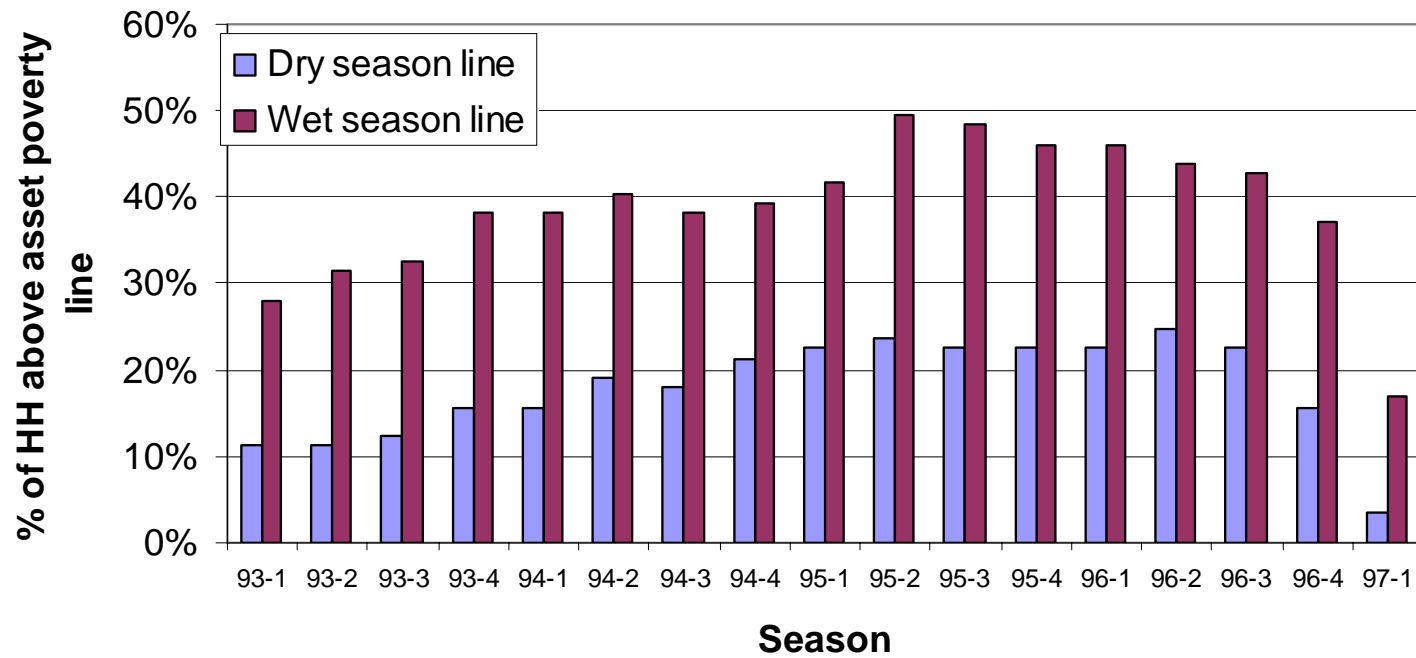


Sudden herd loss is common.

Change in median household herd size by quarter compared to the baseline March 2000 herd size from the PARIMA data for six different sites.

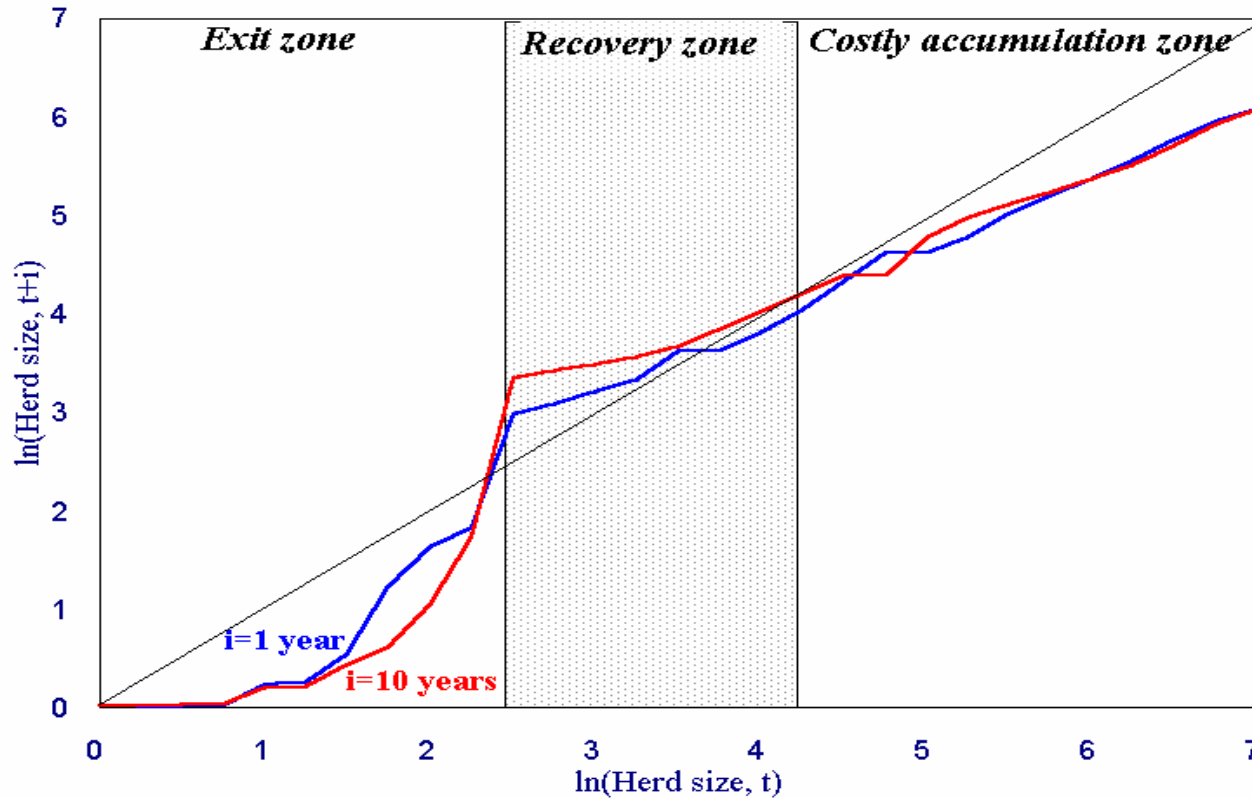


When you measure and how you measure poverty leads to different implications



- Limited understanding of what influences asset vulnerability.
- What do we know, or at least suspect?
 - Not rainfall failure alone, but rainfall failure combined with other factors (previous rainfall failures, restricted mobility, disease,...)
 - Birth and death far outweigh market based interventions in herd change.
 - Little evidence that stocking externalities are the root cause.
 - Great variation across communities.
 - Emerging patterns in asset accumulation.

Evidence from the Borana Plateau

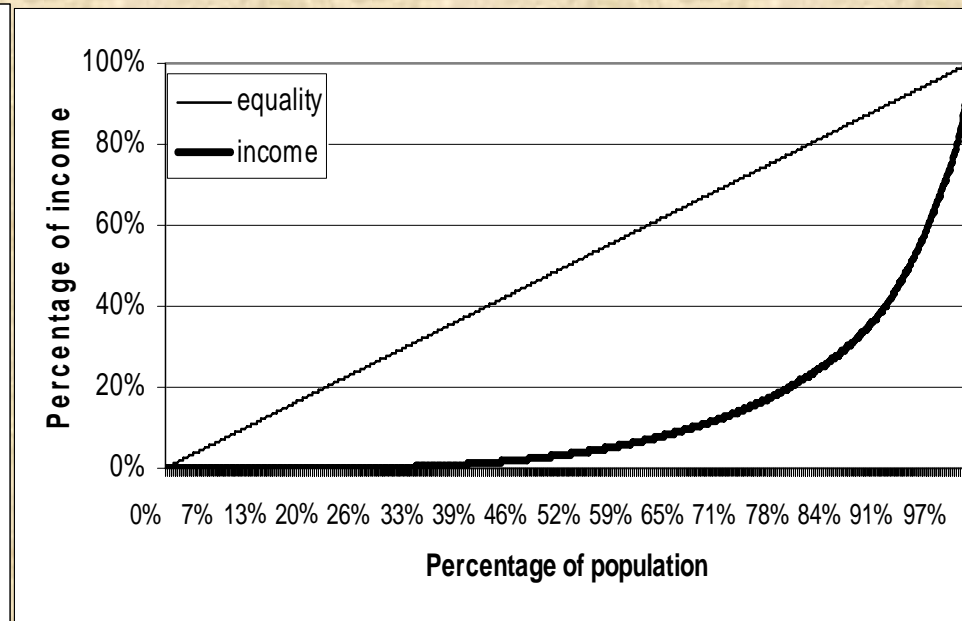
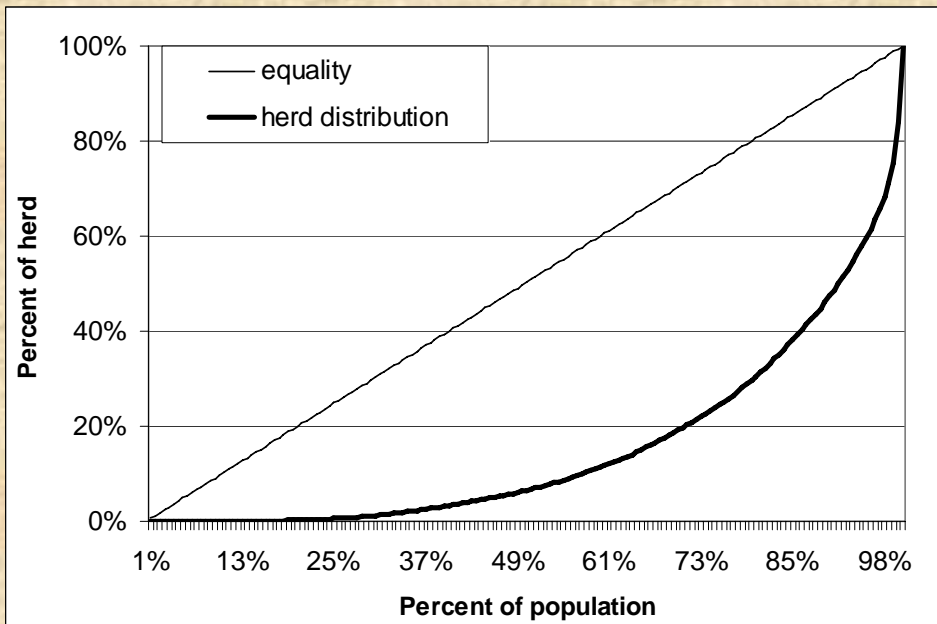


Nadaraya-Watson estimates using Epanechnikov kernel with bandwidth ($h=1.5$)

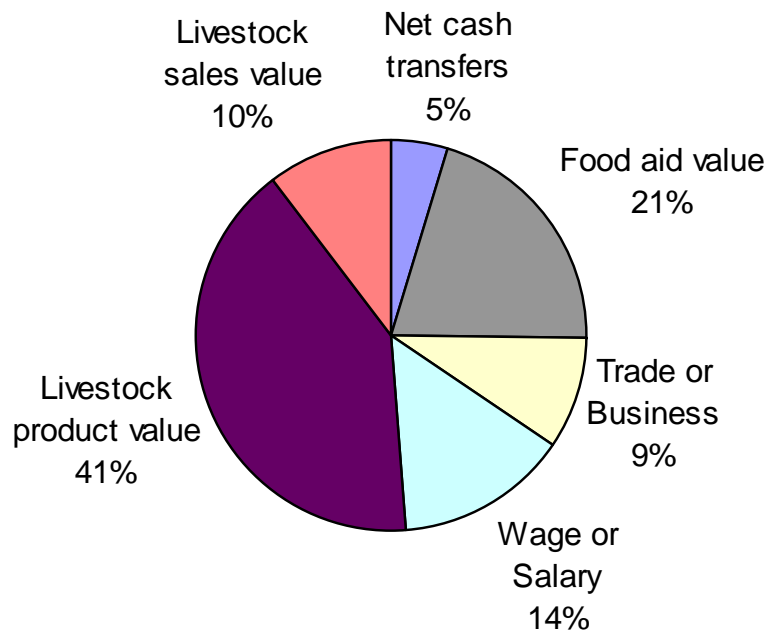
Threshold around 10 animals per person (also note this is close to the dry season asset poverty line)

This pattern suggests restocking should be targeted at people around the threshold.

- What about people who are far below this threshold?
- Herd ownership and income distribution are both relatively unequal for the PARIMA data.
 - Gini of 0.60 for herd ownership,
 - Gini of 0.74 for income distribution.



- Although livestock have been a major focus so far in this presentation, it is critical to note that livestock are not the whole story here.
- Distinguish between pastoralists and people living in pastoral areas by considering income sources using the PARIMA data.



Income quintile	Average household income in 3 months	Percent from Livestock	Percent from Food aid
Lowest 20%	1,117	15%	48%
20% to 40%	3,871	45%	30%
40% to 60%	8,788	65%	14%
60% to 80%	17,242	72%	7%
80% to 100%	44,936	57%	3%

PARIMA data with market values assigned to non-marketed sources of income.

Vulnerability among Pastoralists

- How can vulnerability issues be studied and what data is needed?
 - Risk ranking provides some guidance:
 - not enough food for people was the number one concern, and animal sickness / death and not enough pasture for animals were ranked three and four.
 - Household level data gathering was used.
 - Focus on income and assets.
 - Measure both marketed and non-marketed goods.
 - Multiple observations of a given household over time.
 - Evidence from a variety of sites as well as in depth studies from specific sites.

- Still need further research to:
 - Identify policy measures can reduce asset vulnerability.
 - Identify ways to reduce seasonal fluctuations in income.
 - Identify ways to make income production per animal more effective
 - Investigate other sources of vulnerability that are of high concern (health, market based, security related,...)

- What lessons can we expect?
 - Asset and income vulnerability influence behavior (sales work).
 - Policies that aim to reduce income vulnerability may differ from those that reduce asset vulnerability.
 - Policies that do not recognize that pastoralists confront both types of vulnerability may not achieve their intended outcomes.
 - A significant portion of the population does not have enough livestock to survive on livestock products. They will need focused help.
 - The livestock economy remains the basis for the whole economy in this area.

- How could this research be extended to other areas?
 - The risk ranking is a relatively simple exercise that can bring out important issues.
 - Due to the long cycles and seasonality, there is a need for following a given sample over time to gain a full understanding (note herd genealogy as a shortcut).