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**THE IMPORTANCE OF REPEATED  
OBSERVATIONS IN A COMMUNITY:  
FIELDWORK INSPIRED BY CHEIKH  
MBACKÉ IN NIONO, MALI AND  
NAVRONGO, GHANA**

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PRESENTATION IN HONOR OF CHEIKH MBACKE  
ON THE OCCASION OF HIS BEING HONORED AS THE

**IUSSP LAUREATE, 2015**

PAA, SAN DIEGO, CA, APRIL 29, 2015

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# From Mali .... To San Diego

- Cheikh and I first met in 1986 in Bamako, Mali as fresh post-docs, he from Penn, me from Brown
- I was working on the Enquete Renouvellee de Migration dans la Haute Vallee du Fleuve Senegal... A Repeat Migration Survey!
- This was also the time when Jim Phillips first visited Bamako to talk about bringing Matlab tools to Africa...
- Over the years our lives have crossed many times as we both worked for Rockefeller Foundation and continued to strengthen collaborations with African demographers... and especially to longitudinal studies

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# The Cheikh Principles- Make Time Your Ally

- Use your time well:
  - Get out into the field and see for yourself
  - Check and check again: Mr. Meticulous
- Enhance the value of your time with a strong team:
  - Invest in the team; they will repay you and everyone else.
  - Be patient and calm when things don't go as planned
- Think how things change over time:
  - Longitudinal studies are hugely important
  - Dream of the future, and don't be afraid to introduce new ideas
  - Things change: Go again and find out what happened

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# Applications of the Thinking in Time Principle: Cheikh's Legacy for Two Longitudinal Studies

- Niono, Mali: Climate, migration and health interactions over time
- Navrongo, Ghana: Changing the message with the seasons

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# From Kayes to Niono: Does irrigation really help families stay put?

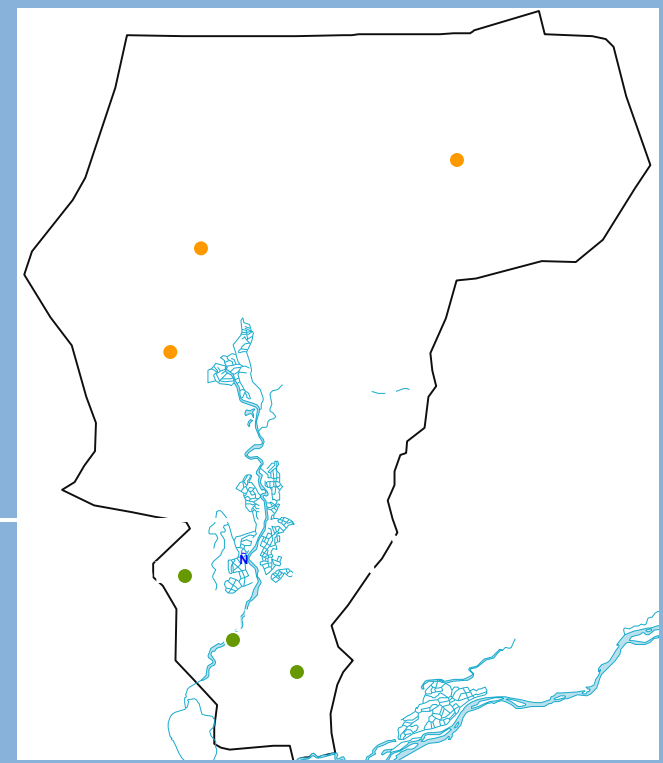
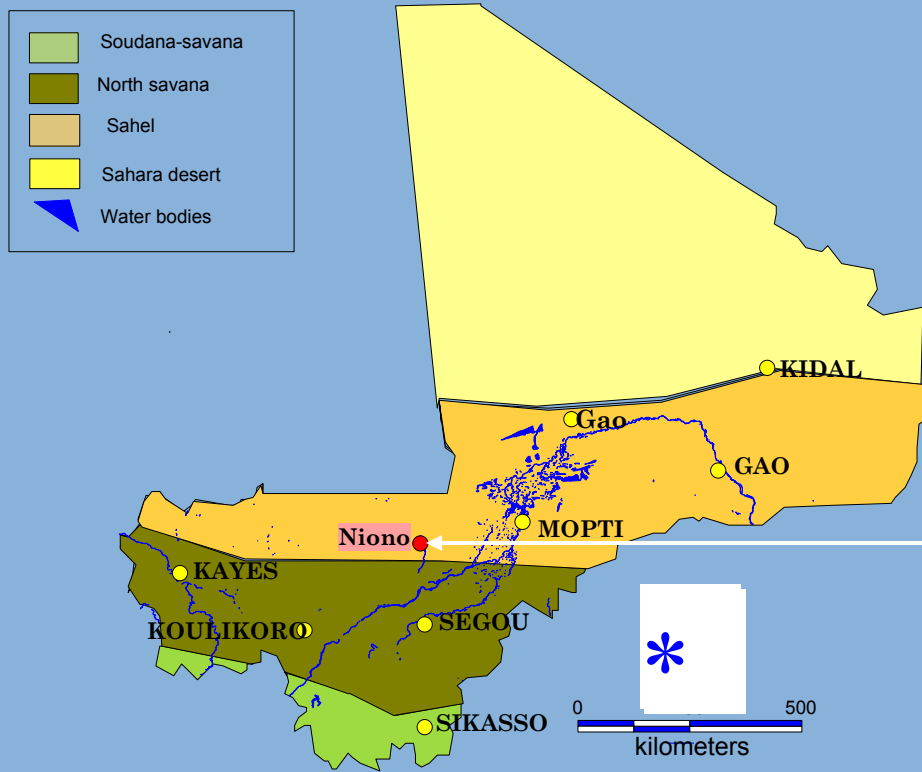
- Our migration survey in Kayes found that migration rose during the drought of 1983-85, and that throughout the valley, villagers had joined together to buy pumps so they could have irrigation from the river as a back-up for dry years.
- Pumps were not a reliable solution, because of break downs, lack of other inputs and poor coordination
- If isolated pumps don't work, how about a fully developed irrigation system?
- .....Thus, the launching of the Niono Climate-Migration and Health Study 2001 to 2006.

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# Niono Climate, Migration and Health Study

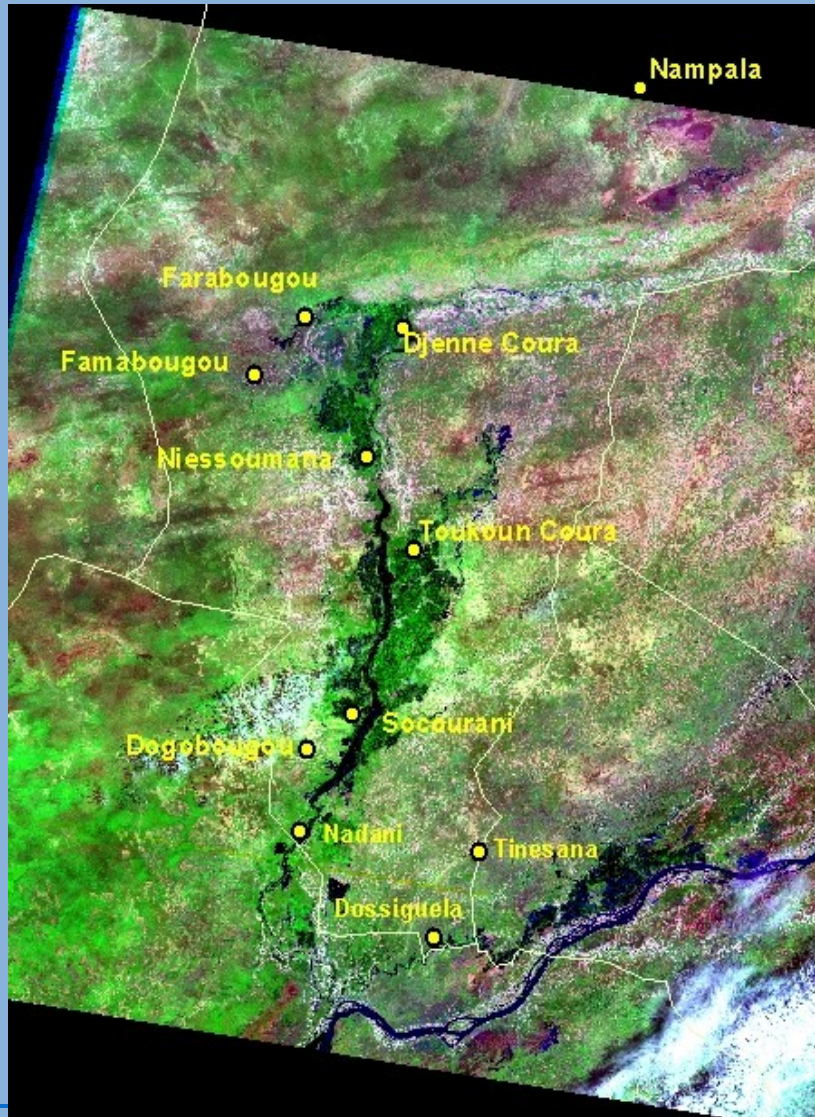
- Study conducted w. Dr. Seydou Doumbia, Malaria Research and Training Center, Mali in Niono, 330 km NE of Bamako
  - Eleven villages selected along the Canal du Sahel,
    - Straddling 3 micro-climate zones (semi-desert, irrigated, and savannah)
    - 4 irrigated villages and 7 dry cultivation villages
- Conducted 4 rounds of longitudinal surveys in the eleven villages, in 2001, 2002 (2 X), and 2003
- Tracked demographic and health events, farm output, sources of income, and migrations
- Counted migrations from round to round and tallied up migrants in each household by when they moved and where to and from
- Published study results: Findley and Doumbia “Cycles of Vulnerability...” in Oucho, ed, Migration in the Service of African Development. 2011.

# Location of Study Sites, Niono District, Mali

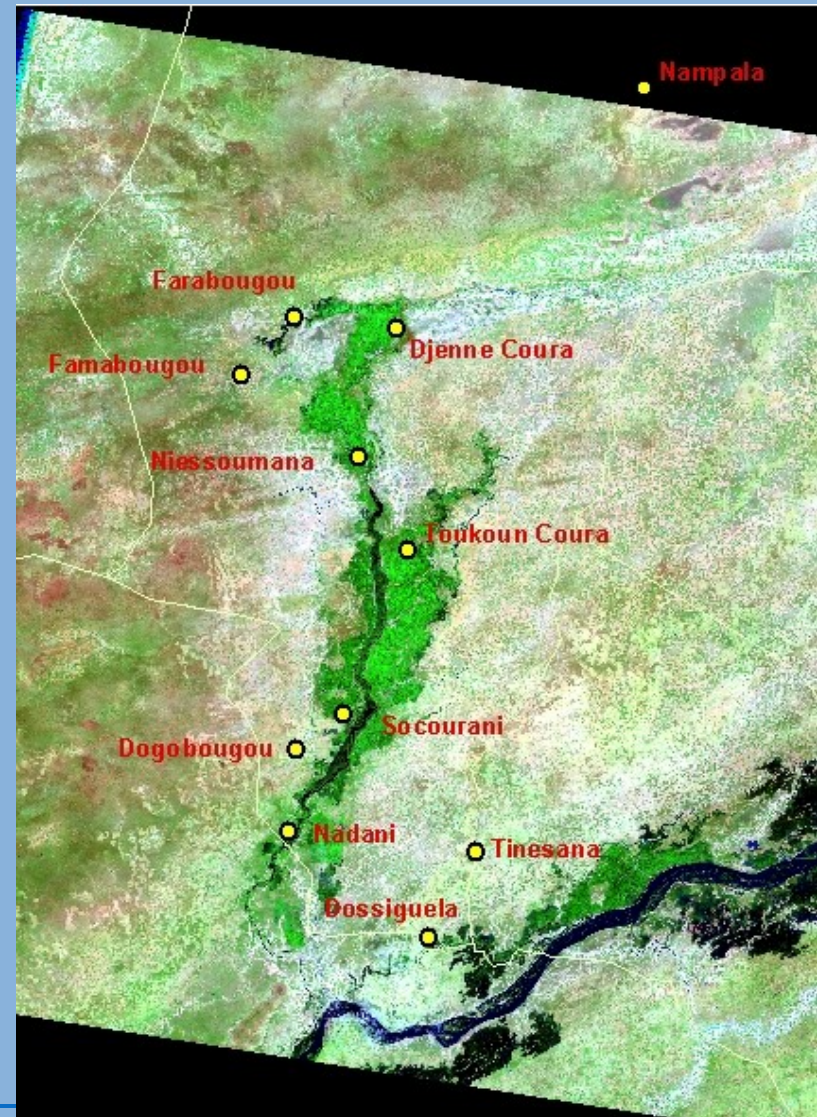


# Cycles of Dry and Wet Years Really Do Make a Difference!

1999 – A Good Year

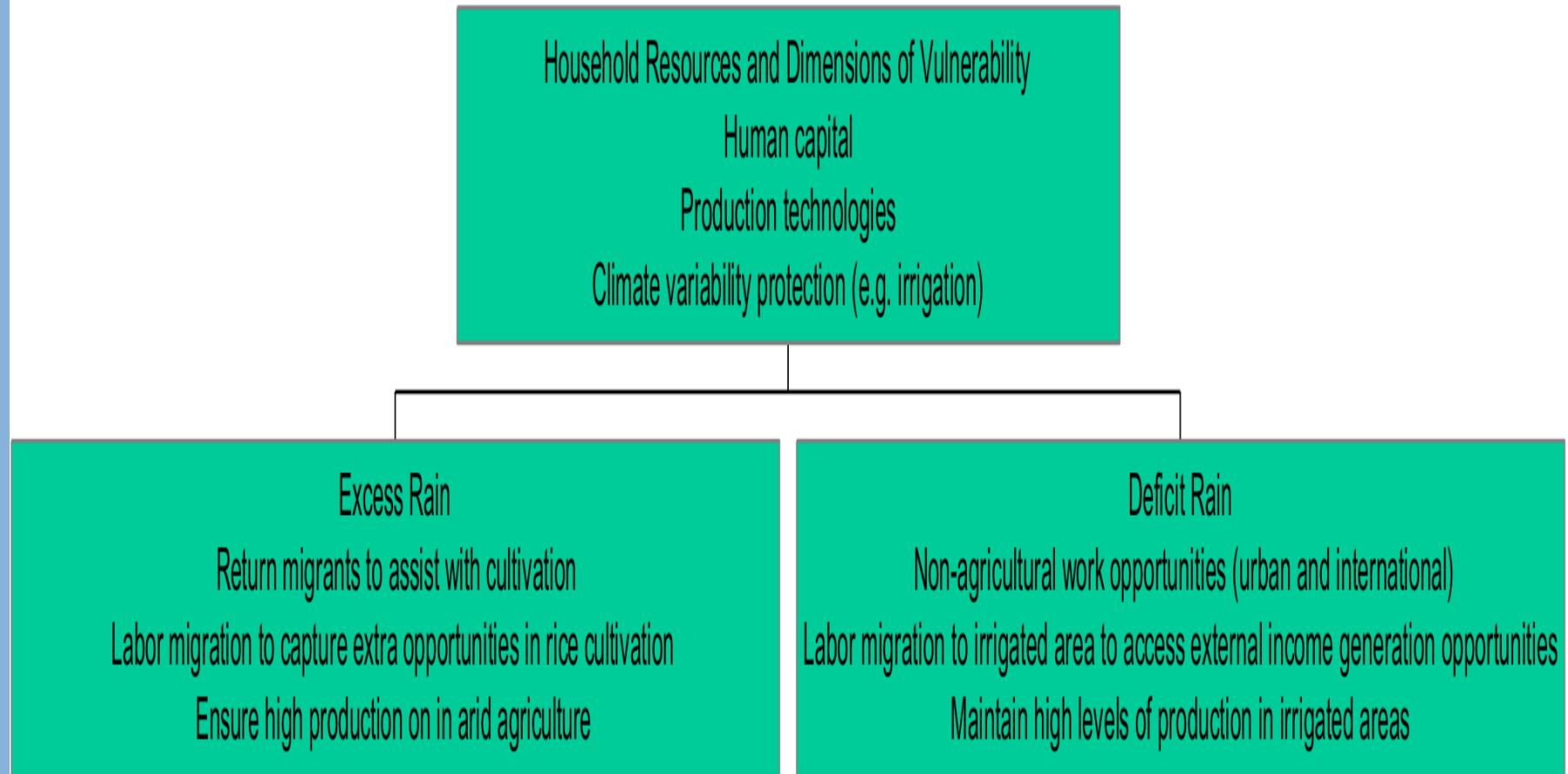


2000 – A Bad Year



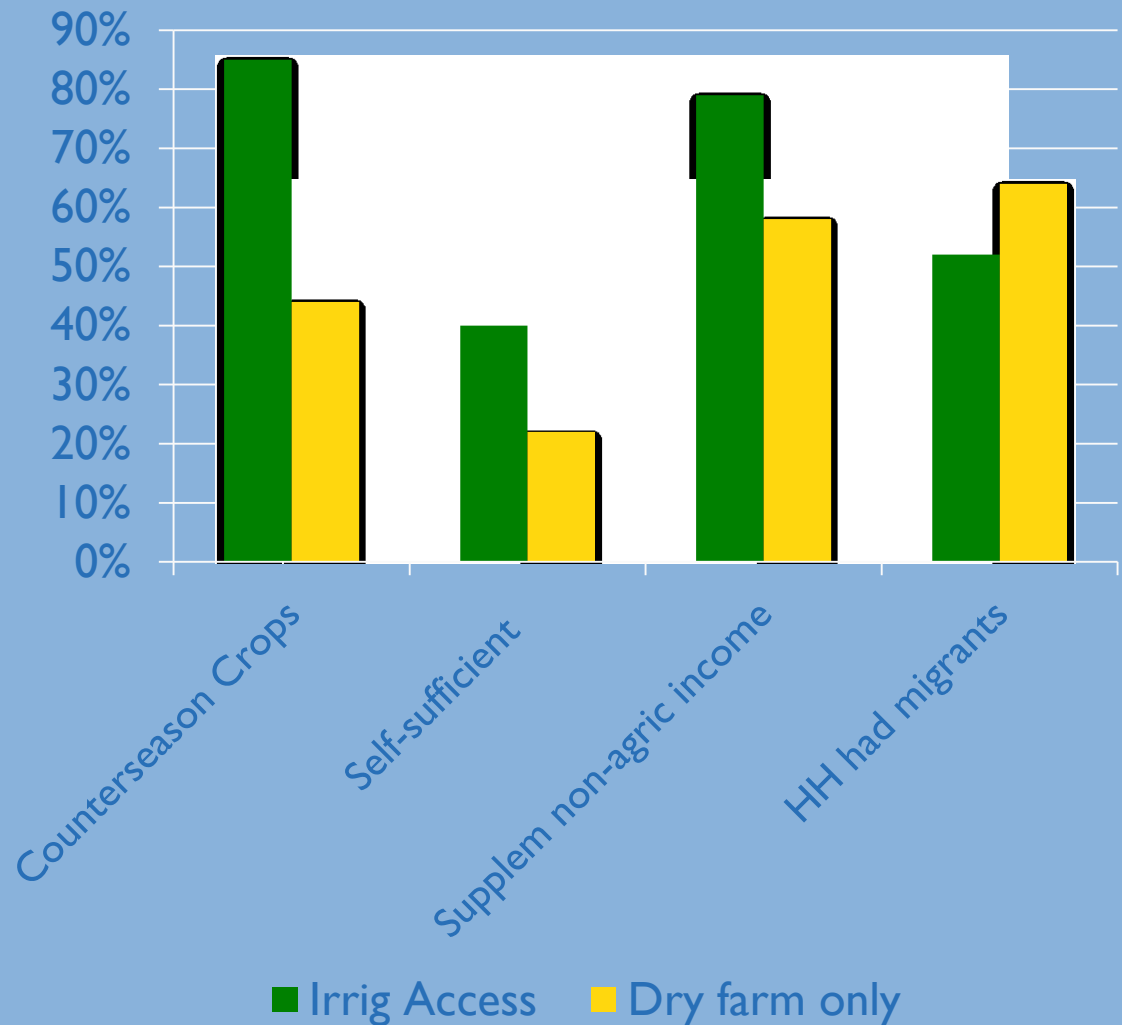


# Figure 1: Conceptual model for Incorporating Migration as a Response to Climate Variability in the Context of Chronic Economic Vulnerability

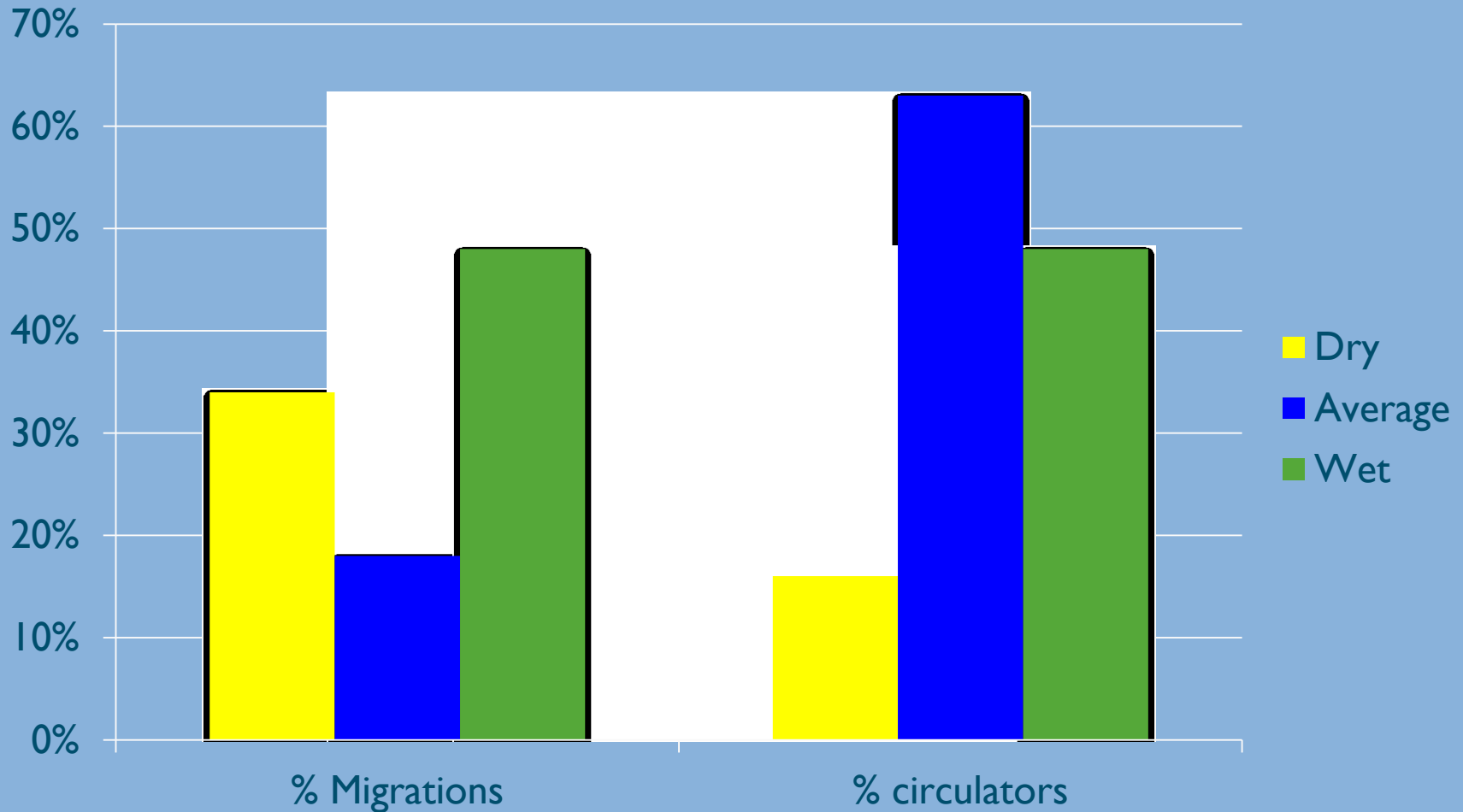


# Migration and Production Variability

- More than half of all HH had migrants!
  - 63% of the households w/out irrigation
  - 50% of HH w. irrigation
- Of those w/out irrigation, not being self-sufficient in previous year increased migration chance.

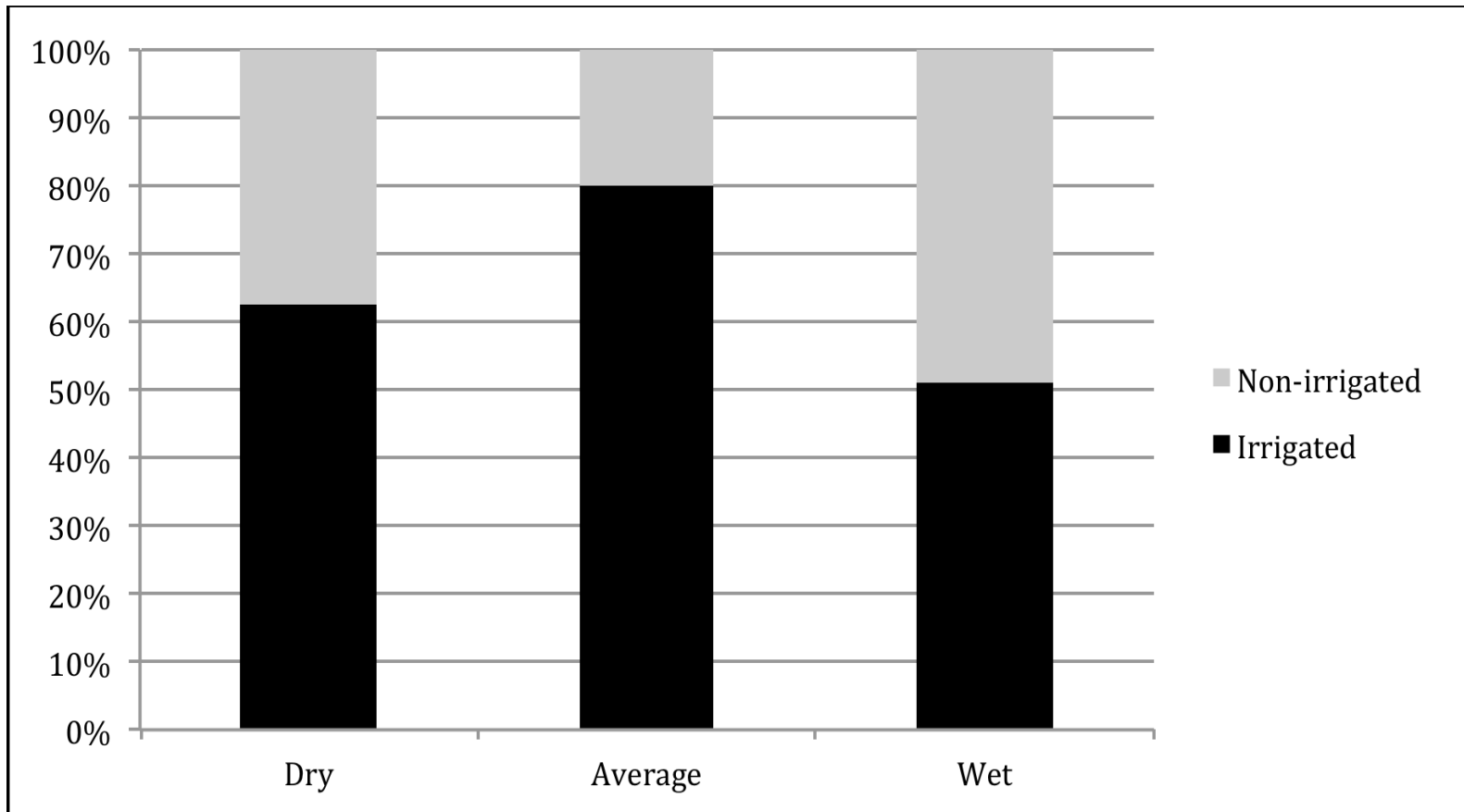


# Migration and rainfall variability: Not so so simple



# Was irrigation a draw for migrants? For > half, but more in average than dry years!

Figure 5: Migration by Relative Rainfall Period and Irrigation of Destination



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# Conclusions about migration, cycles of climate variability and production

- Migration is not just a drought response, and occurs in both wet and dry years.
- Predictions are for greater climate variability, hence we can expect more migration.
- Irrigation does not curtail migration, as over half of households with irrigation also had migrants.
- Irrigation does influence migration patterns, of millet farmers to rice fields but also rice farmers to non-agricultural work in Segou or Bamako.
- Need a more nuanced view of irrigation and how it expands different opportunities over time and depending on the current climate cycle

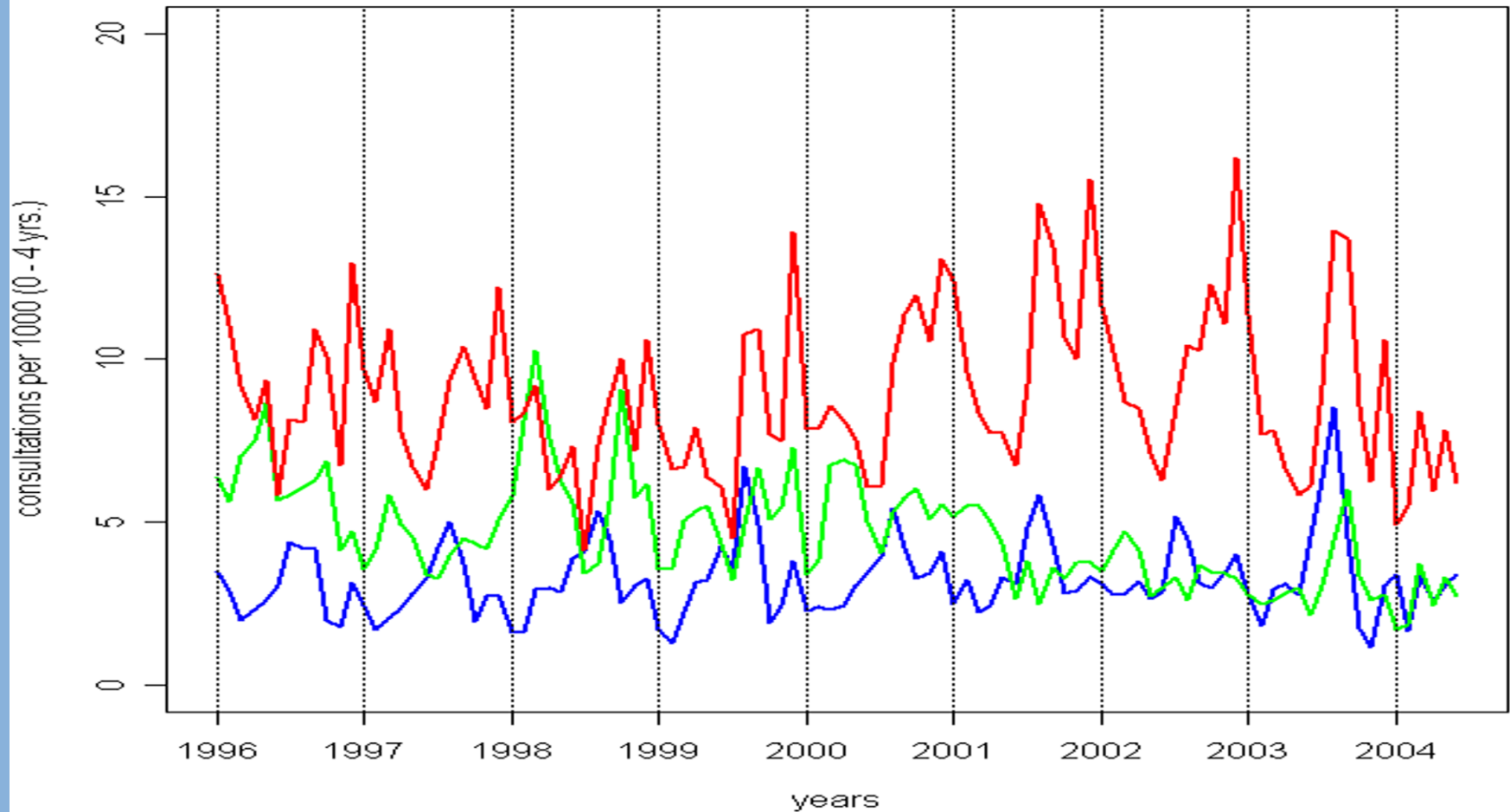
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# Further insights on Time: Cyclical and Seasonal Health Problems

- The Niono study helped us understand the importance of looking at within year changes in rainfall as well as across years.
- We realized that three of the major childhood diseases killing millions of children in Africa had seasonal peaks, in addition to variability from year to year.
- If we could organize the primary prevention messages to be in accord with the changing seasons and inter-annual swings, we could be more effective at preventing childhood illnesses.
- ....Thus, was born Season Smart!

# Documentation of Seasonality of Childhood Illnesses: Niono , 1996-2004

## PHC Consultations



Red= Malaria Green= ARI Blue= Diarrhea

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# From Niono to Navrongo

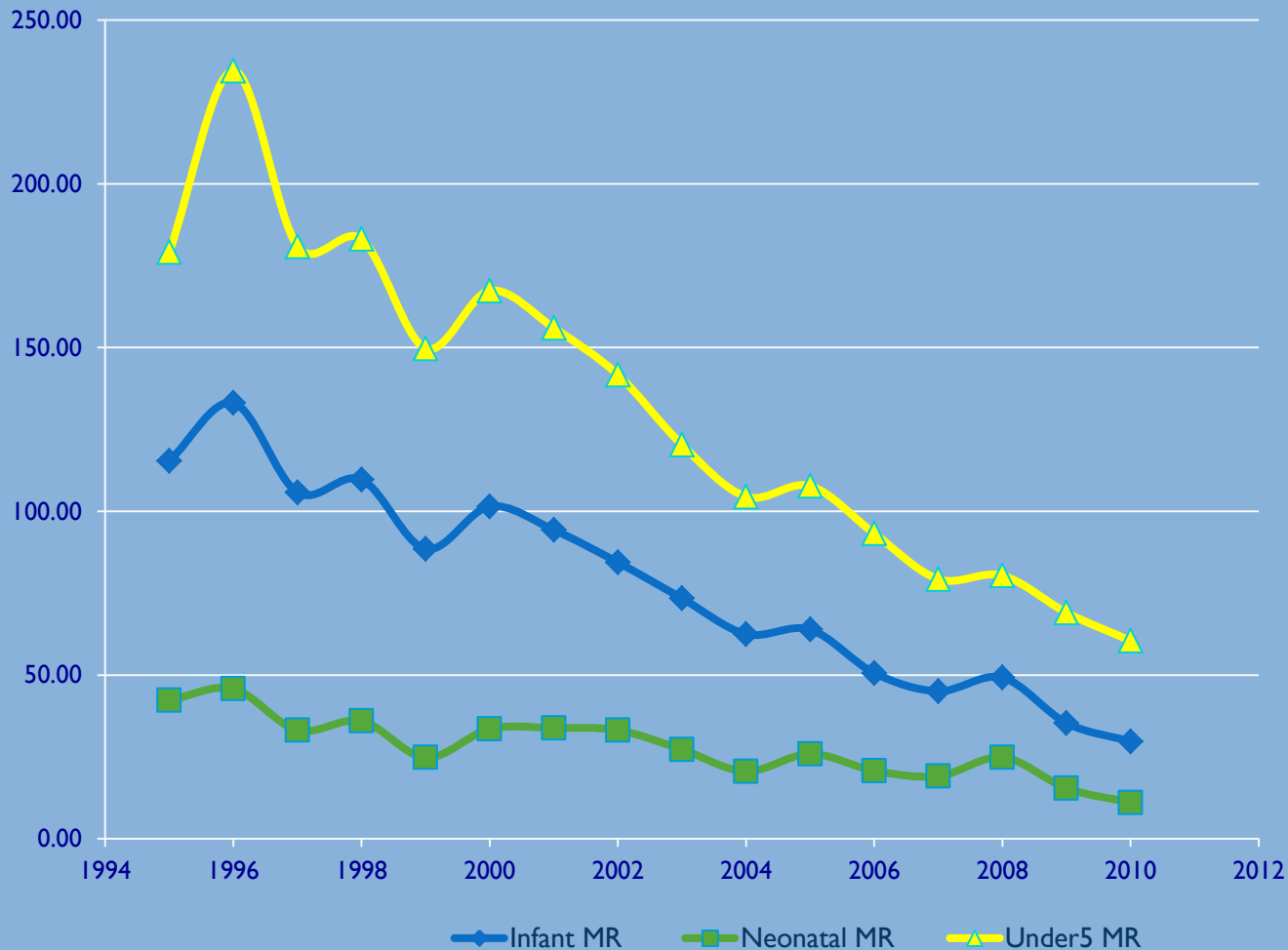
- Navrongo is one of the first In-Depth Network sites (thanks to Cheikh's vision and support!) and has been monitoring mortality and morbidity trends since 1995.
- Many of Cheikh's colleagues here have worked at Navrongo
- Navrongo is also home to a strong regional health program with a network of community health nurses, Kassena Nankana District of the Upper East Region, led by Dr. Koku Awoonor-Williams
- They wanted to pilot the Season Smart idea, as they wanted to continue to bring IMR and CMR down, and they had the infrastructure to do it.
- So... Season Smart was moved to Navrongo for its pilot.



# The Context – Kassena-Nankana District

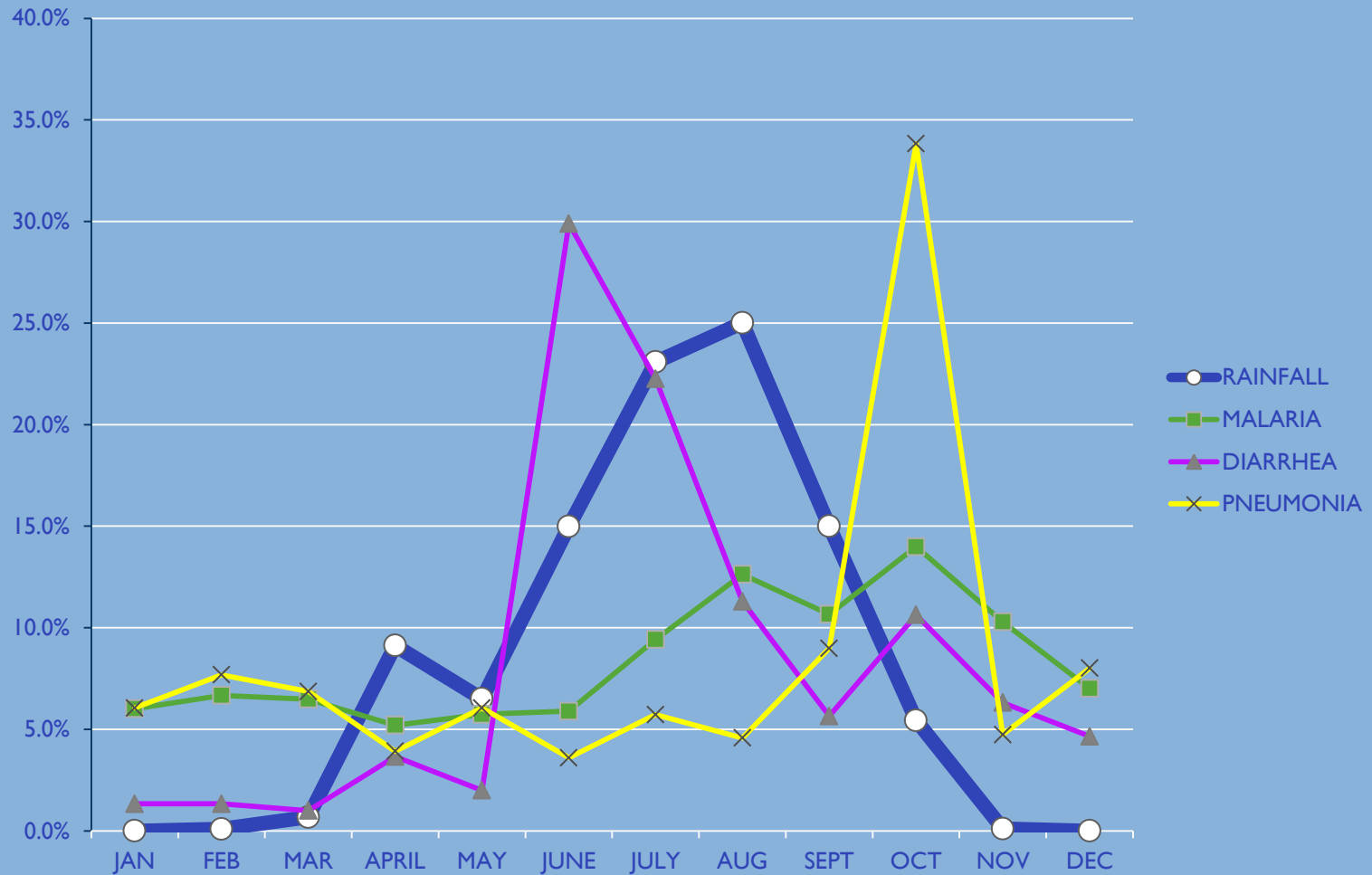


# Navrongo HRC documented the declines in childhood mortality-associated with CHPS, but there was still more to go in 2010 ....



Source: NDSS database, 2011, slide thanks to my colleague, Dr.A. Bawah

# Rainfall and Disease Patterns are very similar to those of Niono



# Navrongo Season Smart Pilot Study

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- Navrongo HRC collaborators: Cornelius Debpuur and Koku Awonoor-Williams (Dir., Upper East Region GHS)
- Selected two comparable CHPS posts for the pilot (each circa 5000 population)
  - Manyoro-Intervention
  - Pungu South- Control
- Spring 2012: Developed the Season Smart protocol and photo-aids to support the CHWs working with the CHPS nurses
- June 2012-May 2013: At the pilot site in Manyoro 32 CHWs (IMCI and growth monitoring) were trained each month on using the Season Smart photo-aids in their monthly visits to families
- Compared changes in CHW activities and sick child visits to the health post, June 2012-Dec 2012

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# It is all in the timing: Logic of Season Smart

- Organized the 16 basic health promotion messages of the community health workers to be TIMED to be most effective at promoting prevention before the peak!
- The periods before the Peaks are “teachable moments” when women are most likely to be interested in learning how to prevent illnesses.
- Complemented the care and treatment messages with more at-home prevention messages
  - **GREEN: Prevention activities, long-term and/or perennial**
  - **Yellow: Prepare to prevent, diagnose and treat diseases coming in next 1-2 months**
  - **RED: Act Now to diagnose and treat diseases at peak risk**
- Also makes the annual charge of CHWs manageable by giving them a calendar to follow

# Navrongo Season Smart Monthly Profiles

Month	Red	Yellow	Green
January	Malaria	ARI	Diarrhea
February	ARI,	None	Diarrhea
March	ARI	None	Diarrhea
April	ARI	None	Malaria, Diarrhea
May	ARI	Diarrhea	Malaria
June	Diarrhea	Malaria	ARI
July	Diarrhea	Malaria	ARI
August	Diarrhea, Malaria	ARI	None
September	Diarrhea, ARI, Malaria	None	None
October	Malaria, ARI	None	Diarrhea
November	Malaria, ARI	None	Diarrhea
December	Malaria, ARI	None	Diarrhea

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# Examples of the Season Smart Photo-Aids for Malaria

- Some long-term prevention
- Some short-term “get ready”
- Some act now!

# Prevent Malaria:

Clear brush from around compound

Fill low spots where water collects in rainy season





# Prevent Malaria: Baby and Mother Under Bed Net



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# Bednets may need repair so mosquitos can't get through!



# Prevent Malaria: Repel mosquitos in the compound in the evening



# Danger Signs of Malaria



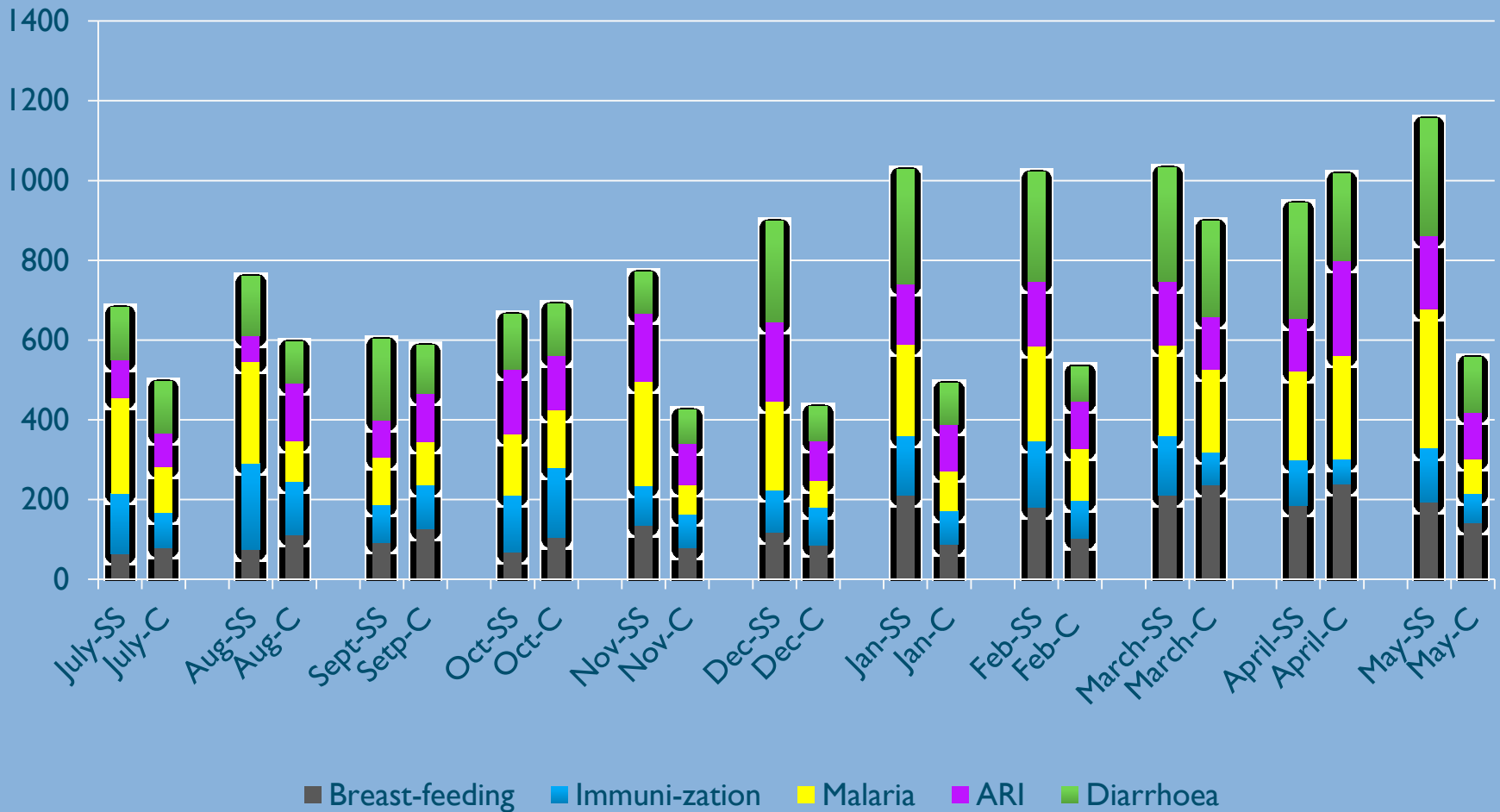
# Go to CHC if any of these danger signs!



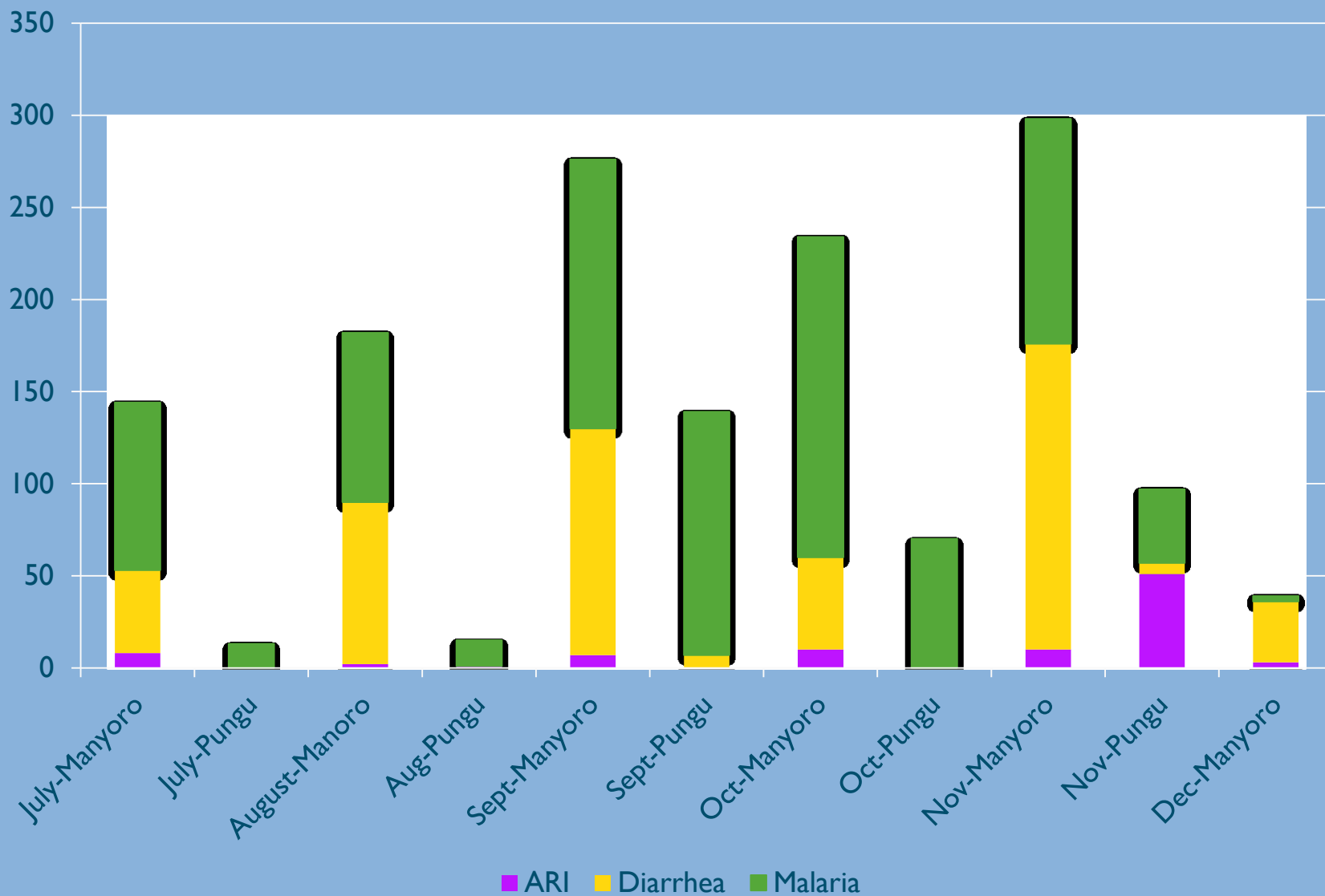
# Treat Malaria!



# CHW's increased delivery of health promotion messages in the villages (SS versus Control)



# Dramatic Rise in Sick Child Consultations to the CHPS SS health post , July-Dec 2012





# What did we learn about time in Navrongo?

- Monthly “chunking” of the IMCI messages made it easier for the CHW and the families. Women welcomed them and were eager for the next “installment”
- Timely response to messages: Women adopted more health promotion practices, and were much more likely to respond to danger signs in their children
  - 45% more women were coached on danger signs of malaria during the malaria peak months than in control zone
  - CHWs made 78% more referrals for malaria and diarrhea than in control zone
- More timely treatment: The CHPS health post nurses were able to see and treat more sick children.
  - 31% more infants and 86% more children 1-4 years
- Preparing now to expand Season Smart to all of Kassena-Nankana where the results will be picked up across the Navrongo Health Research Centre

# Making Time our Ally

- Cheikh's encouragement to look longitudinally has had profound implications for how we practice demography in Africa
  - The longitudinal tools which he has supported challenged us to think about the timing and sequencing of factors influencing demographic behaviors.
    - Migration is conditioned by short-term seasonal and longer-term cyclical experiences
    - These temporal interactions also appear to be context-specific.
  - The power of the In-Depth tools has encouraged demographers and public health officials to collaborate in testing how new health intervention ideas can stretch the system to do more
    - The CHPS study showed that bringing the community health nurse into the community 24/7 contributed to reduced mortality
    - Season Smart has now shown a way to further extend health services and messages into the community, through empowered CHWs using the Season Smart tools and the concept of “teachable moments”
    - Combining GHS monitoring with In-Depth surveillance means that we can identify what was done, how they responded, and what impact it had on demographic behaviors, closing the circle.

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THANK YOU!  
MERCI!  
ANIDJIEE

TO CHEIKH