

# Household Consumption and Natural Resource Management around National Parks in Zambia



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# Outline

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- Introduction
- Objectives
- Data and Methods
- Results
- Concluding remarks



# Introduction

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- Nature tourism development regarded a potential growth frontier
- Community-Based Natural Resource Management (CBNRM) in GMAs
  - Two mutually reinforcing objectives?
    - Village scouts, land plans → conservation
    - Infrastructure, employment → welfare
  - BUT conservation → human-wildlife conflicts
- Impact on welfare == Net effect?



# Objectives

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- Determine the welfare effects of
  - The GMA institution
  - Participation in natural resource management through CRBs and VAGs
- Determine the distributional effects
  - Do poor households benefit more?



# Data

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- 139 Community and 2769 household interviews in four park systems
  - Bangweulu (Kasanka, Lavushi, Isangano)
  - Kafue (Kafue, Blue Lagoon, Lochinvar)
  - Lower Zambezi
  - Luangwa (South Luangwa)
- 60 % GMA strata (4), 40% control areas
- Outcome variable = consumption expenditure



# Estimation Methods

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- Key issue: Selection bias
- Impacts by *Treatment Effects Regression*
  - Joint estimation of outcome & treatment relationships
    - GMA effect
    - CRB, VAG effect
  - Heterogeneous impact
    - By park system
    - By wealth stratum



# Results - Descriptives

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- Households in GMAs
  - More likely to participate in CRBs, VAGs
  - Have more diversified economic activities, including tourism
  - BUT
    - Have less assets
    - More likely to be female headed
    - Less educated
    - Further away from all-weather roads
- No differences wrt consumption



# Descriptive statistics

Variable description	Full sample	Sub-samples		
		Non-GMA	GMA	
Number of sample households	2,649	1,289	1,360	
Per capita consumption expenditure in ZMK	846,331	853,750	839,359	
Household participation in CRB/VAG dummy	0.09	0.06	0.13	***
Age of household head in years	42.42	43.6	41.29	***
Female Headed Household	0.25	0.22	0.28	***
Education of the most educated member in years	6.87	7.45	6.33	***
Number of children below 15 years	2.55	2.66	2.44	***
Number of female members 15-60 years	1.27	1.3	1.24	*
Number of male members 15-60 years	1.19	1.22	1.15	**
Number of adults above 60 years	0.26	0.3	0.23	***
Distance to the nearest all-weather road in km	5.25	3.58	6.86	***
Distance to the nearest basic school in km	4.88	4.96	4.8	
Distance to the nearest health centre in km	11.52	11.27	11.77	
Value of consumption durable assets in million ZMK	0.44	0.58	0.3	***
Participation in cooperatives dummy	0.15	0.19	0.11	***
Number of projects in the community	2.01	1.84	2.16	***
CRB obtained funds from ZAWA past three years	0.09	0.05	0.14	***
Number of households participating in the CRB/VAG	1.86	1.16	2.51	***





# Results - Impact

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- GMA effect positive and significant
  - Accounts for 66% of consumption in GMAs
  - Does this contradict descriptive results?
- CRB/VAG effect positive and significant
  - Participation accounts for 44% of consumption
- BUT..
  - Benefits accrue only in remote park systems with limited alternative economic opportunities
  - Benefits accrue only among non-poor households



# Impact by park system

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Park system	Being in GMA (1)	Participating in CRBs and VAGs (2)
	----- (%) -----	
Bangweulu	72.9***	85.8***
Kafue	-44.4	-28.6
Lower Zambezi	-36.2	49.4
Luangwa	74.4***	53.0***
Overall	66.5***	43.8***

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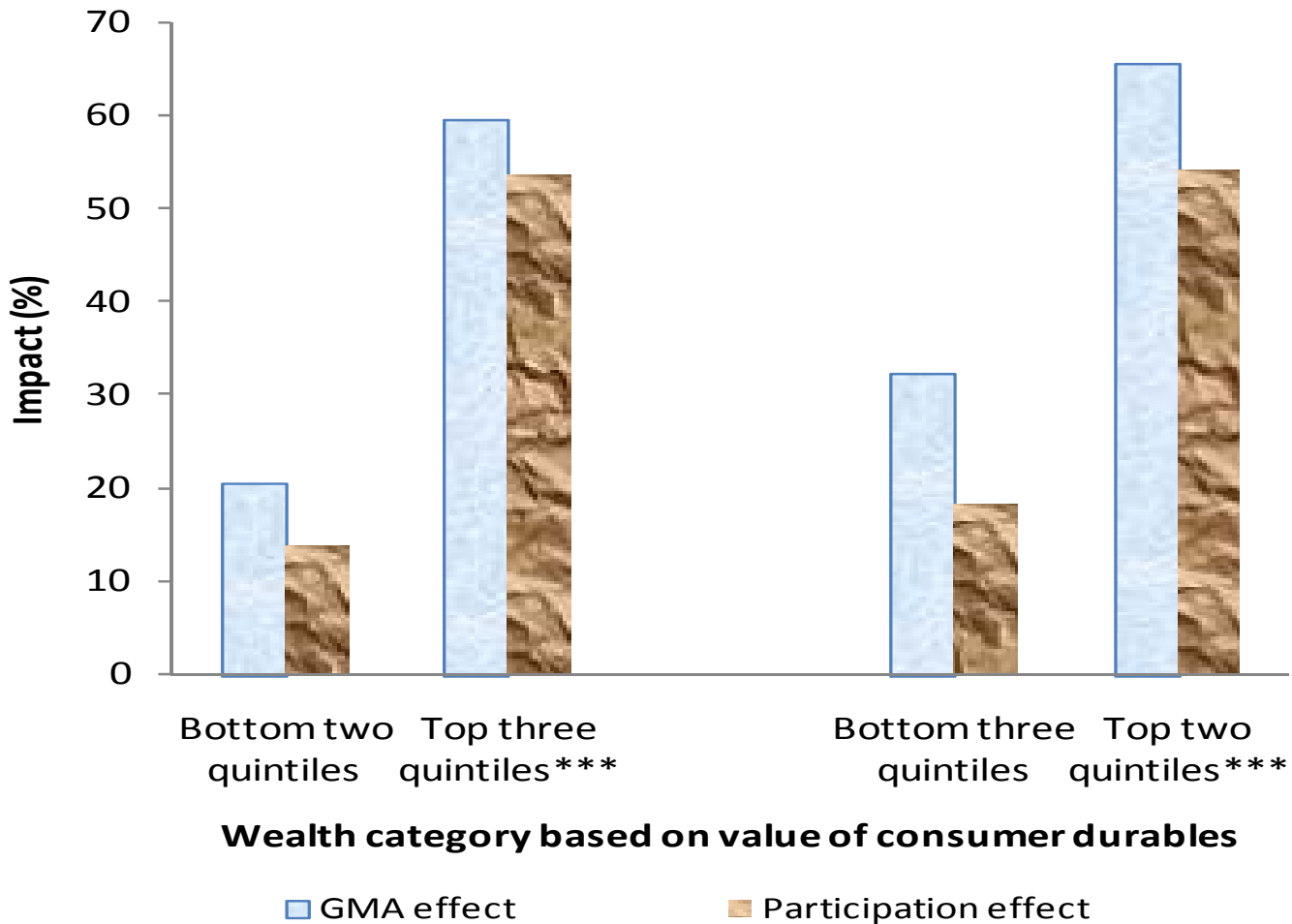


## Impact by park system (2)

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- Households in Bangweulu and Luangwa..
  - Are more likely to be female-headed
  - Have less education
  - Are further away from all-weather roads
  - Have less livestock
- GMAs in Kafue and Lower Zambezi have more recent infrastructure BUT..
  - Household level benefits are not visible
  - No evidence infrastructure is due to GMA

# Impact by wealth category





## Impact by wealth category (2)

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- Poor and non-poor households are equally likely to participate in natural resource management activities
- BUT.. Household participation is in levels
  - The rich participate in CRBs
    - Directly in charge of funds from ZAWA
    - Elite capture cannot be ruled out
  - The poor participate at VAG level
    - ZAWA funds seldom trickle down to this level
    - → Weak participation (Mulenga et al 2003)



# Concluding remarks

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- The CBNRM program is beneficial BUT..
  - Only in GMAs with limited opportunities
  - Only among wealthier, more powerful members
    - These interact more directly with ZAWA through CRBs
    - Majority poor participate passively at VAG level
  - Impediments to effective participation by the majority need to be understood and addressed
- Infrastructure development does not translate into household level gains in the short run