

# **Do household definitions matter in survey design? Results from a randomized survey experiment in Mali**



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# Motivation

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- Household definitions vary across surveys and have potentially significant implications for household composition, statistics generated at household level and comparability across surveys using different definitions
- Standard definitions of the household typically involve one or more of the following:
  - Residency requirement
  - Listing of persons cited as household members have to acknowledge common household head
  - Common food consumption from “common pot” or “common granary”
  - Intermingling of income or production decisions
- There are ambiguities within each component
- Which components are appropriate may vary by survey topic and context

# Motivation: Mali

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- Three different definitions of the household used in three recent national surveys:
  - Rapid Household Consumption Survey 2006:
    - A household is a group of people who normally live and eat their meals together in the household. The household is an economic unit in which the members possess certain economic ties. They may participate together in the same productive activity, earning income together. The survey permits the use of all information which includes key events which illustrate this type of economic behavior. It is essential that all people who participate in the decisions or are affected by the results of these decisions are included in the household.
  - DHS 2006:
    - "Please list the names of the people who normally live in your household and the visitors who passed the last night here, beginning with the head of household."
  - Agricultural Census 2006:
    - Census defines an agricultural holding (economic unit of agricultural production) and defines the HH around the "holding" concept

# Motivation: Mali

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- 3 surveys have different estimates of HH size:
  - Ag Census: 6
  - DHS: 5.7
  - Rapid HH Survey: 8.5 (9.1. for the studied region)
  - All lower than our estimates which are between 11 to 12 persons
- Differences can be result of several factors including sampling, but definition can be a contributor

# Malian HH Context

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- HH structure in Mali, like in other places, is complex, in particular:
  - Multiple households may live in one concession
  - Older “traditional” parents may classify themselves heads of larger households than their offspring might, because older heads may perceive larger households as a sign of status
- Consider food consumption and agriculture:
  - Food: preparation and consumption may be shared among larger group for some meals but not all
  - Agriculture: common family plots
    - Heterogeneity in whether harvest is divided and stored in separate granaries

# Research Questions

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- Do different household definitions affect:
  - Household size
  - Household composition
  - Assets, food consumption, and agricultural production
- The objective is not to determine “correct” household definition (which can vary based on survey’s objectives), but to examine the trade-offs between alternative definition types
- But we can see which definitions lead to different measures for HH size, composition, assets, etc

# Experimental Design

		Definition Keywords: Common Agricultural Activities/ Income Generation Activities	
		No Ag/ Income Sharing keywords	Ag/ Income Sharing keywords
Definition Keywords: Common Food Sharing	No Food Sharing keywords	Definition 1	Definition 3
	Food Sharing keywords included	Definition 2	Definition 4

- All definitions require that members of the household live in the same lodgings and acknowledge a common household head.
- Expanded definitions focus on two key aspects of economic decision making: food preparation and agricultural production.

# Actual Definitions

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1. A household is composed of the group of people **living in the same dwelling space** and **acknowledge the authority of** a man or women who is the **head of household**.
  
2. A household is composed of the group of people living in the same dwelling space **who eat meals together** and acknowledge the authority of a man or women who is the head of household.

# Actual Definitions

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3. A household is composed of the group of people living in the same dwelling space ***who have at least one common plot together or one income generating activity together (for example, herding, business or fishing)*** and acknowledge the authority of a man or women who is the head of household.
  
4. A household is composed of the group of people living in the same dwelling space ***who eat meals together and have at least one common plot together or one income generating activity together (for example, herding, business or fishing)*** and acknowledge the authority of a man or women who is the head of household.

# Sample

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- Random survey experiment implemented in 3 strata in the Segou region in Mali:
  - Office du Niger (ON): gravity irrigation system from colonial period
  - Alatona: villages north of ON; future intervention villages
  - Periphery: rain-fed agriculture near ON
- Sample Size (PPS):
  - 22 ON villages, 24 Periphery, 10 Alatona
  - Up to 20 HHs per village
    - Some villages too small to get 20

# Randomization Strategy

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## □ Randomization done at “concession” level

- A “concession” is a physical space defined by an outer wall, observable by all, and not subject to the definition of the household
- Concessions chosen using circular sampling technique where
- Using randomly assigned definition, list all household heads
- Randomly chose one household within concession
- HHs in large concessions under-represented

# Econometric analysis

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$$y_{ij} = \beta_0 + \beta_2 Def2_{ij} + \beta_3 Def3_{ij} + \beta_4 Def4_{ij} + \delta X_j + \varepsilon_{ij}$$

- Definition 1 is excluded definition
- Coefficients are interpreted as the consequences of adding additional household restriction
- $X_j$  are village-level indicators to control for unobservable village characteristics
- No other household covariates since all are endogenous

# Household Size and Composition

	Total HH Size: Resident for last 6 mo	Age of HH Head	Adults 16- 60	Number of Married Men	Number of Married Women	1 or More Adult Married Sons (of HH Head)	1 or More Adult Married Brothers (of HH Head)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Def 2: Common Food, Dwelling, Authority	0.780 (0.506)	2.13 * (1.20)	0.631 ** (0.295)	0.212 (0.136)	0.225 (0.157)	0.092 ** (0.043)	0.040 (0.035)
Def 3: Common Ag, Dwelling, Authority	1.060 ** (0.507)	2.19 * (1.20)	0.852 *** (0.296)	0.258 * (0.136)	0.378 ** (0.158)	0.034 (0.043)	0.080 ** (0.035)
Def 4: Common Agriculture; Common Food, Dwelling, Authority	0.715 (0.507)	2.93 ** (1.20)	0.551 * (0.296)	0.262 * (0.136)	0.300 * (0.158)	0.064 (0.043)	0.084 ** (0.035)
Constant	11.006 *** (0.357)	52.43 *** (0.85)	5.391 *** (0.209)	1.902 *** (0.096)	2.327 *** (0.111)	0.331 *** (0.030)	0.156 *** (0.025)
P value: Joint test of Def 2, Def 3 and Def 4	0.190	0.086	0.030	0.173	0.094	0.164	0.059
N	1021	1021	1021	1021	1021	1021	1021

Notes

1 The omitted definition is Definition 1: Common Dwelling and Authority.

2 All regressions include village fixed effects.

# Assets

	Farm Assets		Livestock (TLU)		Assets, Non-Farm		
	Levels	Per A.E.	Levels	Per A.E.	Levels	Per A.E.	
	(1)	(2)	(3)	(4)	(5)	(6)	
Definition 2: Common Food, Dwelling, Authority	0.272 (0.157)	* (0.041)	-0.039 (0.808)	2.652 (0.115)	*** 0.293 (0.298)	** (0.071)	0.465 (0.069)
Definition 3: Common Agriculture, Dwelling, Authority	0.561 (0.157)	*** (0.041)	-0.001 (0.809)	1.889 (0.115)	0.090 (0.298)	0.655 (0.071)	-0.094 (0.071)
Definition 4: Common Agriculture; Common Food, Dwelling, Authority	0.166 (0.157)		-0.045 (0.041)	0.645 (0.809)	-0.035 (0.115)	0.254 (0.298)	-0.125 (0.071) *
Constant	6.682 (0.111)	*** (0.029)	0.976 *** (0.570)	6.396 *** (0.081)	0.916 *** (0.210)	11.668 *** (0.050)	1.704 *** (0.050)
P value: Test of Definition 2 = Definition 3	0.066			0.346			0.525
P value: Test of Definition 3 = Definition 4	0.012			0.126			0.181
P value: Joint test of Def 2, Def 3 and Def 4	0.004		0.563	0.005	0.021	0.149	0.346
N	1021		1021	1021	1021	1021	1021

The omitted definition is Definition 1: Common Dwelling and Authority.

All regressions include village fixed effects.

# Consumption

	Grain Expenditure		Kgs of Grains Consumed		Kgs of Millet Consumed	
	Aggregate (FCFA)		Levels	Per A.E.	Levels	Per A.E.
	(1)	(2)	(3)	(4)	(5)	(6)
Def 2: Common Food, Dwelling, Authority	1740 (961)	* (95.4)	60.7 (4.44)	8.88 (0.438)	0.410 (0.438)	7.27 (3.56) ** (0.340)
Def 3: Common Agriculture, Dwelling, Authority	1580 (962)	49.0 (95.5)	7.66 (4.45)	*	0.244 (0.438)	5.53 (3.57) 0.194 (0.340)
Def 4: Common Agriculture; Common Food, Dwelling, Authority	1540 (962)	109.0 (95.5)	6.25 (4.45)	0.449 (0.438)	2.71 (3.57) 0.254 (0.340)	
Constant	10100 (677)	*** (67.2)	1250.0 (3.13)	47.62 (0.308)	5.884 *** (0.308)	33.80 (2.51) *** (0.239)
P value: Joint test of Def 2, Def 3 and Def 4	0.230	0.725	0.192	0.727	0.186	0.538
N	1011	1011	1011	1011	1011	1011

The omitted definition is Definition 1: Common Dwelling and Authority.

All regressions include village fixed effects.

The exchange rate for the FCFA was 450 to the US dollar.

# Agricultural Production

	Number of Plots conditional on HH Farming		Value of Grains Produced (FCFA) conditional on HH Farming		Land Size (Hectares)		Total Plot Inputs	
	Levels	Per A.E.	Levels	Per A.E.	Levels	Per A.E.	Levels	Per A.E.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Def 2: Common Food, Dwelling, Authority	0.109 (0.105)	-0.009 (0.015)	6,663 (76,436)	-4,470 (8,479)	-0.150 (0.606)	-0.061 (0.069)	58,348 (66,624)	3,499 (5,257)
Def 3: Common Agriculture, Dwelling, Authority	-0.016 (0.105)	-0.028 * (0.015)	-840 (75,958)	-7,859 (8,425)	0.149 (0.606)	-0.055 (0.069)	72,197 (66,706)	4,200 (5,263)
Def 4: Common Agriculture; Common Food, Dwelling, Authority	-0.028 (0.105)	-0.028 * (0.015)	-92,188 (76,012)	-20,917 ** (8,431)	-0.388 (0.606)	-0.121 * (0.069)	11,922 (66,710)	-513 (5,264)
Constant	2.041 (0.075)	*** 0.284 *** (0.011)	801,703 *** (53,981)	96,037 *** (5,988)	6.726 *** (0.428)	0.843 *** (0.048)	199,881 *** (47,033)	22,483 *** (3,711)
P value: Joint test of Def 2, Def 3 and Def 4	0.541	0.175	0.508	0.078	0.837	0.379	0.647	0.743
N	937	937	926	926	1021	1021	1021	1021

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The omitted definition is Definition 1: Common Dwelling and Authority.  
All regressions include village fixed effects.

# Results

	<b>Adding consumption requirements</b>	<b>Adding common ag or income generating requirements</b>	<b>Adding both</b>
<b>HH size</b>	-	Increased household size	-
<b>HH Comp</b>	Increased number of married sons, increased number of people 16-60	Increased number of married brothers, increased number of people 16-60	Increased number of married brothers, increased number of people 16-60
<b>Assets</b>	Greater levels of farm assets and livestock holdings (levels and AE)	Greater levels of farm, nonfarm assets and livestock holdings	-
<b>Consumption</b>	Greater levels of expenditure, greater quantities measured	Greater levels of quantities measured	-
<b>Production</b>	-	-	-

# Conclusions

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- We find that additional keywords in definitions increase rather than decrease household size and significantly alter household composition.
  - Keywords may trigger respondent to include/remember a different set of people
  - Variation in composition were driven mainly by the inclusion or exclusion of adults in the definition
- Composition changes as well as household size drive changes in levels and AE statistics, but not consistently for asset, production and consumption statistics.
- Since food budget shares, especially grain budget shares are high (60-80% in Mali), the implications on poverty statistics are large.
- Consistency over time in definitions used in national surveys and in evaluations (baseline and endline studies) are paramount for accurate measurement of policy relevant variables

# Contact Information

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