



# Measuring Welfare for for Small Vulnerable Groups Poverty and Disability in Uganda

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## Few welfare statistics for vulnerable

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- Welfare information for vulnerable groups is typically not reflected in poverty profiles. I distinguish between:
  - Non-income dimensions of poverty
  - Income poverty (poverty incidence)
- Which vulnerable groups are we talking about?
  - People with disabilities
  - Vulnerable children (child headed hh, orphans, children that work)
  - Vulnerable women (widows; single moms)
  - Elderly
- A commonality for these vulnerable groups is their small size



## Few welfare statistics for vulnerable

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- Being of small size hinders obtaining welfare information
  - Poverty profiles are almost exclusively based on information available in LSMS-type household surveys such as the HBS
  - Being sample surveys ...
    - ... the number of observations is typically insufficient for precise welfare estimates for particular vulnerable groups.
    - If sufficient observations are obtained, they may not be representative.
  - A stratified sampling approach could resolve these issues, but is rarely done in practice (at least for vulnerable groups)



# Population censuses, a solution?

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- Population censuses collect (representative) information for even the smallest group
- Many traditional vulnerable groups can be identified
  - Related to household composition (elderly, single women with children etc.)
  - Disability
  - Orphans
- Little reason not to use population censuses
  - Advances in computing power and data storage make that population censuses can be analyzed with a desk top computer



# Population censuses, a solution?

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- Population censuses collect much information on non-income dimensions of welfare
  - Household size and composition
  - Education attainment
  - Housing quality
  - Access to clean water and sanitation
  - Life expectancy
  - Pregnancy
  - Occupation
- Population censuses do not comprise information on income poverty



## Example: poverty and disability in Uganda

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- 1991 Population and Housing census
  - Long form with info on disability administered in urban areas
  - 22,165 households with disabled head (5% of total)
  - 425,333 households with non-disabled head
- Census manual defines disability as any condition which prevents a person from living a normal social and working life.
- Head of household is disabled if this prevents him/her from being actively engaged in labor activities during the past week

## Non-income dimensions of welfare from census (Uganda)

<b>Urban areas only, 1991</b>	<b>Head disabled</b>	<b>Head not disabled</b>
Age	37.6	34.7
Years of education	6.2	7.6
Female headed	45%	32%
Household size	4.7	3.9
Marital status		
... never married	12%	18%
... married	67%	69%
... widowed, divorced	20%	13%



## Non-income dimensions of welfare from census (Uganda)

<b>Urban areas only, 1991</b>	<b>Head disabled</b>	<b>Head not disabled</b>
Wall material		
... mud, unburned brick	74%	58%
... cement burnt brick	23%	35%
Floor material		
... mud	60%	48%
... cement	38%	47%
Tap water	22%	33%



## Non-income dimensions of welfare from census (Uganda)

<b>Urban areas only, 1991</b>	<b>Head disabled</b>	<b>Head not disabled</b>
Yrs of education missed by children		
... aged 12	1.1	0.9
... aged 18	2.2	1.9
Main source of livelihood		
... subsistence farming, petty trade, cottage industry	59%	28%
... formal trade, employee income	25%	50%



# Income poverty statistics for vulnerable

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- To obtain information on income poverty, one needs consumption information from a household survey
  - Back to the old problem of small population size
- Can household survey and population census be combined?
- New econometric techniques allow to do this:
  - Poverty mapping is a way to obtain income poverty statistics for small administrative areas
  - The same technique can be used to obtain poverty estimates for vulnerable groups



## Combining census and survey data

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Elbers, Lanjouw & Lanjouw, *econometrica* 2003

- Estimate with LSMS:  $\ln y_{ch} = X_{ch}^T \beta + \eta_c + \varepsilon_{ch}$
- Predict with census:  $\ln \tilde{y}_{ch} = X_{ch}^T \tilde{\beta} + \tilde{\eta}_c + \tilde{\varepsilon}_{ch}$
- Calculate welfare stat:  $\tilde{\omega}_d = E[W_d | m, \tilde{y}, d]$



# Combining census and survey data

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- Very labor intensive process
  - Ensure that census and survey can be mapped to each other
  - Ensure that variables in census and survey are identically defined and distributed
  - Identify as many identical variable as possible
  - Extensive specification search
  - Estimate separate models for each stratum
  - Predict poverty for each stratum
- But rewarding...
  - Get poverty estimates at low levels of disaggregation
  - Also get standard errors



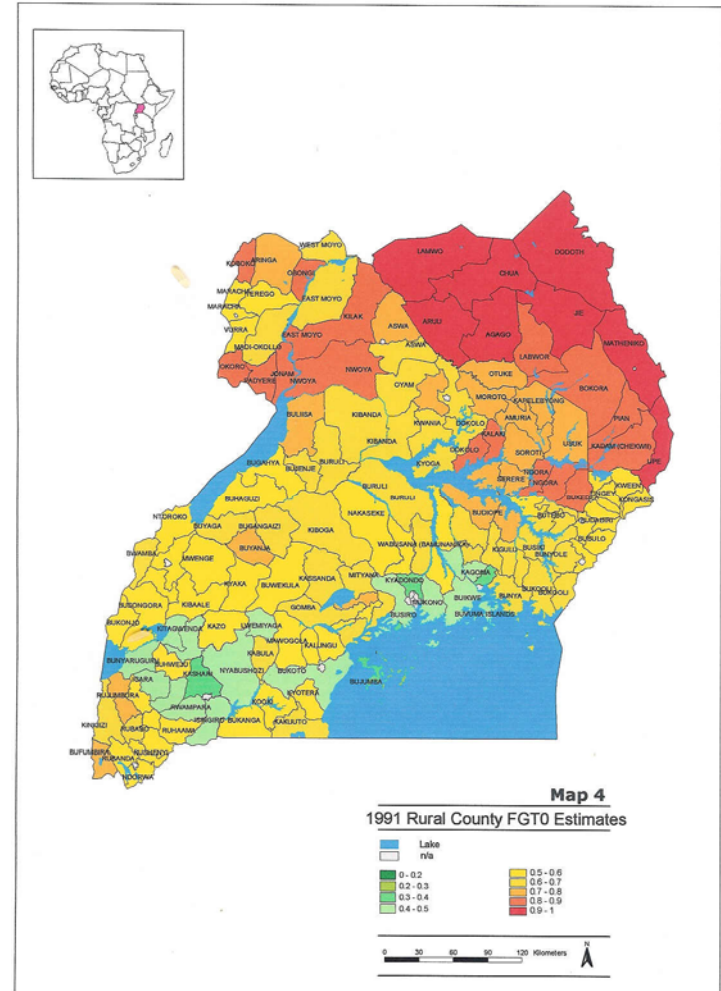
# Data for Uganda

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- 1991 Population and Housing census
  - Long form with info on disability administered in urban areas
  - 22,165 households with disabled head (5% of total)
  - 425,333 households with non-disabled head
  
- 1992 IHS
  - Consumption aggregate
  - Information on disability is absent
  - 4 urban strata

# Disaggregating by administrative area

- Poverty estimates at LC3 level, three administrative levels below which survey is representative
- Standard errors at LC3 level are of same order of magnitude as those in the survey at stratum level
- Maps are attractive presentational devices





## Disaggregating by vulnerability status

	Disabled head of hh		Non-disabled head of hh	
	<i>Poverty Incidence</i>	Std. Error	<i>Poverty Incidence</i>	Std. Error
Central	<i>26.4</i>	2.2	<i>18.8</i>	1.5
East	<i>50.4</i>	1.5	<i>36.9</i>	1.2
North	<i>56.6</i>	2.0	<i>48.4</i>	2.0
West	<i>45.7</i>	2.7	<i>31.0</i>	1.5



## Caveat I: Is poverty under-estimated?

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- Reconsider the model estimated in survey

$$\ln y_{ch} = X_{ch}^T \beta + \eta_c + \varepsilon_{ch}$$

- There is only one model applying to disabled and nondisabled
- Differences in poverty incidence between disabled and non-disabled occur because welfare correlates differ
  - Education, age, household size, female headed, marital stat.
  - Housing conditions, toilet, access to safe water
  - Location means capturing employment etc.
- $\beta$ 's are the same for disabled and non-disabled
  - But, return to education could be different



## Caveat I: Is poverty under-estimated?

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- We estimate

$$\ln y_{ch} = X_{ch}^T \beta + \eta_c + \varepsilon_{ch}$$

- Suppose we could estimate a model, exclusively for disabled people:

$$\ln y_{ch} = X_{ch}^T \gamma + \eta_c + \varepsilon_{ch}$$

- If  $\gamma$ 's <  $\beta$ 's and we use the  $\beta$ 's to predict consumption:
  - predicted consumption is too high, poverty is under-estimated
- If  $\gamma$ 's >  $\beta$ 's and we use the  $\beta$ 's to predict consumption:
  - predicted consumption is too low, poverty is over-estimated



## Caveat I: Is poverty under-estimated?

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- For vulnerable groups it seems likely that  $\gamma$ 's <  $\beta$ 's
  - E.g. return to education is lower for disabled people
- Consequently, poverty is underestimated
- Direction of bias not always clear
  - e.g. fishermen
- Check: use a different (non-representative) survey to test the assumptions about the  $\gamma$ 's and  $\beta$ 's



## Caveat II: The role of demographics

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- Close relation between being vulnerable and household composition
  - E.g. disabled live in larger households
  - Elderly live in small households
- Some vulnerable groups are even defined demographically:
  - Child headed households
  - Single women with children
- Incidence of poverty is sensitive to assumption about economies of scale (Lanjouw and Ravallion 1995)
- Do sensitivity analysis



## Conclusion

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- Advances in computing technology and econometric techniques allow one to obtain welfare statistics for traditional vulnerable groups
  - Statistics on non-income dimensions obtained straight from census
  - Statistics on income poverty computed with poverty mapping
- Approach is too labor intensive to be used if one is only interested in poverty statistics for a particular vulnerable group
  - But poverty estimates for vulnerable can easily be generated once a poverty map has been prepared.
- First results indicate that poverty incidence is much higher amongst disabled. Note however that:
  - Poverty among disabled is probably underestimated
  - Poverty stats. sensitive to assumptions about economies of scale