

Tracking excess mortality in countries with limited death registration: the role of mobile phone surveys

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Excess mortality: a key measure of COVID-19's impact

- ▶ Number of deaths above number of deaths that would have occurred if the COVID-19 pandemic had not happened.
- ▶ Increasingly accepted/recommended indicator:
 - ▶ not affected by limited availability of tests for SARS-CoV-2
 - ▶ bypasses issues of classification of causes of deaths
 - ▶ includes indirect effects of the pandemic
 - ▶ Should be largely comparable across countries and over time

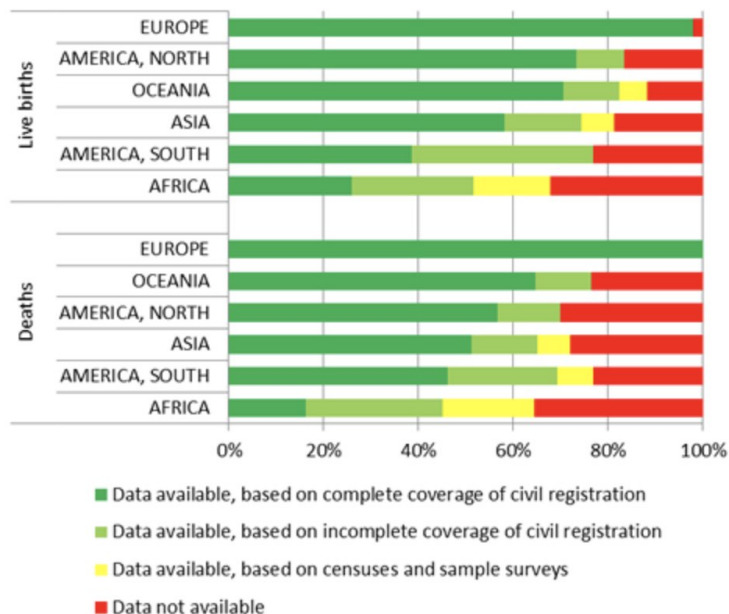
Excess mortality: a key measure of COVID-19's impact

- ▶ Regular updates from national statistical offices and health agencies
- ▶ Generated a lot of media attention
- ▶ EuroMOMO project
- ▶ Addition of data series on Short-term Mortality Fluctuations in Human Mortality Database

Excess mortality: data needs

- ▶ Data from a complete vital registration system
- ▶ Timely registration, so excess can be tracked on a weekly/monthly basis
- ▶ Population counts to account for changing population size and composition from year-to-year.

Excess mortality in low-income settings: challenges



Excess mortality in LLMICs: potential solutions

- ▶ WHO Recommendations: increasing facility-based and community-based recording and reporting of deaths.
- ▶ Issues:
 - ▶ Relies on modeled estimates for pre-COVID baseline.
 - ▶ Hard to scale-up such systems in “normal” times
 - ▶ Safety risks with increased community-based reporting, household visits etc. . .

Excess mortality in LLMICs: the role of mobile phone surveys

- ▶ Rapid proliferation of mobile phone surveys in the context of the COVID-19 pandemic.
- ▶ Very few mobile phone surveys collect data on mortality.

Rationale for mobile surveys about mortality

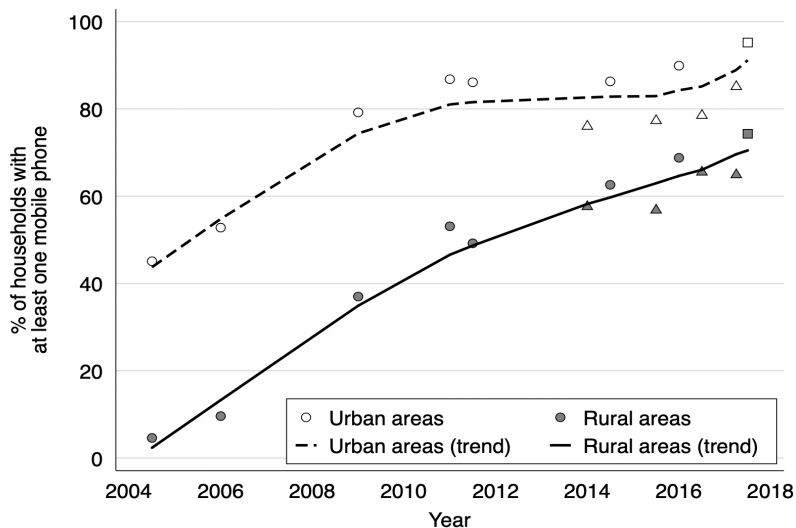


Figure 2: Expansion of access to mobile phones in Uganda

Rationale for mobile surveys about mortality

Supplement approaches recommended by the WHO

- ▶ Estimates of pre-COVID mortality can be obtained from mobile survey, using consistent methodology
- ▶ Can be rapidly and safely conducted in current context
- ▶ May reach areas where scale-up of death records is not happening.

Mobile surveys about mortality: what are the issues?

- ▶ Some issues shared with other mobile surveys, in particular sampling frame and sample selection bias
- ▶ Some issues shared with in-person mortality surveys: sample size and statistical power
- ▶ Issues specific to mortality measurement via mobile phone:
 - ▶ Sensitivity of the topic
 - ▶ Time to collect data
 - ▶ Accuracy of reported data

Pilot study in Malawi

- ▶ Study initiated before COVID-19 pandemic, as part of a multi-country validation study of survey data on mortality (R01HD088516)
- ▶ Study based in a Health and Demographic Surveillance System (HDSS) for reference data
 - ▶ Karonga Health and Demographic Surveillance System

Pilot study in Malawi

- ▶ Multiple assessments of mortality data
 - ▶ Validation vs HDSS data
 - ▶ Multiple members of the same family interviewed either by phone or in person to assess reliability (randomly allocated)
 - ▶ In-depth interviews with respondents and interviewers to assess issues related to sensitivity of the topic.

Pilot study in Malawi

- ▶ Sampled 150 families, among which index participants in 126 families completed an in-person interview and 342 of their siblings completed a mobile interview.
- ▶ Collected parental survival histories and siblings' survival histories from respondents.

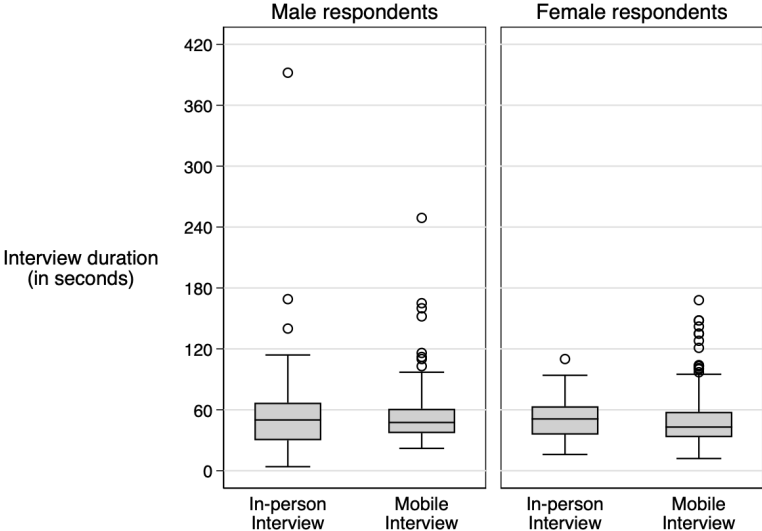
Pilot study in Malawi: participation

- ▶ Non-participation in mobile interview primarily due to phone ownership:
 - ▶ 33% of potential mobile participants did not own a phone
 - ▶ 10% resided in a HH without a mobile phone
 - ▶ Second reason for not participating: “could not be reached”
- ▶ Very few refusals to participate in mobile interview among potential respondents (<1%)
- ▶ Refusal to answer questions about survival of siblings and parents were extremely limited, comparable to in-person interviews (<1%).

Initial results: sensitivity of the topic

- ▶ In in-depth interviews, interviewers reported that circumstances of the death can make it more difficult to collect mortality data (e.g., violent deaths), regardless of the mode of interview.
- ▶ Different issues and skills involved in conducting in-person vs. mobile interviews.
 - ▶ *“I feel like these issues [sadness among respondents] happen more during face to face interviews because I think that your physical presence and facial expressions make a great impact for them to remember their deceased. And I feel like the respondents also want to let you know how much pain they are going through so that you should sympathize with them.”*
(Interviewer PL, 05/24/2020)

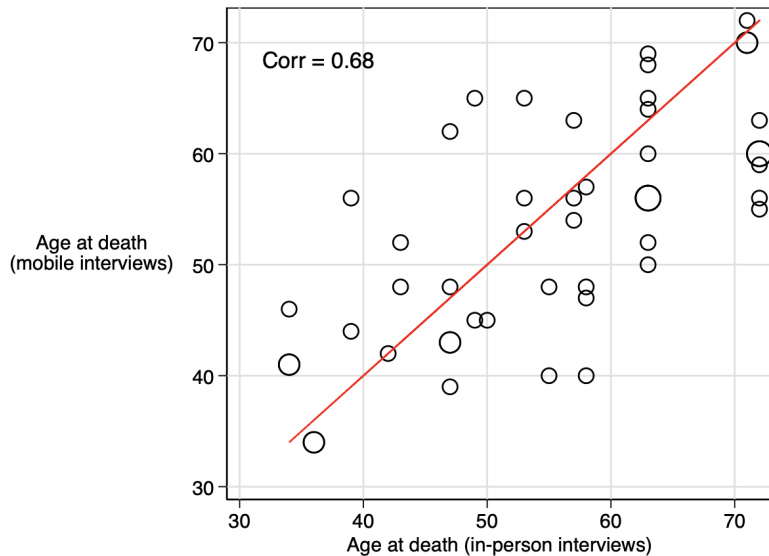
Initial results: duration of interviews



Initial results: accuracy

- ▶ Systematic assessment of inter-sibling reliability
- ▶ Comparison with prospective records from HDSS for validation
- ▶ Analyses under way. Additional assessments will include accuracy of year and month of death reporting, symptoms preceding deaths etc. . .

Initial results: accuracy



Conclusions

- ▶ Feasible to collect data on mortality via mobile phones.
- ▶ This might supplement current recommendations from WHO for rapid mortality monitoring during COVID-19 pandemic
 - ▶ Particularly in countries with the least robust data collection systems
 - ▶ Might also help improve estimation due to consistent pre-COVID baseline
- ▶ Additional work needed to adjust for sample selection biases and representativity of mobile phone data

Additional references:

- ▶ Pre-print on rationale for mobile phone surveys:
<https://osf.io/preprints/socarxiv/4bu3q/>
- ▶ Pre-print on Malawi study, including COVID follow-ups: <https://www.medrxiv.org/content/10.1101/2020.06.16.20133322v2>