Systematic estimates of cause-specific mortality for neonates, children and adolescents under 20 in Africa for 2000 - 2021

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CA-CODE

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2022-2025: CA-CODE objectives

- Methodological innovations
- Results dissemination
- Country engagement
- Evidence exploration
- Harmonization and synchronization
Causes of Mortality for children and adolescents

Age-specific mortality

a. Neonates
b. Under five years
c. 5-9 both sexes
d. 10-14 both sexes
e. 15-19 females
f. 15-19 males
~3% U5 deaths (U5D) occurred in countries with adequate VR; 90% of U5D occurred in countries estimated by statistical model using VA
Sources of causes of death and covariates

Collaborator Sites
- COMSA, CHAMPS, ALPHA
- Previous: MCHSS, MDS, INDEPTH, VASA, Madagascar

Covariates
- Vaccinations, WASH, SRH, nutrition, demographic

Systematic Review
- Distiller SR, Distiller AI

Single Causes
- HIV, measles, malaria, TB, crisis

Mortality Models
Bayesian model

- Multinomial regression in Bayesian framework: Covariates systematically prioritized (selected) in using the LASSO (Least Absolute Shrinkage and Selection Operator)

- Areas with nationally representative studies have more influence in their estimates (random effects)
- Methods innovation: Verbal autopsy misclassification and confusion matrix
New implementation (in progress)

- Example misclassification matrix (Previous)
  $\begin{bmatrix} 40\% \\ 40\% \\ 20\% \end{bmatrix}_s = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \end{bmatrix}_s \begin{bmatrix} 40\% \\ 20\% \\ 20\% \end{bmatrix}_s$

- Example potential misclassification matrix
  $\begin{bmatrix} 40\% \\ 40\% \\ 20\% \end{bmatrix}_s = \begin{bmatrix} 1 & 0.5 & 0 \\ 0 & 0.5 & 0.67 \\ 0 & 0 & 0.33 \end{bmatrix}_s \begin{bmatrix} 20\% \\ 40\% \\ 30\% \\ 10\% \end{bmatrix}_s$

- Decomposed:
  $\begin{bmatrix} 40\% \\ 40\% \\ 20\% \end{bmatrix}_s = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \end{bmatrix}_s \mathbf{C}_s \begin{bmatrix} 20\% \\ 40\% \\ 30\% \\ 10\% \end{bmatrix}_s$
Example coefficients
Under five mortality
Subnational Estimates

• India
• China

• Africa:
  • Nigeria
  • Ethiopia
CA-CODE: Data portal

https://childmortality.org/
Thank you

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