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What do we really know? Metrics for food insecurity and malnutrition

Hartwig de Haen, Stephan Klasen, Matin Qaim
University of Göttingen, Germany

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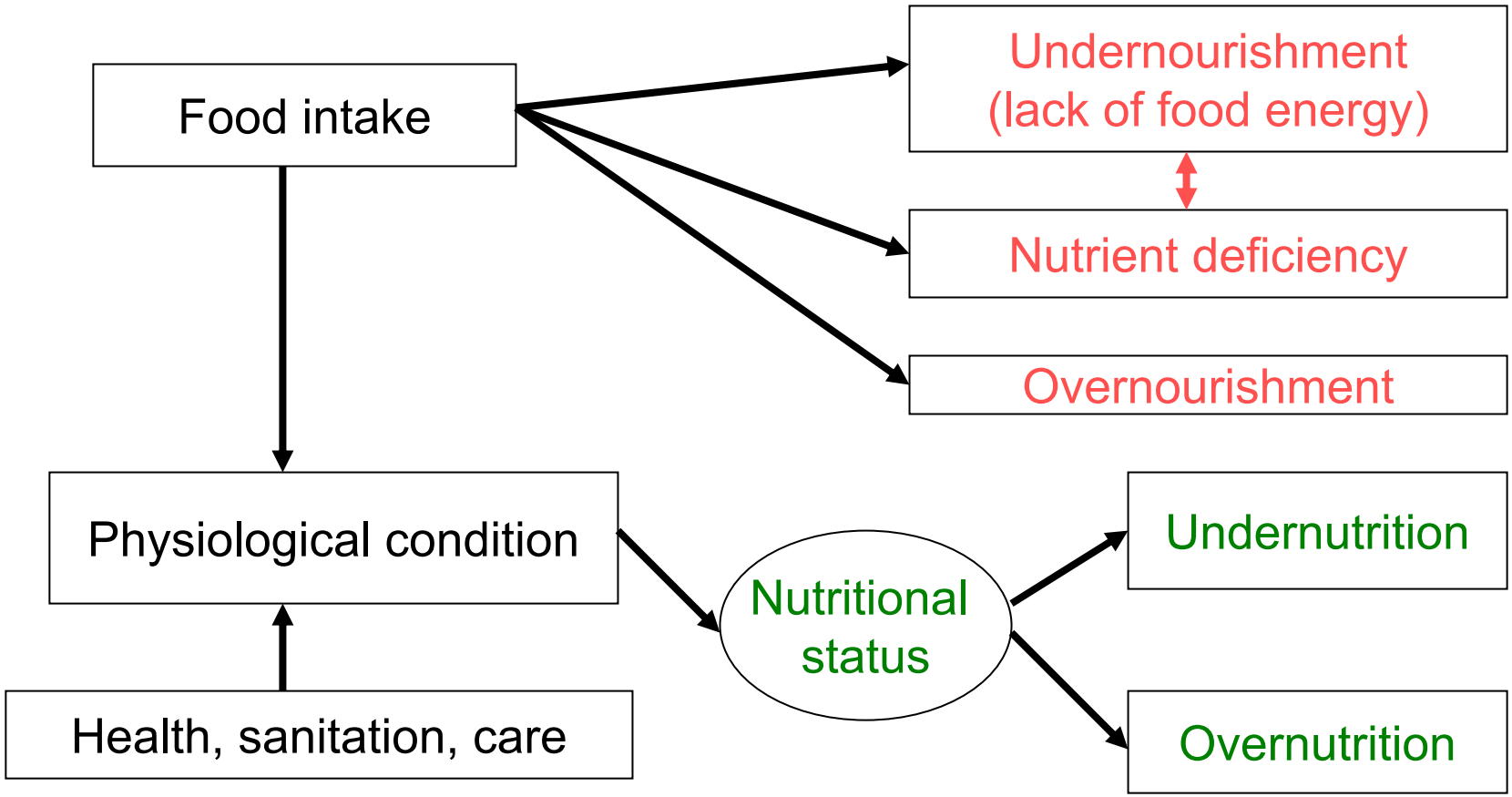
Outline

1. Questions and issues
2. Three key methods
   - FAO indicator of chronic undernourishment
   - Household consumption surveys
   - Anthropometric measurements
3. Contradictions and complementarities between indicators
4. Recommendations for improvement
5. Next steps

Dimensions of food insecurity

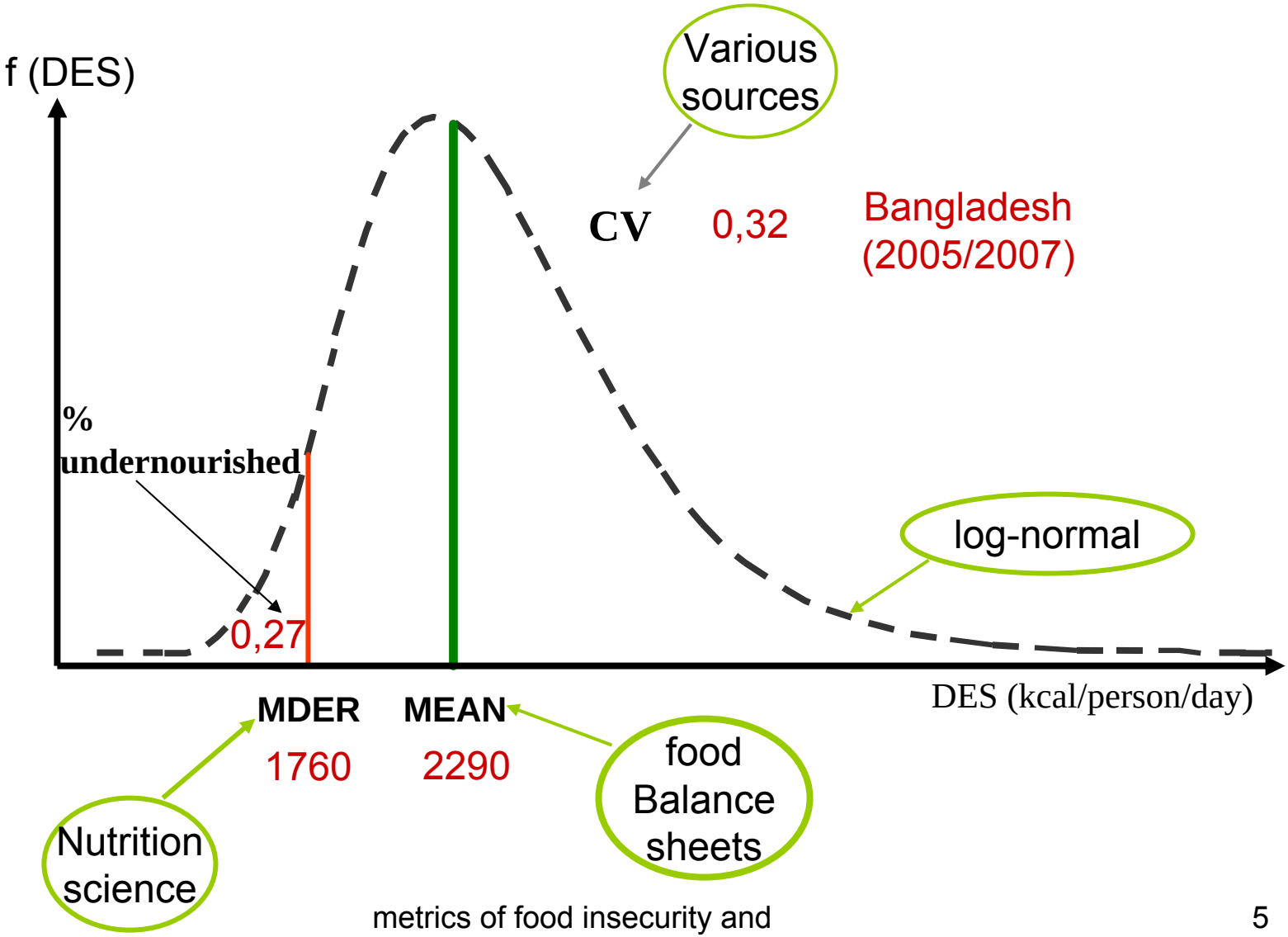
- Food Security ≠ Nutrition Security
- FIVIMS – multiple indicators needed



Questions and issues

- Key questions to be answered:
  - Who are the hungry? How many? Where? When? Why?
- Inconsistency of different methods
- Suite of indicators indispensible
- Focus on chronic food insecurity and malnutrition;
- Short-term famines and hunger emergencies require different approaches;

The FAO method



The FAO method

Use of the indicator

- Annual publication in SOFI
- Since 2008: ex-post projections
- Monitoring MDG One
- Useful for national and global governance
- Not suited (and not intended) to guide sub-national policy action
- Currently being reviewed in FAO

The FAO method

Main strengths

- Focus on essential food energy requirement
- Regular publication and worldwide coverage
- Consistent with national statistics
- Relatively low cost
- Food balance sheet approach also applicable to other nutrients (macro, micro)

The FAO method

Critical issues (1)

- Dietary energy supply (DES)
  - Dietary diversity not captured
  - Seasonal fluctuations not covered
  - Biased estimates through errors in food balance sheets (losses, waste, non-food use etc)
  - Dependant on quality of data inputs from countries (e. g the case of India)

The FAO method

Critical issues (2)

- Inequality of consumption within countries (CV)
  - Sources of CV not transparent
  - Upper and lower bounds for CV unclear (0.2-0.35)
  - Constancy of CV over time unrealistic and may misrepresent trends in hunger
- Minimum dietary requirements (MDER)
  - Based on WHO/FAO/UNU Expert Consultation (2001)
  - Some issues need more research
- Ex-post projections
  - Enables more timely estimates
  - Method insufficiently documented

The FAO method

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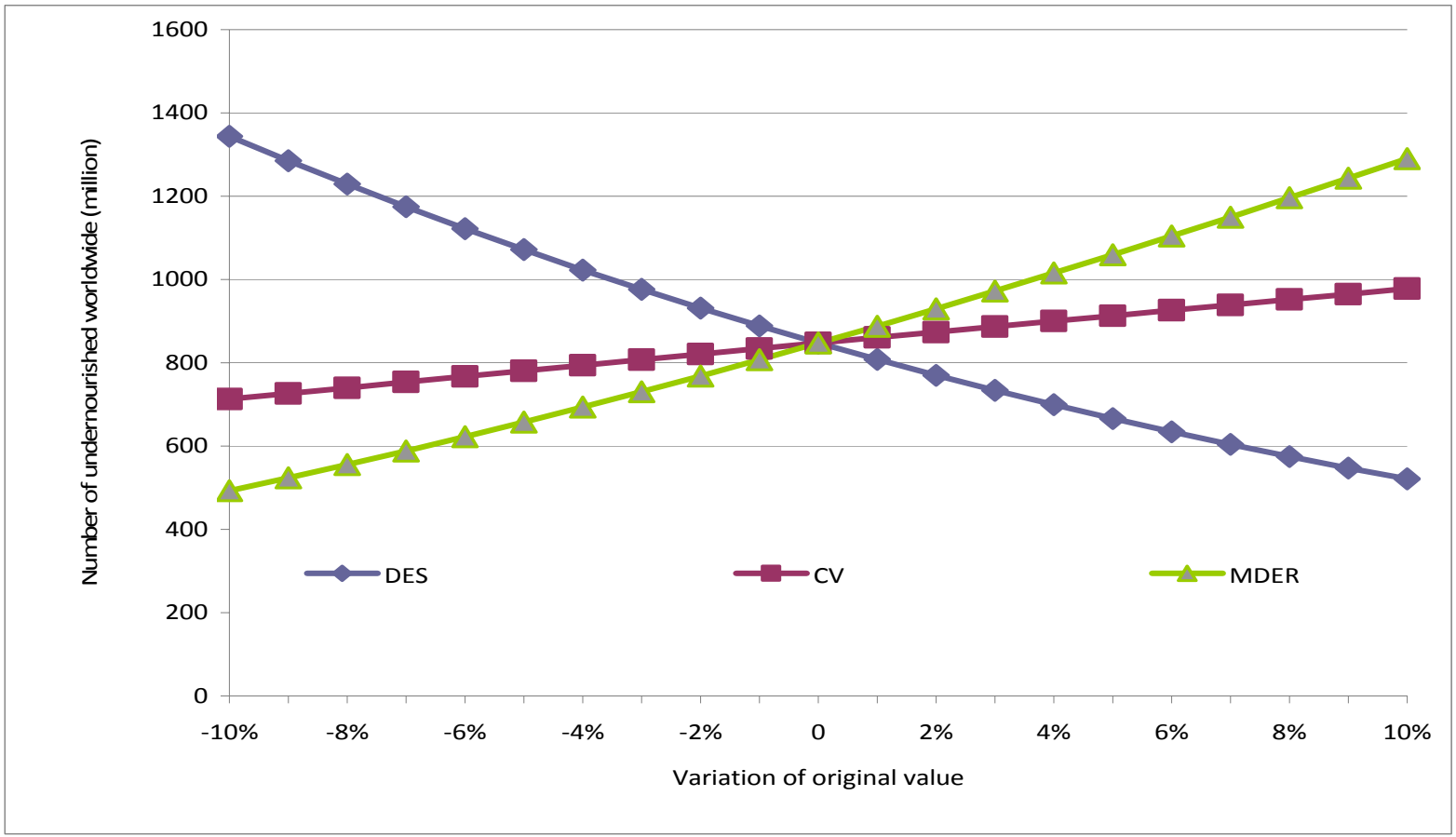
Estimates of undernourishment 2005/2007 with varying DES, CV and MDER



Food Consumption Surveys

- Data base:
  - Representative household surveys (increasingly frequent and rising accuracy);
  - Food expenditures (recall or diary);
- Method:
  - Conversion of food expenditures into calories (and other nutrients);
  - Comparison with household-specific needs;
  - Aggregate to generate national and international numbers;

Advantages

- More direct assessment of detailed food deficits
  - fewer assumptions needed;
- Direct measurement of distribution of hunger
  - no distributional assumptions;
- Household-specific assessment of actual dietary requirements possible;
  - no aggregate assumptions;
- Disaggregation by groups possible;
- Actionable indicator:
  - allows analysis of determinants of hunger

Disadvantages

- Seasonal assessment usually difficult;
- Data accuracy issues:
  - Food consumed away from home;
  - Intrahousehold losses, waste, non-food use, and distribution;
  - Sampling and recall errors;
  - Inter-personal variation in cut-offs;
- Timeliness, Coverage and Comparability;
  - Significant delay between field work and survey results;
  - Many countries still have no or highly irregular surveys;
  - Survey instruments differ between countries (esp. on detail of food consumption, recall versus diary, etc.);

➢ **Substantial conceptual advantages, but remaining empirical problems. Questions of interpretation?**

Anthropometric Assessments

- Nutritional ‚outcome' (rather than ‚input')
- Data base:
  - Representative household surveys (DHS);
  - Anthropometric assessment (of children);
- Method:
  - Comparison of individual anthropometric status with international reference standard (for children);
  - Z-score (SD. Distance from median of standard);
  - Key: Statistical assessment (misclassification), reference standard;

Advantages

- Measures what is arguably most important;
- Disaggregation by groups possible;
- Actionable indicator:
  - Very well-suited for monitoring;
  - Can study determinants;
- Good coverage, timeliness, and comparability of survey instruments (DHS, MICS, WFS);

Disadvantages

- More than food security;
- Focus on children;
- Timeliness and size of surveys;
- Missing covariates in surveys (DHS, MICS);
- Underweight and the Nutrition Transition:
  - Shift to foods with higher caloric, fat, sugar content boost weight and reduce ‚underweight'
  - Stunting better indicator?

International Comparability?

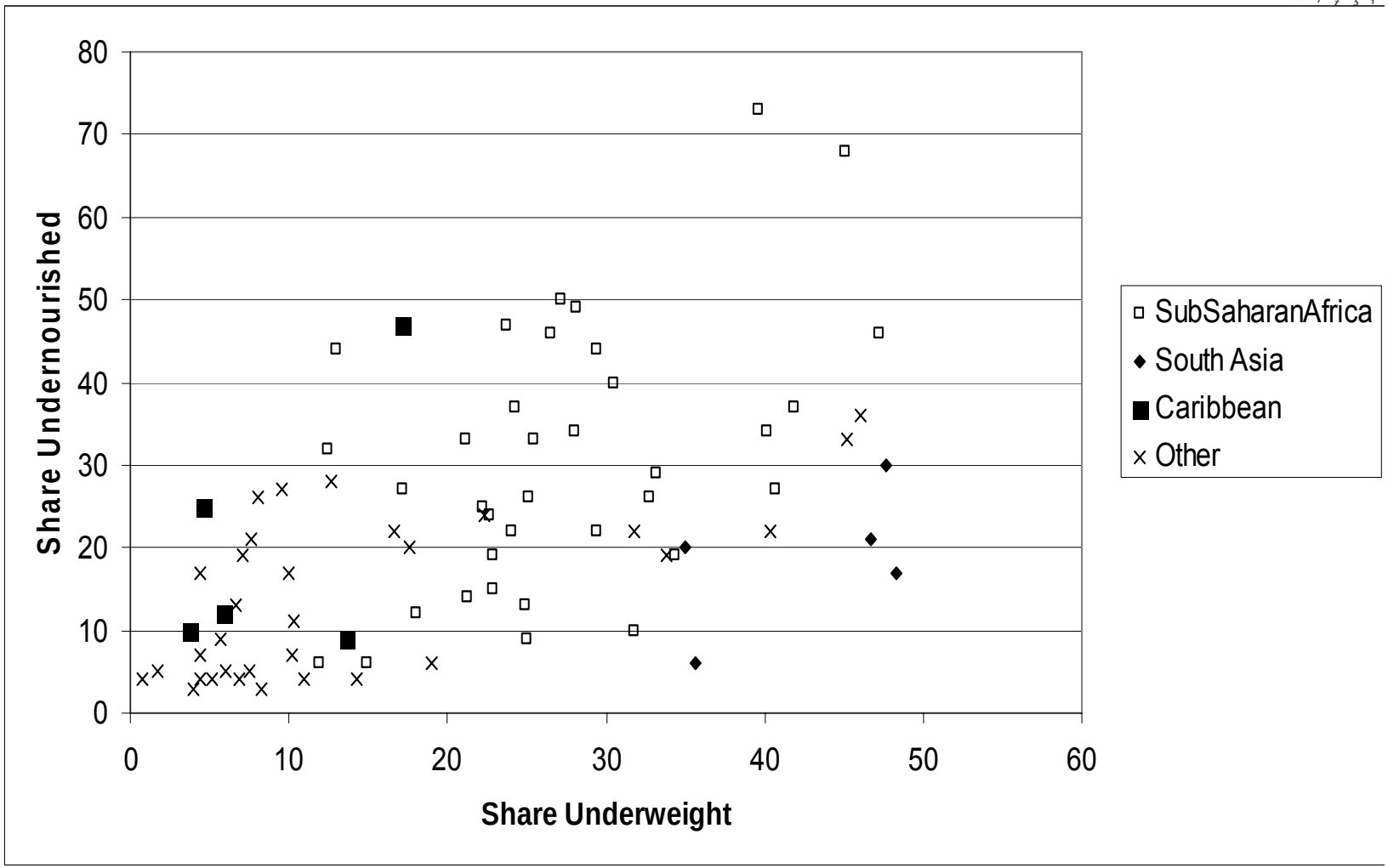
- Genetic differences seem to preclude worldwide standard for adolescents/adults;
- Small genetic differences among children?
  - Inconclusive evidence (possibly 1-3% differences, e.g. South Asia vs. Africa?);
    - Data for new reference standard support small differences;
  - Very high sensitivity of undernutrition rates to small differences in standard;
  - South Asian ‚enigma' partly due to this? (Not due to selection effect of lower mortality)

Comparison of Methods

Criterion	FAO approach	Consumption survey	Anthropometry
Ability to draw a regular picture for total global, regional and national populations	++	-	+
Ability to draw a regular picture for special population groups at global level	-	-	++
Usefulness to assess inequality of food consumption within countries	--	++	--
Usefulness to assess consumption consistent with national supply and demand	++	-	--
Accuracy in terms of measuring the adequacy of food intake	+	++	--
Accuracy in terms of measuring and identifying determinants of nutritional status at a point in time	-	+	++
Accuracy in comparing nutritional status across space and over time	--	+	?
Ability to assess dietary diversity and micronutrient status	--	++	-
Ability to portray regional and socioeconomic heterogeneity within countries	--	++	++
Ability to portray seasonal variation	--	-	-
Ability to inform global governance	++	-	++
Usefulness to guide national policy decisions (e.g., targeting)	--	+	++
Usefulness to simulate nutritional impacts of policies and shocks at country level	--	++	-

Notes: + and – signs indicate whether or not the approach is suitable. Double signs indicate very suitable or very unsuitable.

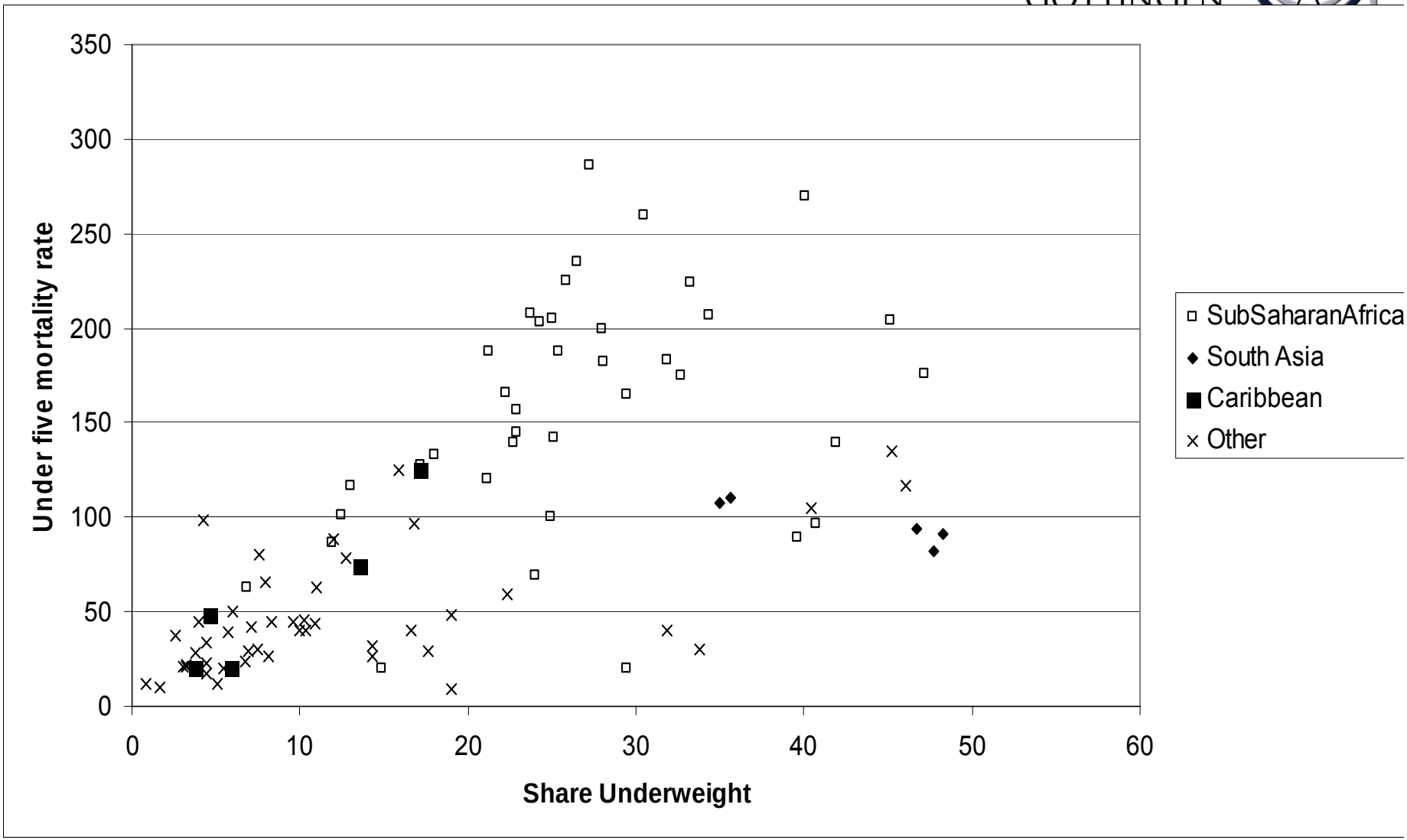
Figure 4: Undernourishment and childhood underweight rates in 2000



Source: Klasen (2008)

Similar mismatch FAO method and food consumption method.

Figure 5: Childhood underweight and under five mortality rates 2000



Source: Klasen (2008).

Recommendations for improvement (1)

Improving the FAO Indicator

- Review the accuracy of FBS data (underway)
- Update CVs regularly using household surveys (underway)
- Use FBS approach for other nutrients
- Consider lower frequency of publication
- Longer-term projections of undernourishment
- Resume estimates of depth of hunger (?)

Recommendations for improvement (2)

Moving beyond the FAO Indicator

- Expand living standard measurement surveys
- Link LSMS with anthropometric suveys
- Simulations (global and national)
  - e.g. use of consumption surveys and price/output data to estimate current levels of hunger
  - Policy impact simulations.

Recommendations for improvement (3)

Moving beyond the FAO Indicator

- Improve and expand surveys of concrete nutrition indicators
  - Dietary diversity
  - Micronutrient deficiency
  - (Overweight and obesity)
- More research:
  - Consumption surveys versus anthropometrics
  - Cut-offs (anthropometrics and intake)

Next steps

- Establish inventory of various indicators
- Enhancement of the empirical data base
  - Continue review of FBS data base
  - Reconcile food consumption data from FBS and household surveys
  - Enlarge country coverage and frequency of household living standard and anthropometric surveys
  - Harmonize formats, questionnaires, and sampling frames for both (esp. DHS/MICS and LSMS).

Institutional implications

Key agencies must cooperate more closely to:

- overcome incompatibilities between the methods
- work towards consistent suite of Indicators
- maintain close links to research community
- seek joint diagnoses of different indicators
- consider publishing a joint Report on Food and Nutrition Security
- advocate and promote country-owned measurements and policy responses

Options for institutional set-up

- Networking - reinvigoration of FIVIMS (?)
  - Food Security Info Network (FSIN) (FAO, WFP, IFPRI)
  - Involve others (esp. WHO, UNICEF, World Bank, EU)
  - Online Portal of all available indicators
  - Regular consultations on the three key indicators
  - Broaden focus on under- and overnutrition
  - Strengthen country-level work
- Use platforms for advocacy and support:
  - CFS
  - SCN
- Funding: combine RP and joint donor funding

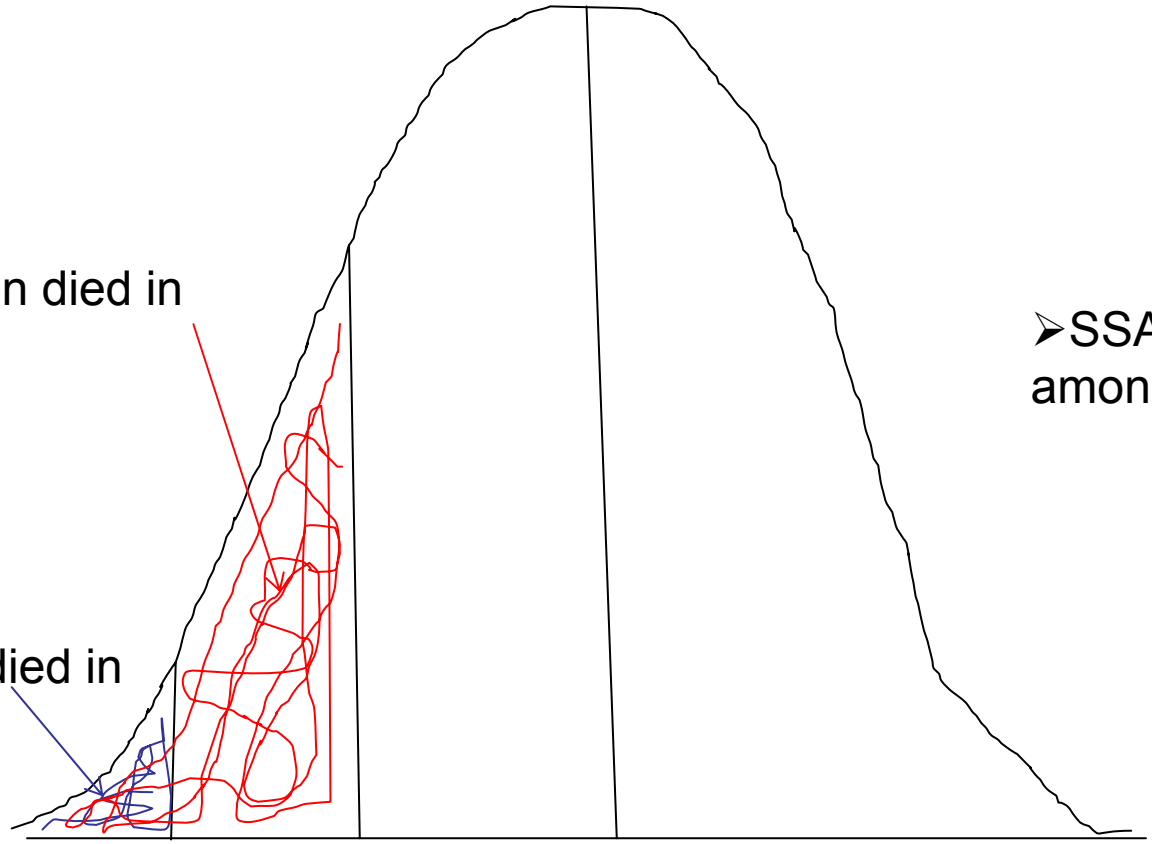
Conclusions

- Three competing methods, each with substantial strengths and weaknesses;
- Improvements in all approaches feasible (but require more research, data, resources);
- More focus on nutrition security indicators desirable
- Additional low cost indicators to be considered (e. g. dietary diversity);
- Need to also assess indicators of transitory hunger in food emergencies
- Greater linkages between methods promising way forward.

Assessing chronic versus transitory food insecurity

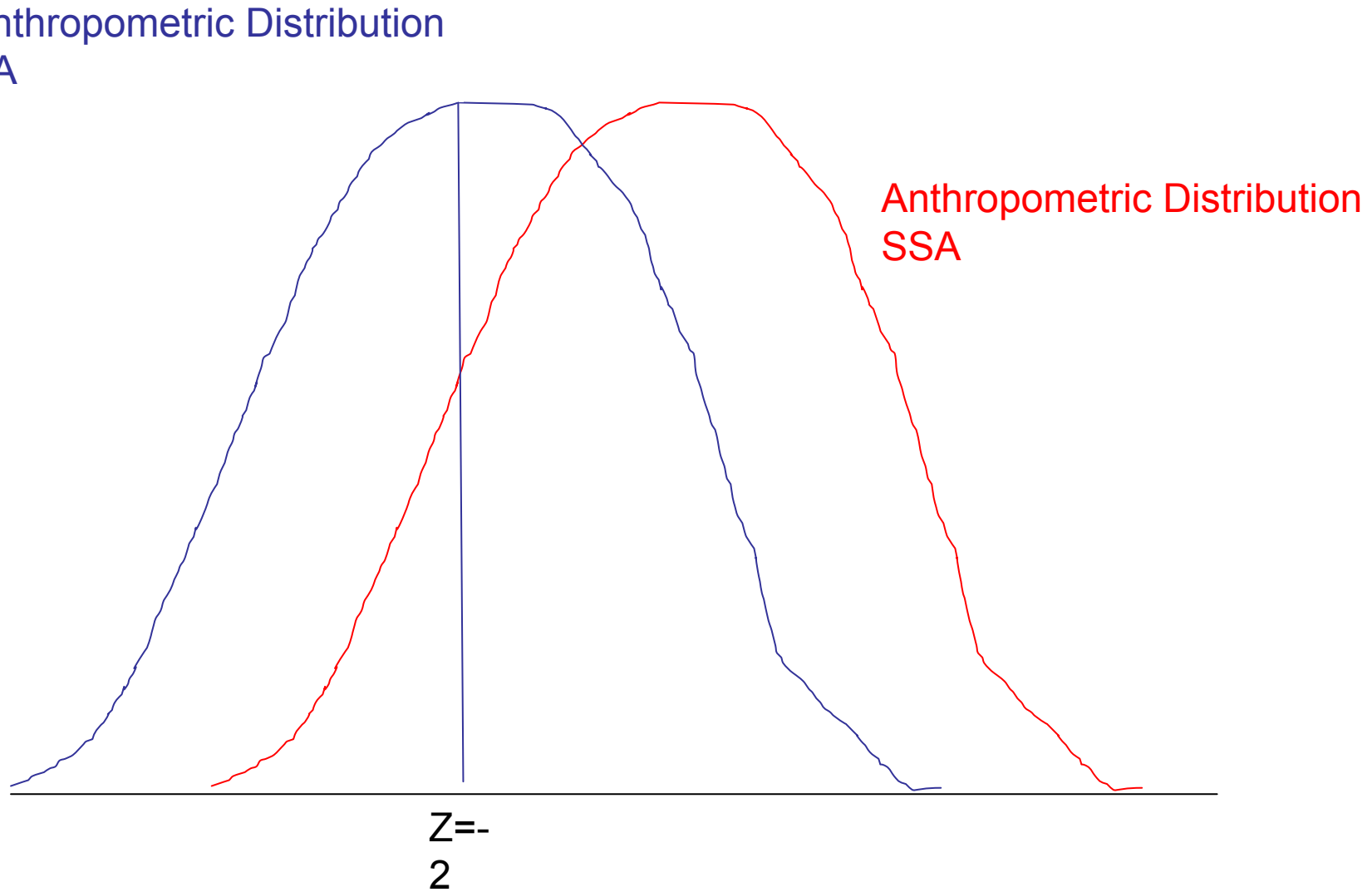
- **Profiles from household surveys** needed for **both** types
- **Transitory** food insecurity – three situations:
  1) Food emergency, no prior profiles:
     ⇨ad-hoc survey of vital nutrition needs
  2) Food emergency, prior profiles available:
     ⇨impact simulations with household models
  3) Recurrent crises (volatility of prices/incomes):
     ⇨regular household surveys plus impact simulations

Selection via Mortality and the ‚South Asian' Enigma



- SSA lower undernutrition among living children.

Actual Anthropometric Distributions



➢**Selection argument not consistent with actual anthropometric distributions.**