Links Between Agri-Food Value Chains & Nutrition

Policy Dialogue Shaping AFVCs for Nutrition

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Alexander A. Kalimbira

PSLC, JC, MSCE, Dip, BSc, MSc, PhD

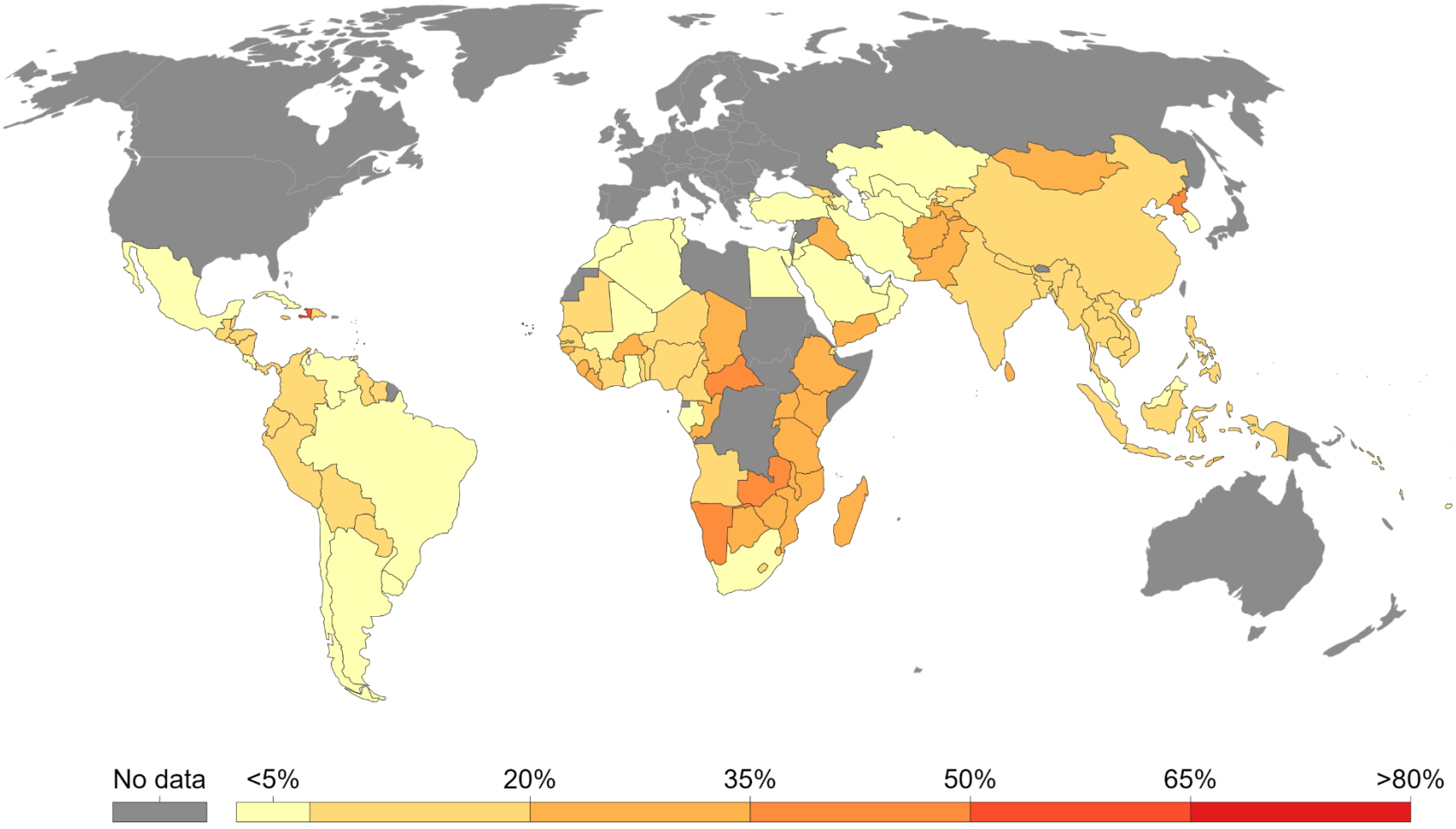
Associate Professor of Human Nutrition

Department of Human Nutrition & Health

Faculty of Food & Human Sciences

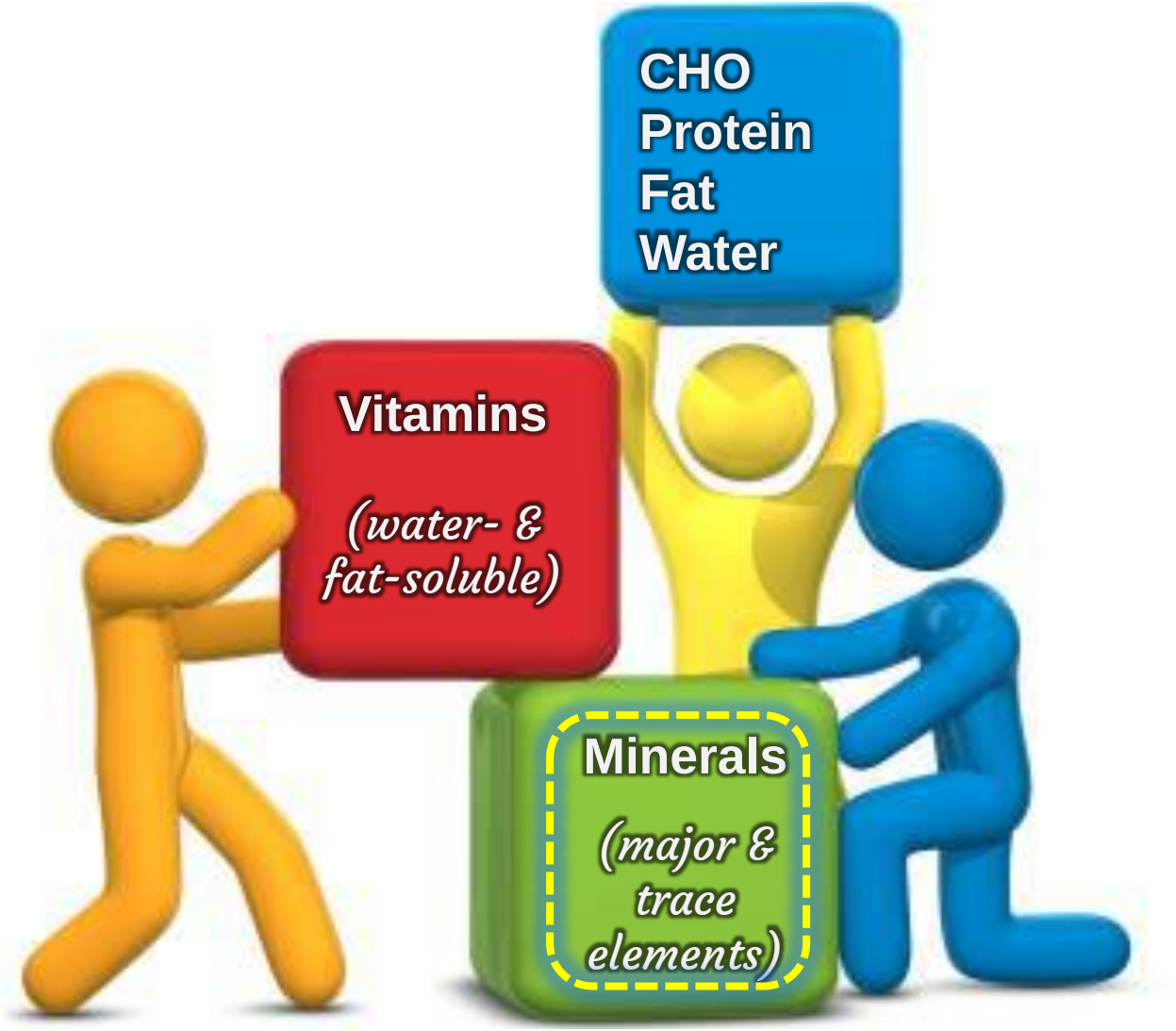
LUANAR @ Bunda

Inadequate Calorie Intake

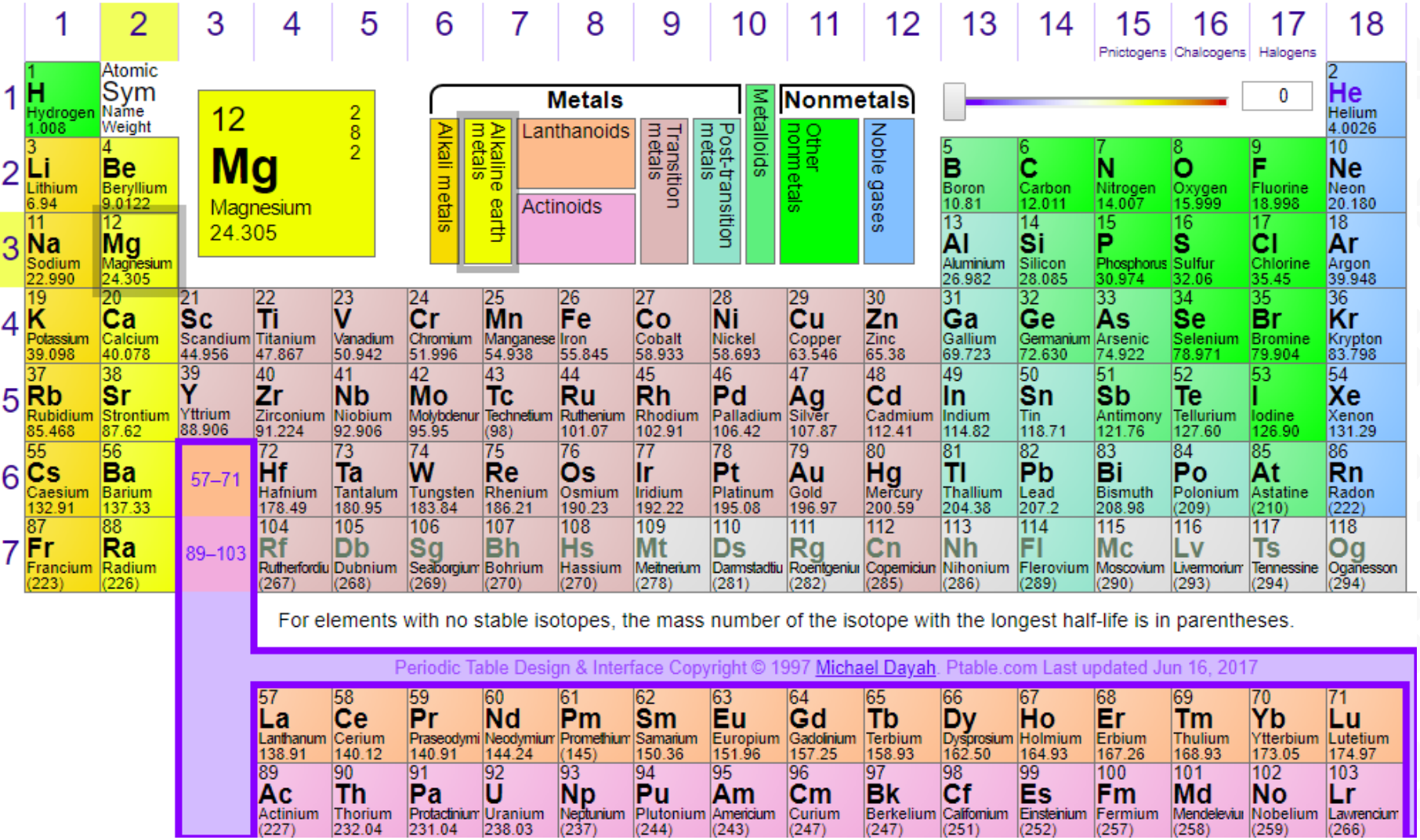


Source: Our World in Data (2019)

Building Blocks of the Human Body



Building Blocks of the Human Body



Agriculture Nourishes Us All

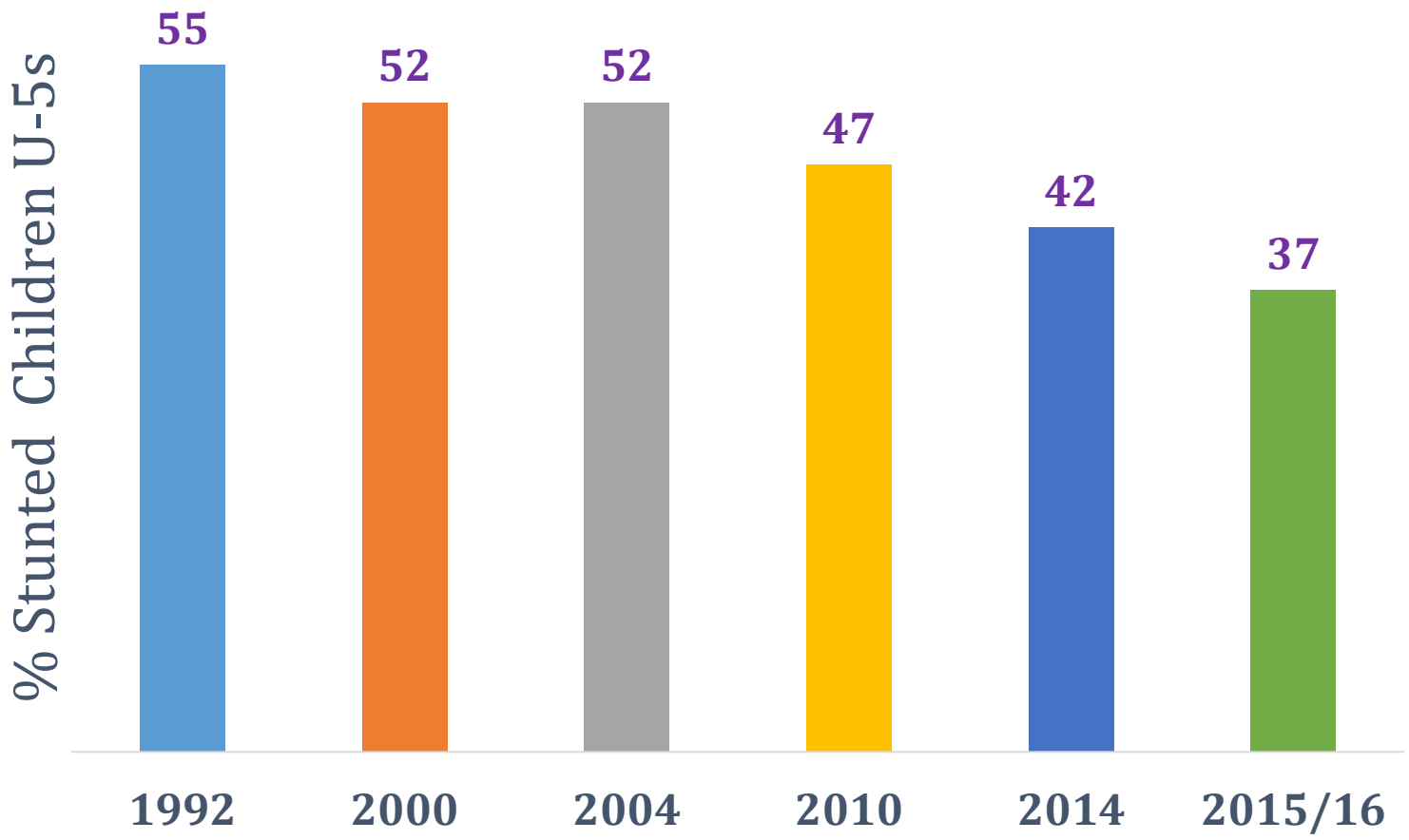
- Direct source of food
- Livestock provide nutrients (minerals, proteins, vitamins) in the form that our bodies understand & love to have (bioavailability)
- Animal source foods are preferred by most household members

Is Malawi a livestock country?

"Malawi can be a livestock country but at the moment it is not and will for sometime be dependant on imports, unless radical revolutionary strategies like in the crops sub-sector are immediately seriously implemented."

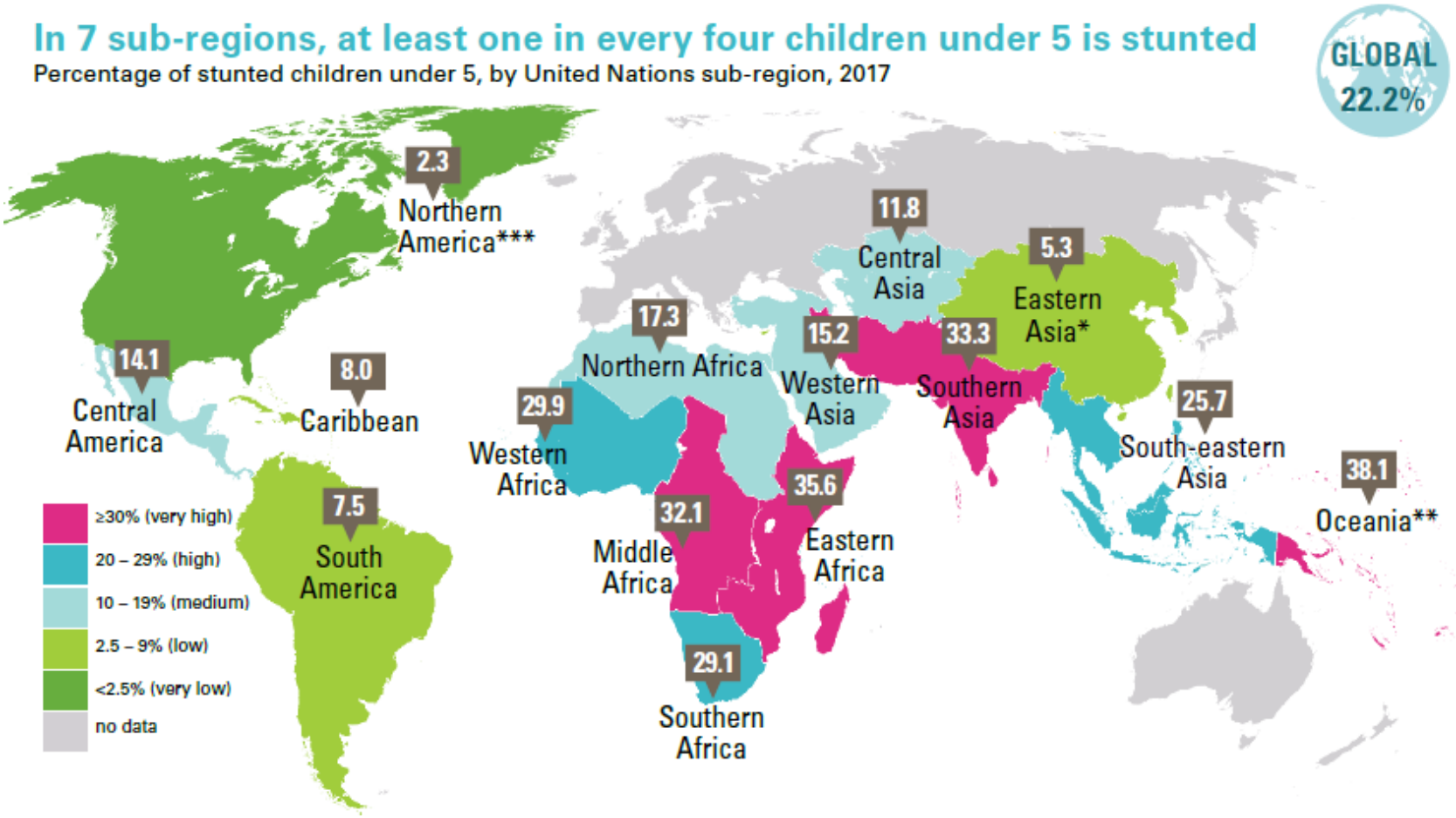
Prof. Richard Phoya (2009)

We are used to stunting stories



Trends in the burden of stunting in Malawi (1992 to 2015/16)

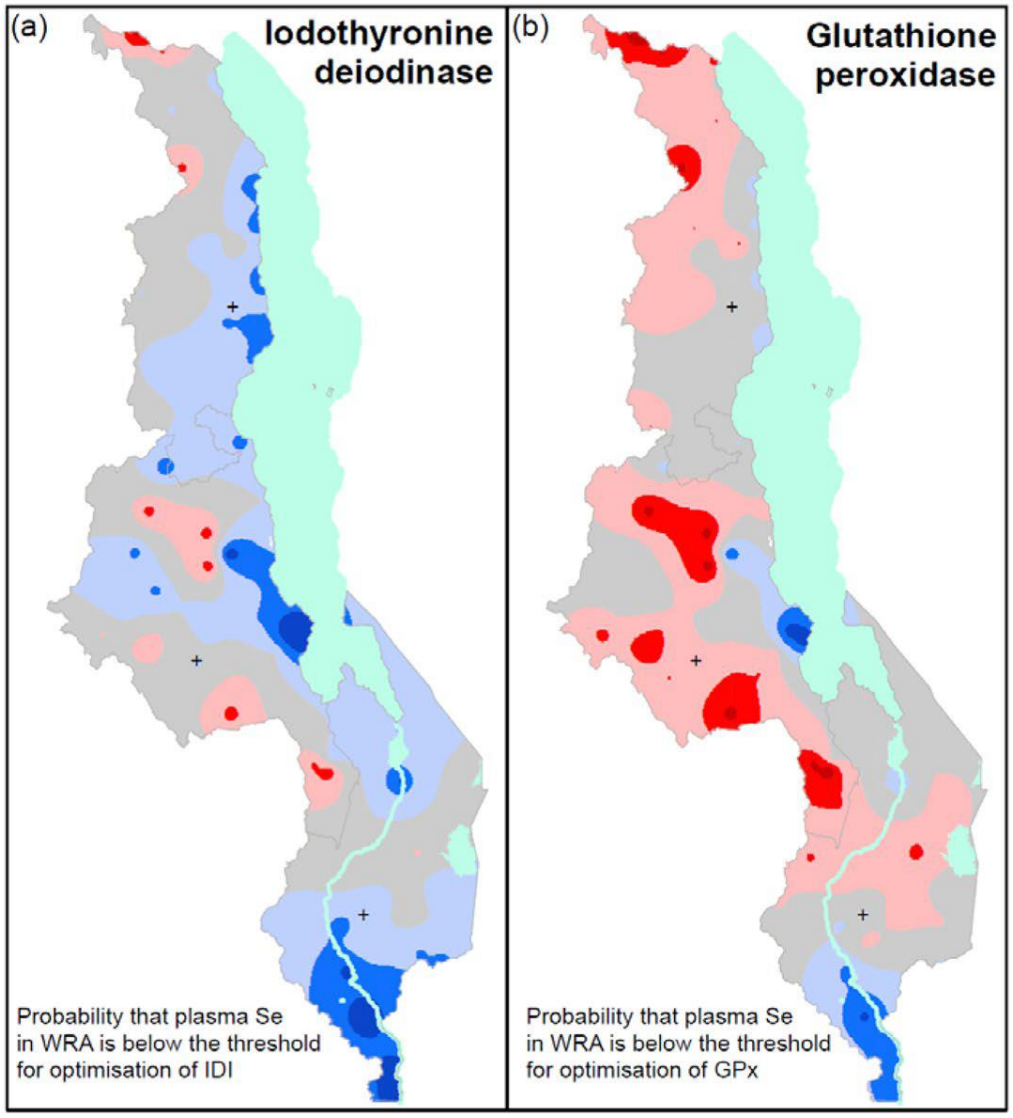
Global Prevalence of Stunting



Source: UNICEF, WHO, WB (2018)

Short-Statured Adults

Selenium Deficiency in Malawi

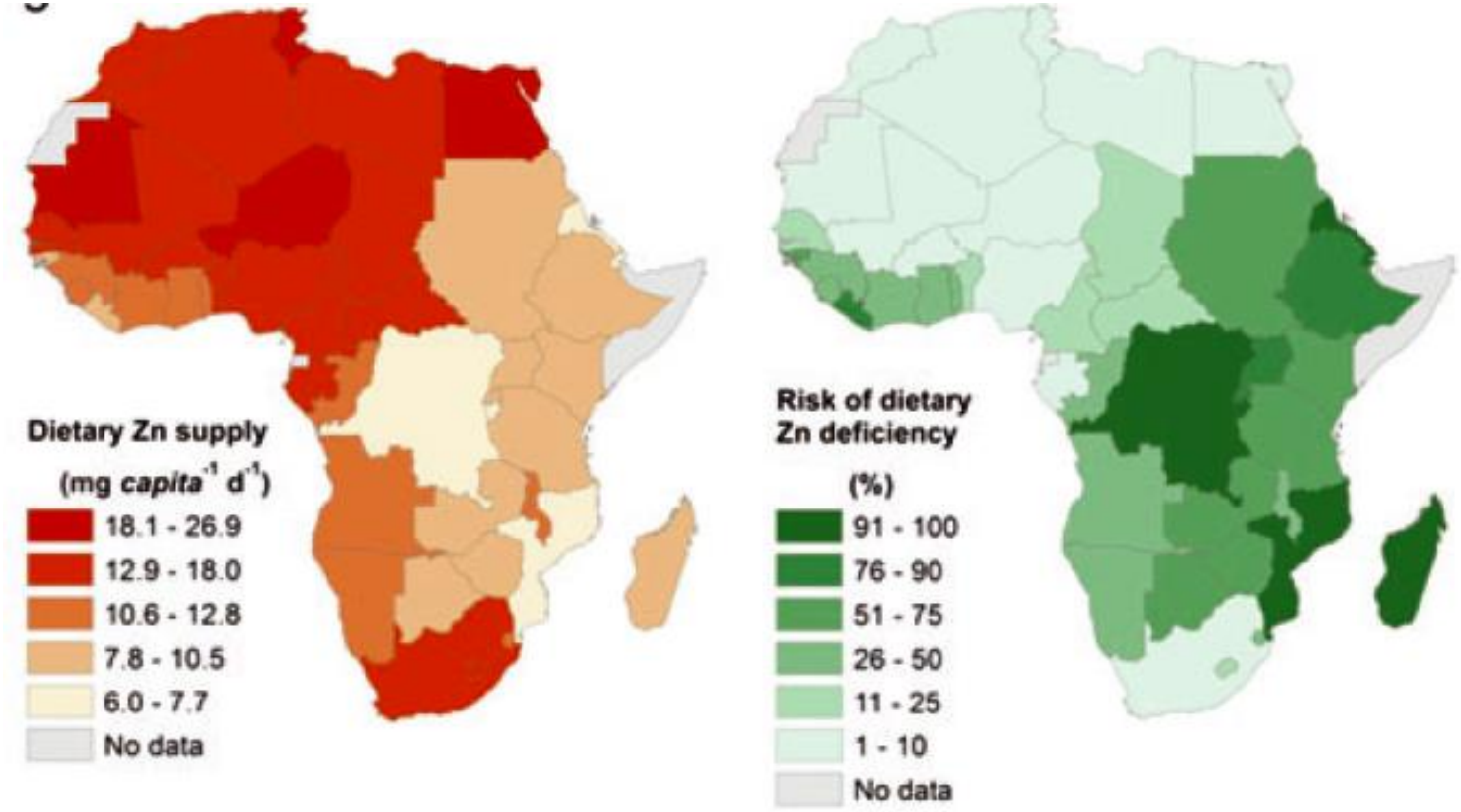


Source: Phiri, F.P. et al (2019)

Probability that plasma Se in WRA is below the specified threshold

- Exceptionally unlikely (0–1%)
- Very unlikely (1–10%)
- Unlikely (10–33%)
- About as likely as not (33–66%)
- Likely (66–90%)
- Very likely (90–99%)
- Virtually certain (99–100%)

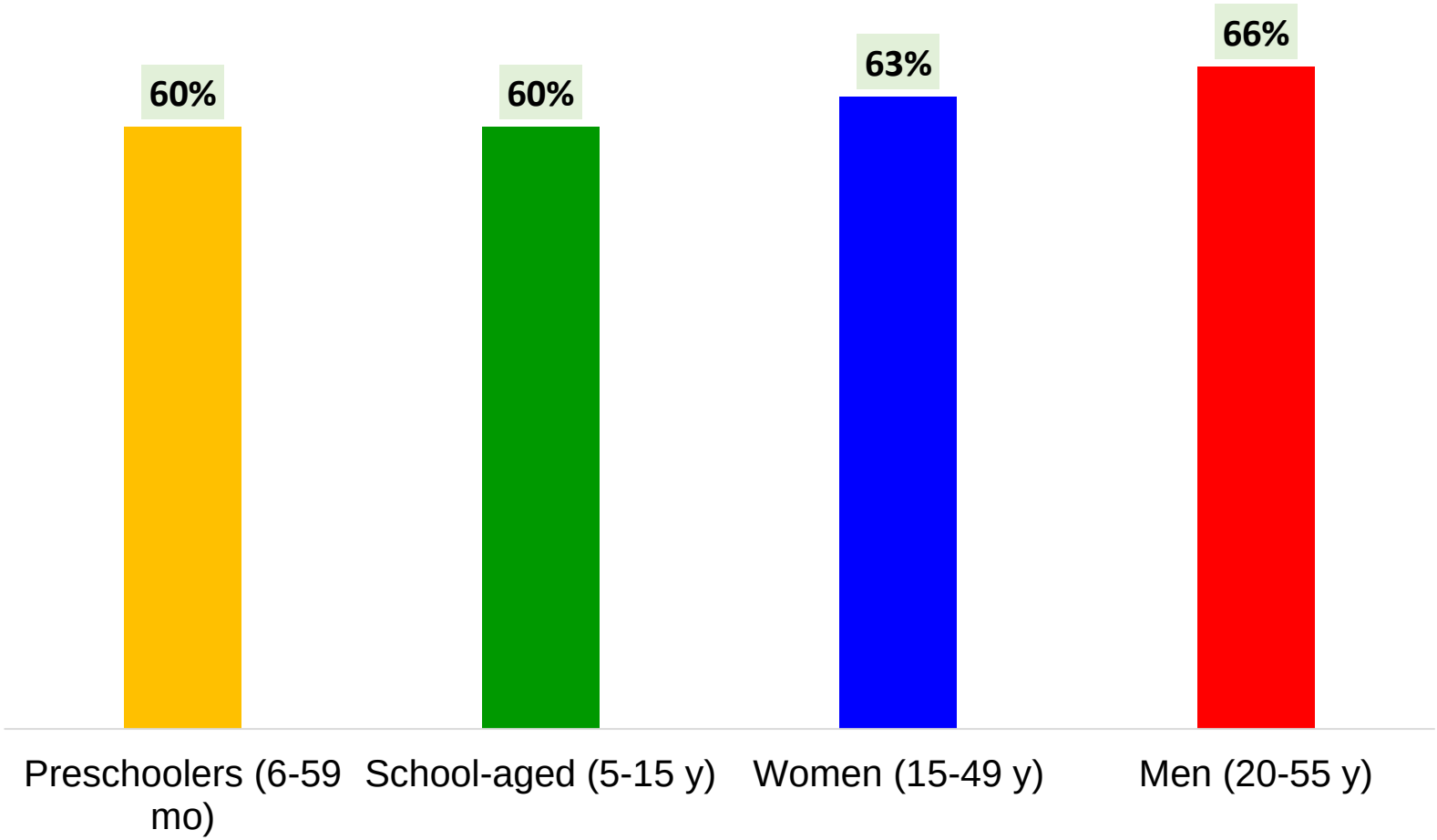
Dietary Zn Supplies in Africa



Dietary mineral supplies in Africa

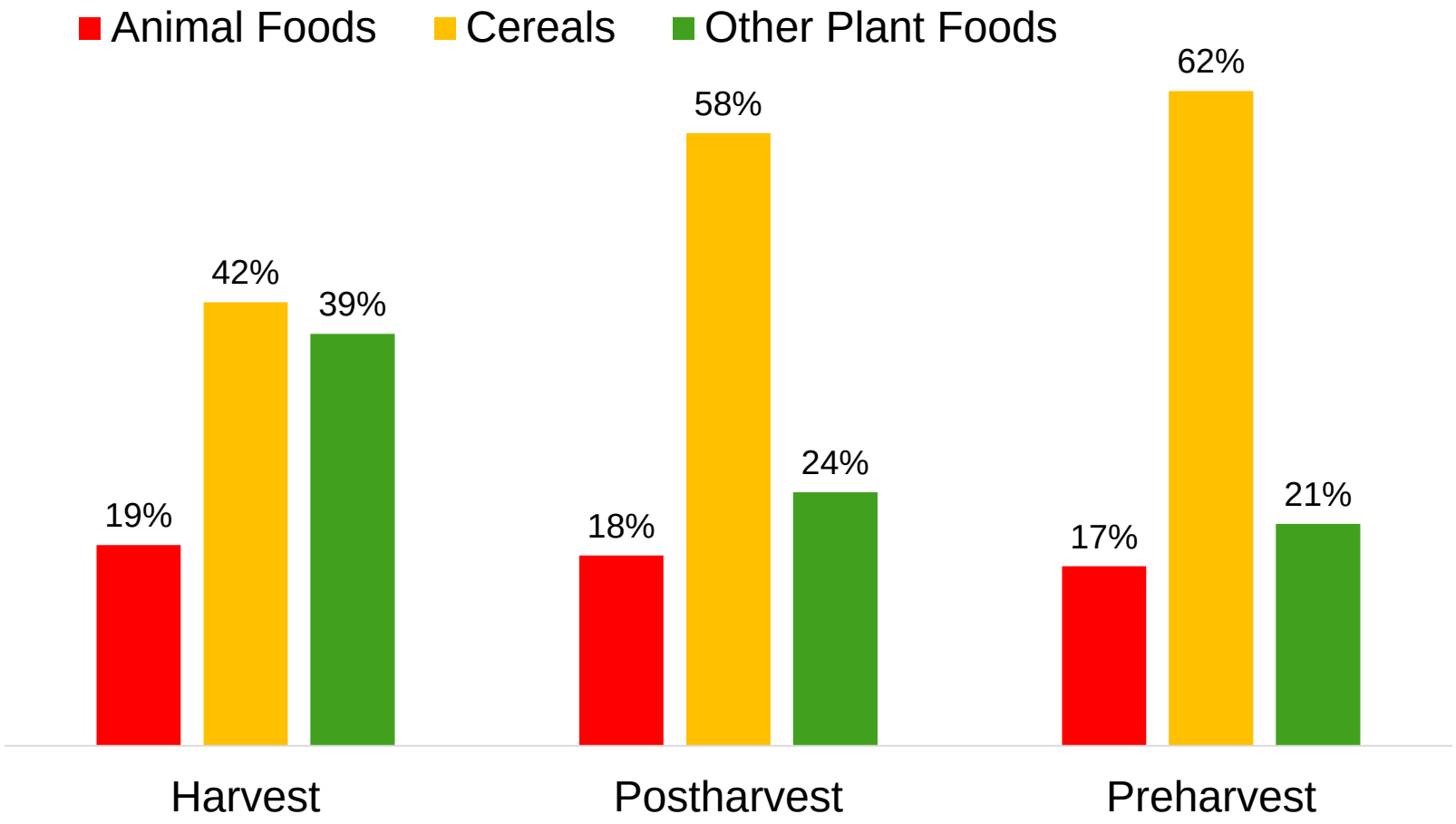
Edward J. M. Joy[a,b,†], E. Louise Ander[b,†], Scott D. Young[a], Colin R. Black[a], Michael J. Watts[b], Allan D. C. Chilimba[c], Benson Chilima[d], Edwin W. P. Siyame[e], Alexander A. Kalimbira[e], Rachel Hurst[f], Susan J. Fairweather-Tait[f], Alexander J. Stein[g], Rosalind S. Gibson[h], Philip J. White[i] and Martin R. Broadley[a,*]

ZnD: Public Health Problem in Malawi



Prevalence of Zn deficiency (low serum Zn) in Malawi (NSO, 2017)

Too little anima food? (Ferguson et al.,1989)



Contribution of animals foods, cereals & other plant foods to Zn intake in by season

Pellagra

From "Fundamentals of Clinical Nutrition" by R. L. Weinsier copyright 1993 by Mosby-Year Books N.Y.

Fig. 6-8 Clinical findings of niacin deficiency before **(A)** and after **(B)** therapy in an alcoholic patient.

Pellagra: Does it exist today?

Am. J. Trop. Med. Hyg., 96(5), 2017, pp. 1244–1247
doi:10.4269/ajtmh.16-0423

An Outbreak of Pellagra in the Kasese Catchment Area, Dowa, Malawi

George Matapandeu,[1] Samuel H. Dunn,[2] and Patti Pagels[2]*

[1]*Orant Charities, Primary Care Clinic, Kasese, Dowa, Malawi;* [2]*Department of Family and Community Medicine, University of Texas Southwestern, Dallas, Texas*

Abstract. Pellagra is a deficiency of niacin or its amino acid precursor, tryptophan, which presents with the classic four Ds: the characteristic dermatitis, diarrhea, dementia, and eventually death if left untreated. The incidence of pellagra is quite rare presently because of increased awareness and strategies such as vitamin fortification. However, the deficiency is still present in cultures that rely on maize as their primary source of sustenance. We report a recent outbreak in a catchment area in Kasese, Malawi, of 691 cases of pellagra which were successfully treated with niacin supplementation. We present this short report to highlight the importance of educating providers of at-risk populations about this diagnosis and to consider solutions for these populations to prevent further deficiencies.

INTRODUCTION

Pellagra is a deficiency of niacin and/or tryptophan, the amino acid precursor to niacin. The signs and symptoms form the classic four Ds: dermatitis, diarrhea, dementia, and death. First described in the eighteenth century, pellagra was a deadly disease that affected both developing and developed countries.[1] With further understanding of the pathophysiology of pellagra in the twentieth century and vitamin fortification endeavors in the United States[2] and

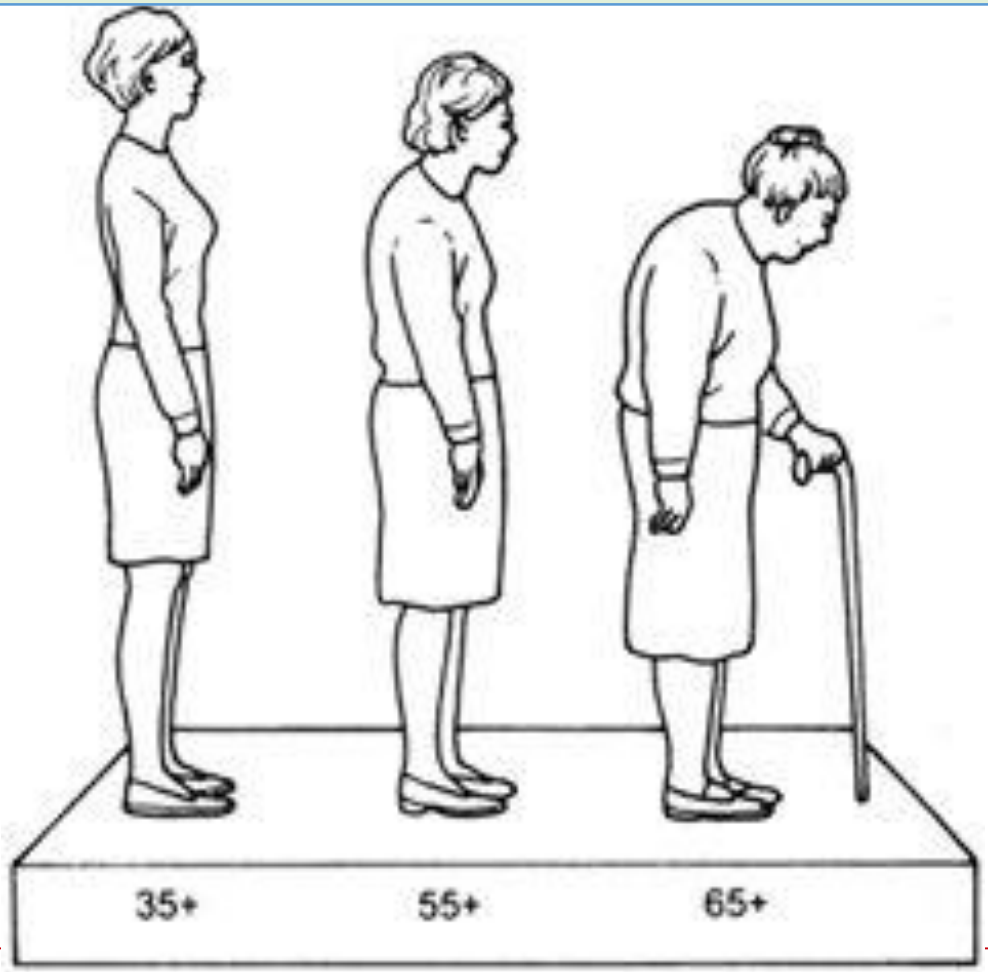
The patients had no history of concurrent rheumatologic or neurologic symptoms. Approximately 60% of the patients were female and 96% of the affected patients were over the age of 15. The majority of the patients were in extreme poverty and from remote tribal areas.

Initially, these patients were treated with a generic emulsifying skin ointment with little improvement. After seeking input with colleagues in Malawi and the United States, pellagra was finally considered as a possible diagnosis. A treatment program was started in October 2015 in which

Pellagra (Chikwakwa)

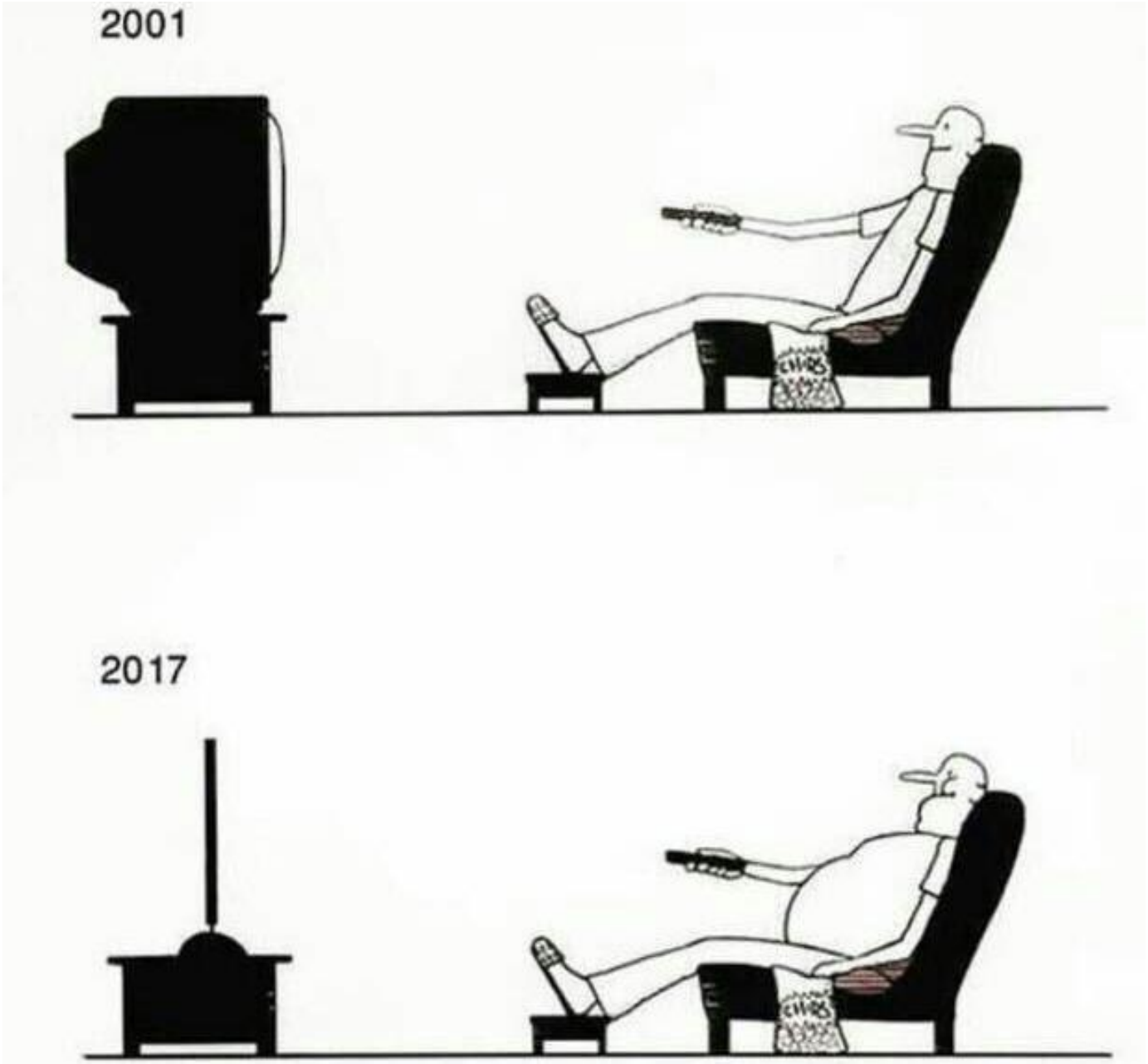
Pellagra (Chikwakwa)

Osteoporosis

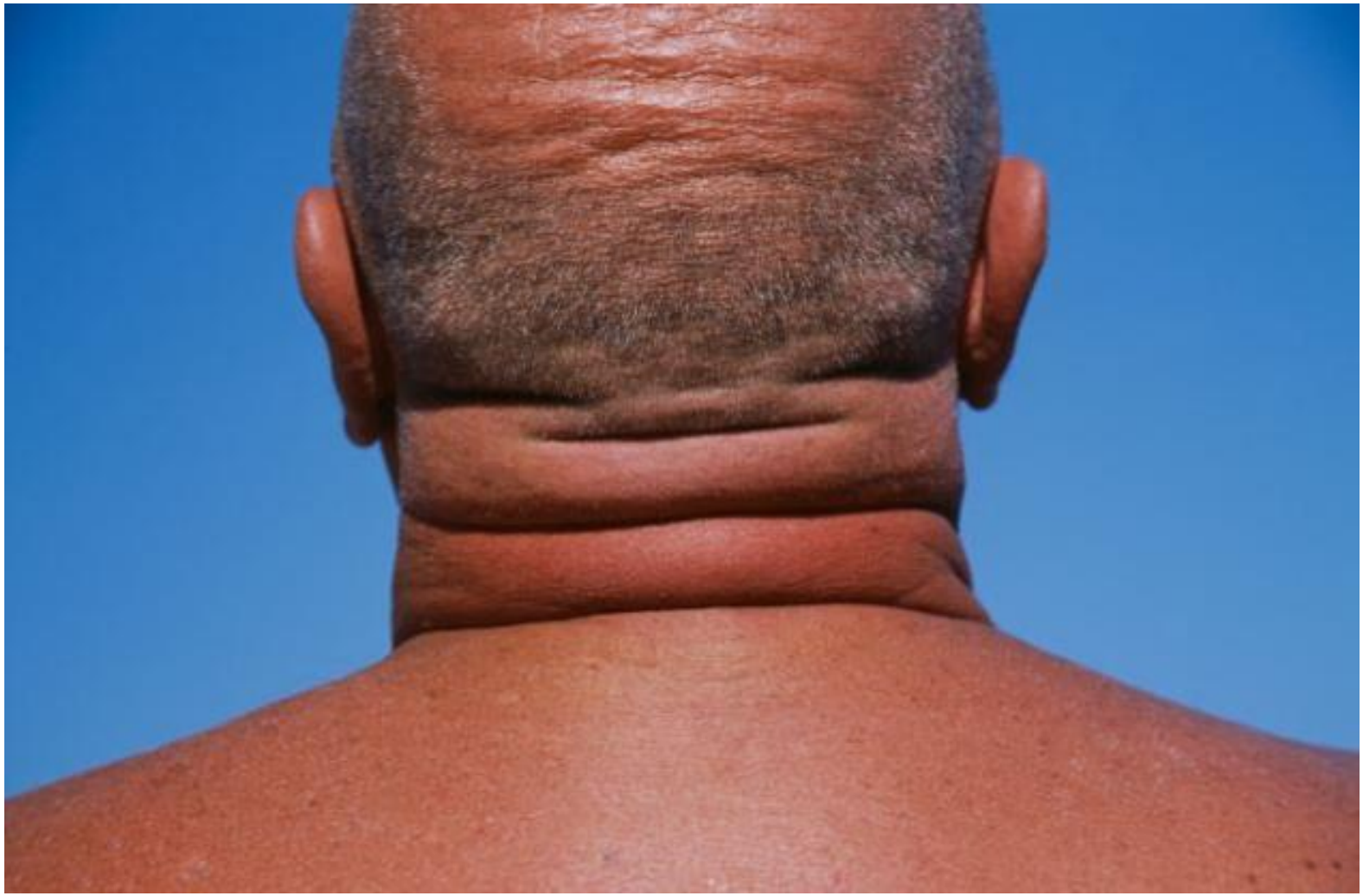


Failure to lay down a strong bone matrix in early years ↑ risk of osteoporosis in later years

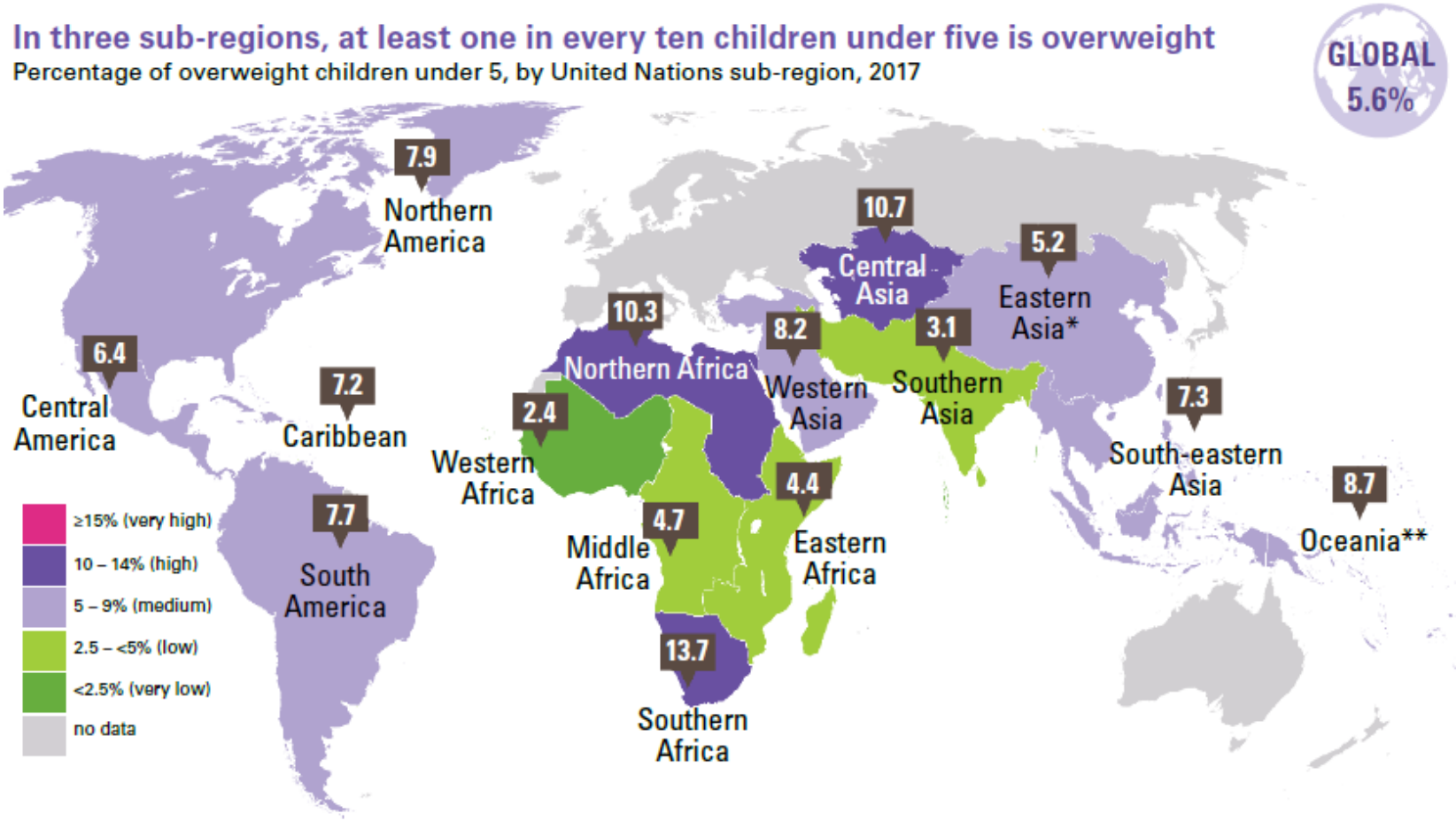
Why osteoporosis is irreversible: once you've lost bone matrix, you've lost the foundation on which to build further bone


2001
2017

Others have more than enough

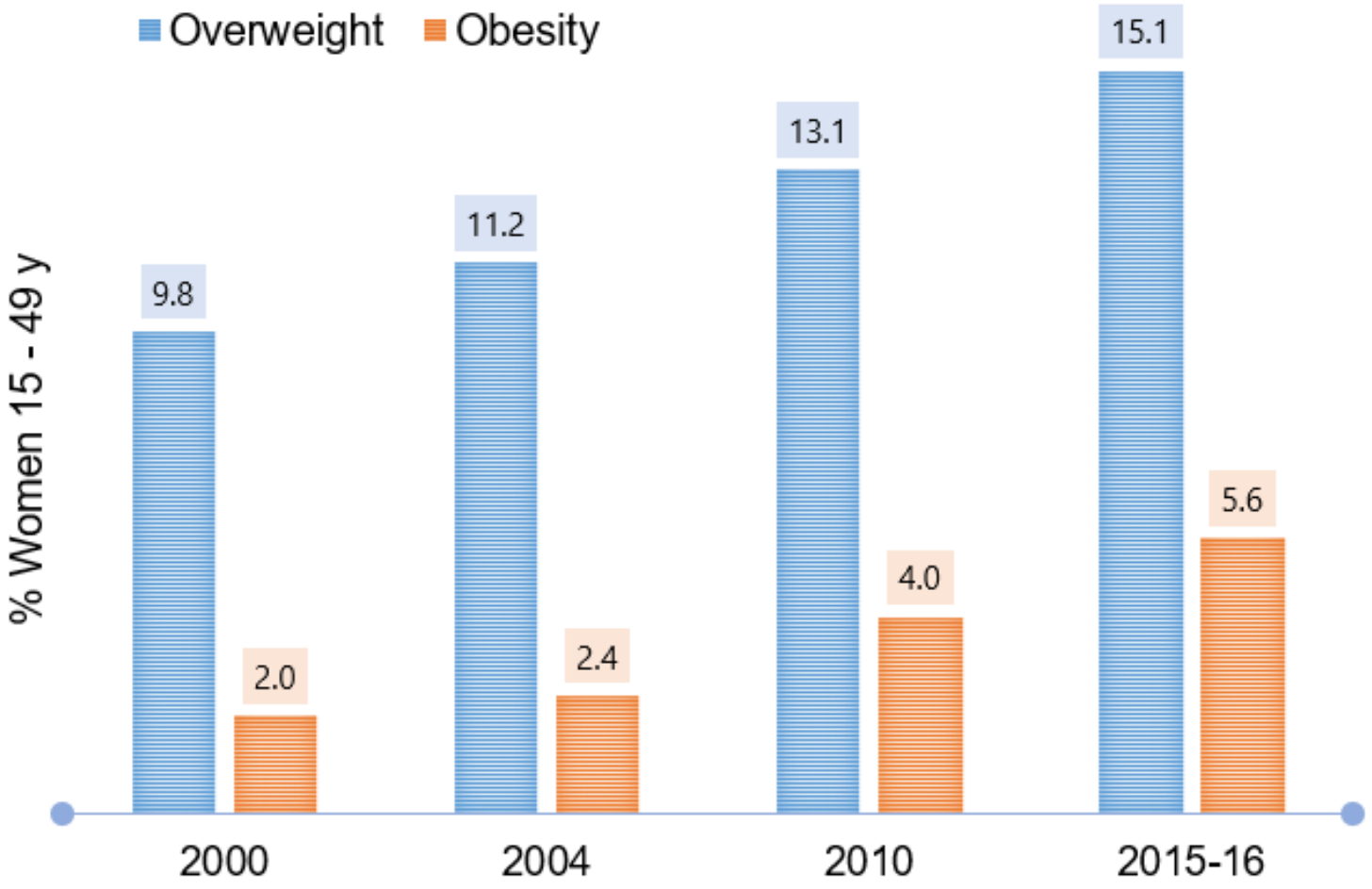


Prevalence of Overnutrition



Source: UNICEF, WHO, WB (2018)

Trends in Prevalence of Overnutrition

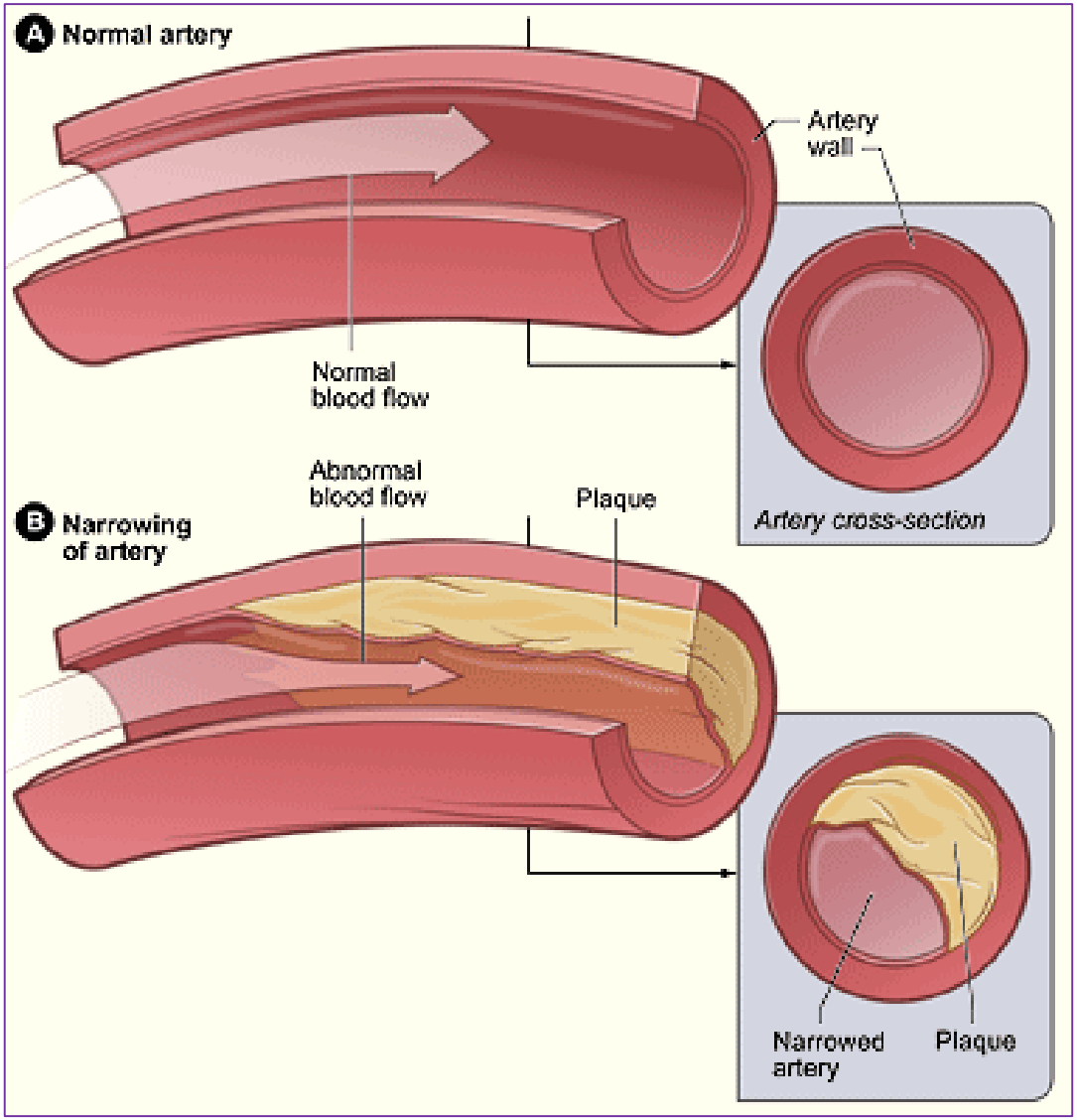


Burden of overnutrition in Malawi

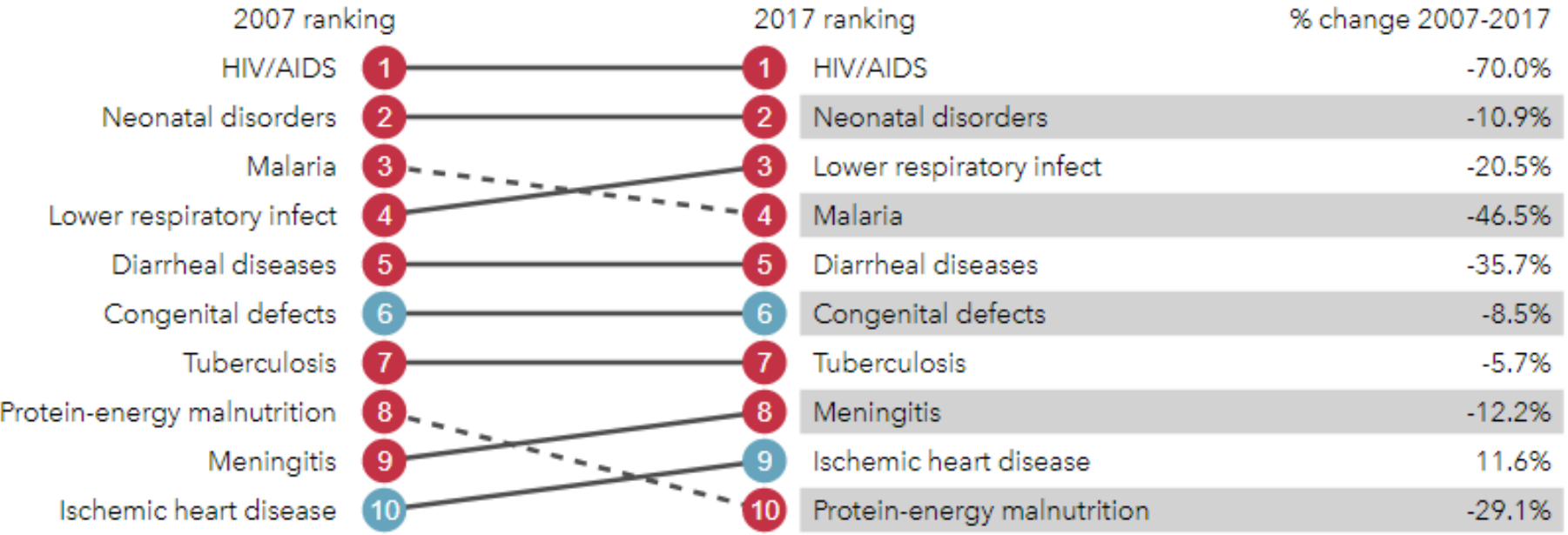
Data Sources: From 2000, 2004, 2010 & 2015-16 MDHS reports

Atherosclerosis – *Blocked vessels*

https://www.youtube.com/watch?v=zfAqC1oPbkw



What causes the most premature death?

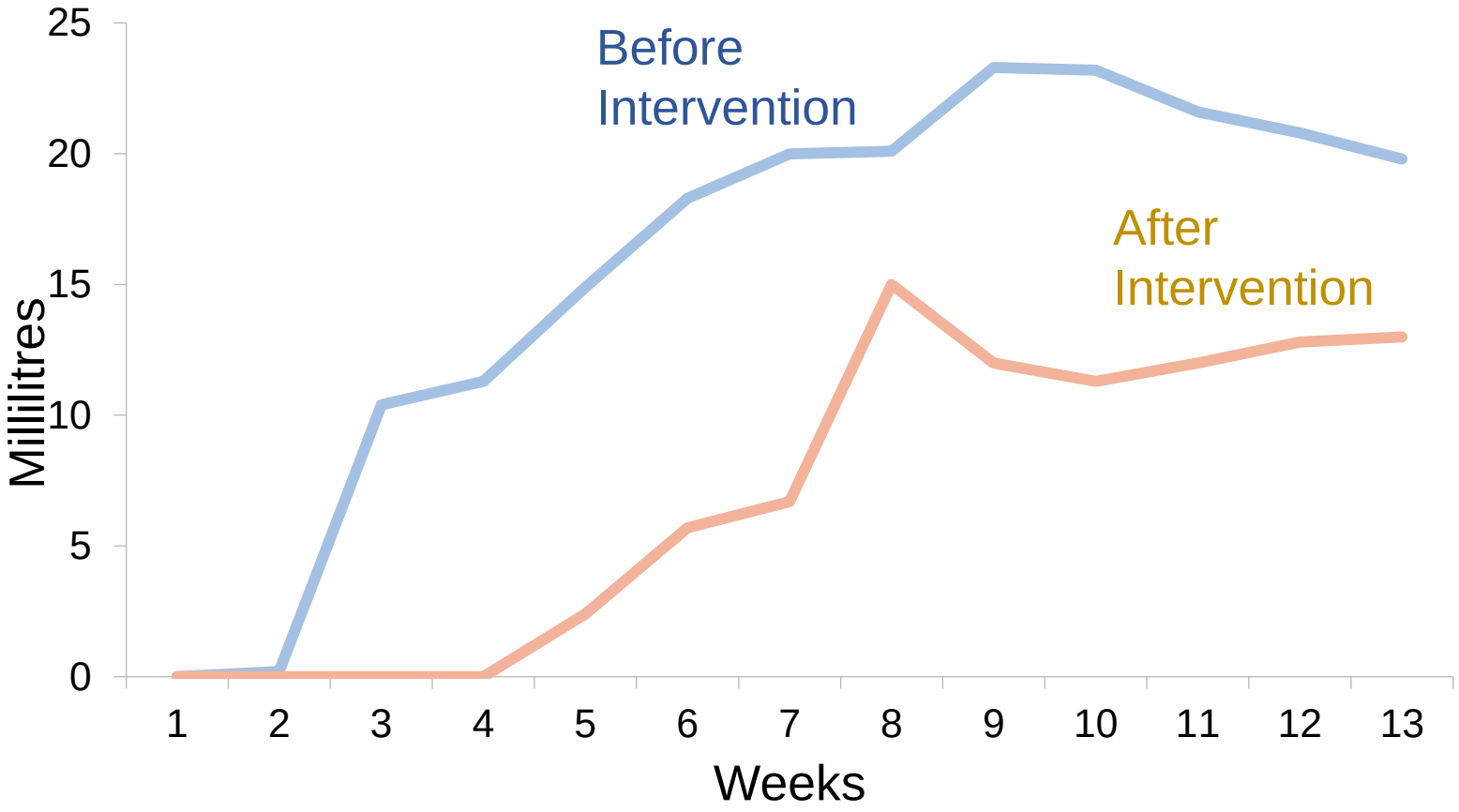


Source: http://www.healthdata.org/malawi

Only ischemic heart disease (IHD) had a +ve increased between 2007 and 2017

IHD: heart problems caused by narrowed heart arteries. When arteries are narrowed, less blood & oxygen reaches the heart muscle.

"mSMEs" have capacity to change



Average oil separated from peanut butter (Day 1 to 84) before & after intervention

Source: Moyo, T. (2017)

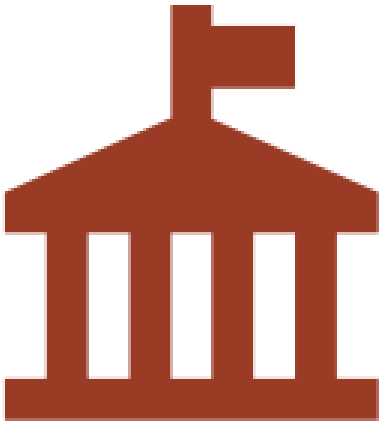
"mSMEs" have capacity to change

Sample Code	Faecal Coliforms(MPN/100ml)	
	Before Intervention	After Intervention
R	Positive	Negative
S	Negative	Negative
T	Negative	Negative
U	Positive	Negative
V	Positive	Positive
W	Positive	Positive
X	Positive	Positive
Y	Positive	Positive
Z	Positive	Negative

Source: Moyo, T. (2017)

Are nutritious foods accessible?

Tackling undernutrition through market-based solutions often fails to reach the (poorest) people



Solution

Mandatory & large-scale **fortification**
e.g. cooking oil, flour, sugar to deal with vitamin & mineral deficiencies

Approach relies on a value chain involving producers, processors, retailers & consumers

Problems With Compliance

- **Micro, small & medium enterprises (MSMEs)** often lack the skills, resources & regulatory incentives to comply
- **Competition from non-compliant MSMEs** means large companies may underdose products or simply sell at a premium price to wealthy consumers
- **Government or statutory agencies** have low regulatory capacity & little access to food testing technologies

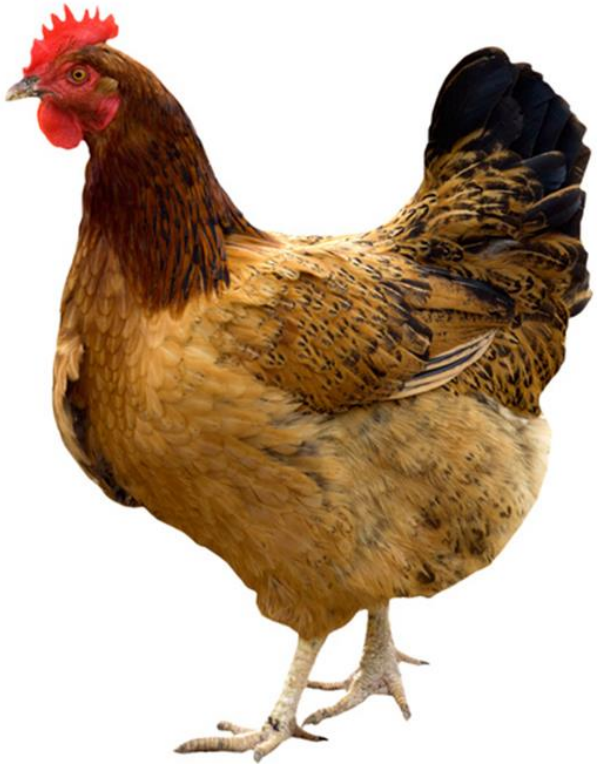
Believability of Claims of Quality

With no visible difference between fortified & unfortified flour, the nutritional value (& additional cost) of fortified flour must be taken on trust

Believability of Claims of Quality

Making Nutritious Foods Accessible

- How do households source food?
  - How are practices changing in different settings?
  - Need data on whether & how specific groups are being reached



Making Nutritious Foods Accessible

- What formal-informal linkages in food systems exist?
  - How do they operate?
  - What innovations can increase access to nutritious foods for households?
- Does government have capacity to enforce regulations & improve information available to consumers?
  - Certification
  - Franchising
- Public sector programmes to reach the poorest & most marginalised households?

How to Apply AFVC Concepts for Nutrition

“. . . there is not just one way to conduct a value-chain analysis, apply a value-chain approach, or examine the implications of an existing value chain.”

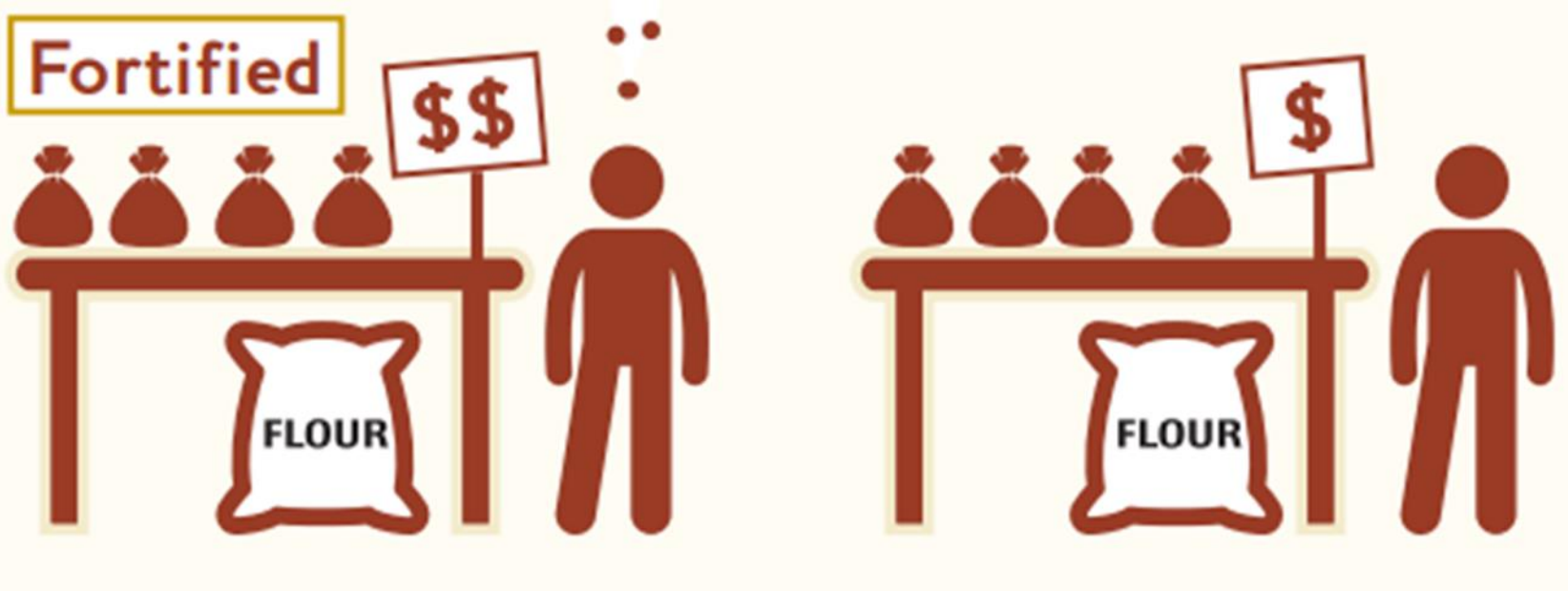
Hawkes & Ruel (2011)

Applying AFVCN Approaches

- Are there explicit **nutrition goals**?
  - There is not a single "value-chain-for-nutrition" approach
  - All value-chain approaches to nutrition should focus on a clearly stated, outcome-oriented nutrition goal
- What **nutrition problems** are being addressed?
  - Identify core food & nutrient gaps
  - The gaps & associated health problems can be addressed by targeting one/more food value chains

Applying AFVCN Approaches

- Create & capture **value for nutrition**
  - Consider the value for nutrition (not just economic value)
  - Increased economic value for vulnerable value-chain actors can be associated with increased value for nutrition



Applying AFVCN Approaches

- Be expansive but **tailor solutions** to context
  - Search for solutions using the whole value chain (including different sectors & actors at different scales)
  - Application of solutions should be tailored to circumstance
- Focus on **coordination** of the whole chain
  - May involve intervening at several points along the chain
  - Taking a few actions to fix coordination problems
  - Creating incentives for change along the chain
  - Requires developing alliances among the actors involved

Applying AFVCN Approaches

- **Add value** not only for nutrition but also for actors along the value chain
  - Nutrition-oriented activities should become a solution to problems faced by actors as well
  - Solutions for nutrition that do not work for actors within the value chain are not value-chain solutions
  - Adding value for both consumers & actors along the value chain

Applying AFVCN Approaches

- Take a **broader view** of "adding value" for producers & consumers
  - Are consumers willing to pay for greater nutritional value or desirability?
  - Producers able to produce more to supply a larger market
- **Focus**: meeting, increasing, & creating demand
  - Including consumers' unmet & uncreated demand
  - Poor people may have demand for more diverse diets that include a variety of micronutrient-rich foods such Kuroiler chickens

Applying AFVCN Approaches

- Create a **policy environment** in which better nutrition is valued
  - Policy environment can create incentives for actors in the chain to value nutrition & change their behavior accordingly