

Why are so many people,
especially children,
chronically hungry?

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Harvard-Radcliffe Class of 1965, 2022-05-14

1 person in 10 is chronically hungry
& 1 child in 5 is stunted because:


1. They are too poor to buy food (NOT
because the world produces too little food);

AND

2. Markets accept chronic hunger, & stunting
in children caused by chronic hunger, as a
consequence of poverty.

Price of MY food takes no account of YOUR hunger.

A market works only for people with enough money to pay for what the market offers. One must pay to play in grain markets.



Governance of markets
reflects values.
Slavery was acceptable.
Hunger still is.

J.M.W. Turner (1775-1851): The Slave Ship
1840 Museum of Fine Arts Boston

Food is superabundant.

Current cereal grain production could provide all the calories needed by 11-14 billion people.

Earth has 8 billion people.

Grains piled on runways, parking lots, fields amid global glut

Reuters

USA



A mountain of grain sits in a storage pile, as midwestern grain farmers and merchants struggle to find storage space after three years of record harvests, near Minburn, Iowa, U.S., March 11, 2017. REUTERS/Scott Morgan

Cereal production, utilization and stocks

Million tonnes

Million tonnes

cereal production & use were
Global 2.8 billion tonnes in 2021-22.



Production (left axis)

Utilization (left axis)

Stocks (right axis)

FAO World Food Situation₇

Release date: April 8, 2022

1 tonne (1000 kg) of carbohydrate
supplies enough energy for
4-5 people for 1 year.

200 kg of this grain provides	kilocalories per day for a year
Rice	2,000
Wheat pasta	2,032
Corn (maize)	1,984
Oatmeal	2,028

2.8 bln tonnes of cereal have
calories for 11-14 billion people.

The gentrification of food: 43% of cereal grains feed people.

FAO GIEWS Food Outlook July 2018

Use 2017-18	Million metric tons	%
Food	1,118	43
Feed	932	36
Other	565	22
Total use	2,615	100

Hunger is economically invisible.

Chronically undernourished people exercise less demand (supported by customers' orders and capacity to pay) in world food markets than people who demand meat, biofuels, and other non-food uses of grain.

Chronic hunger versus famine

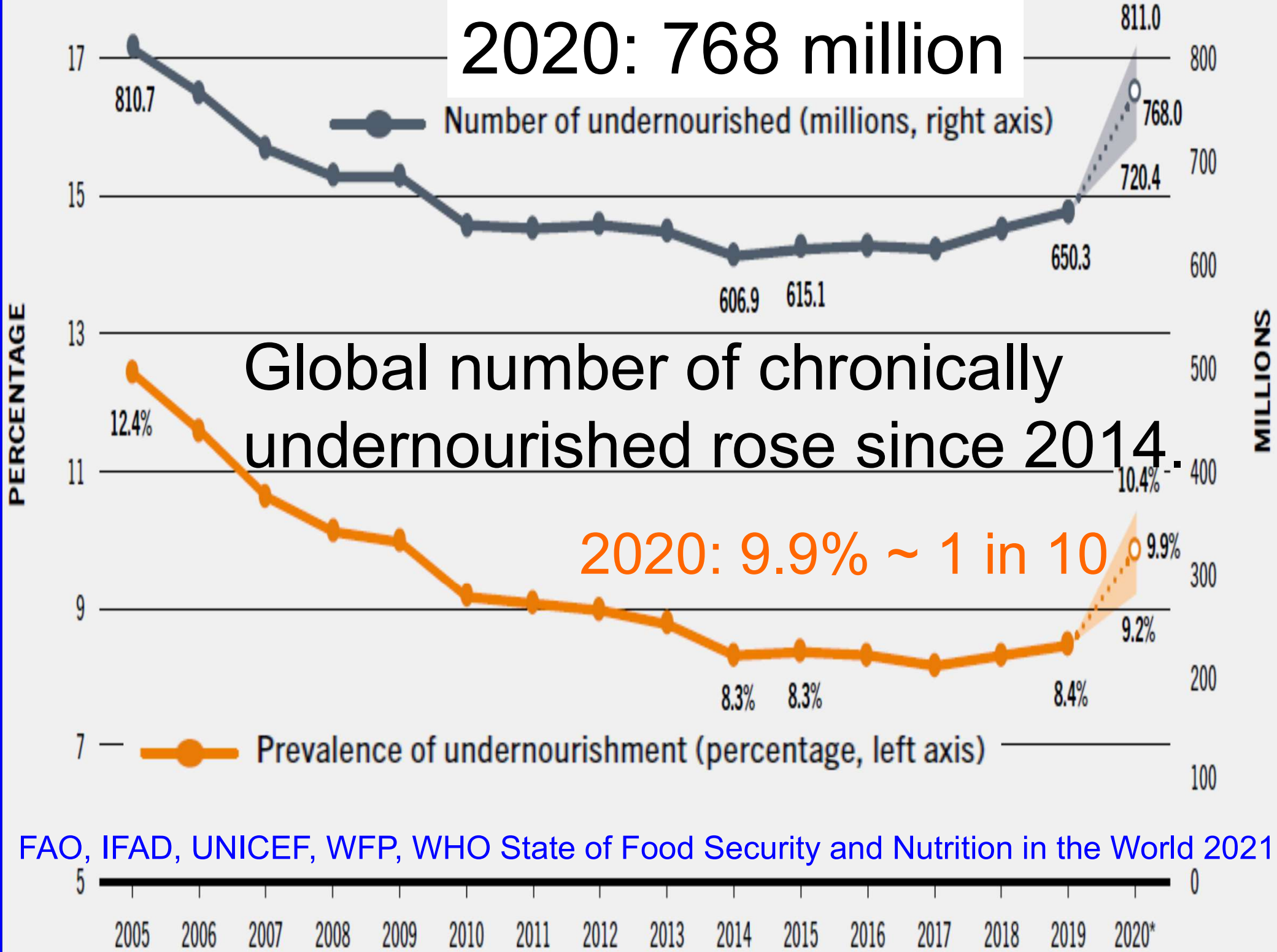
Chronic hunger affects
many more people

(750-800 million, ~1 in 10)

than famine

(40-50 million, ~1 in 200).

2020: 768 million



FAO, IFAD, UNICEF, WFP, WHO State of Food Security and Nutrition in the World 2021

Chronic hunger stunts children.

Child suffers stunting if child's height falls 2 or more standard deviations below median height of child of that age by World Health Organization Child Growth Standards.

WHO Nutrition Landscape Information System

Stunting comes from chronic undernutrition and/or chronic infection.

**Stunting affected 22% (>1 in 5)
of children under 5 y in 2020.**

FAO, IFAD, UNICEF, WFP, WHO

State of Food Security & Nutrition in the World 2021

Guatemala: 42.8% of children under 5 y were stunted, 2020.

FAO, IFAD, UNICEF, WFP, WHO
State of Food Security & Nutrition in the World 2021

Mayan descent, Guatemala



Mayan descent, USA

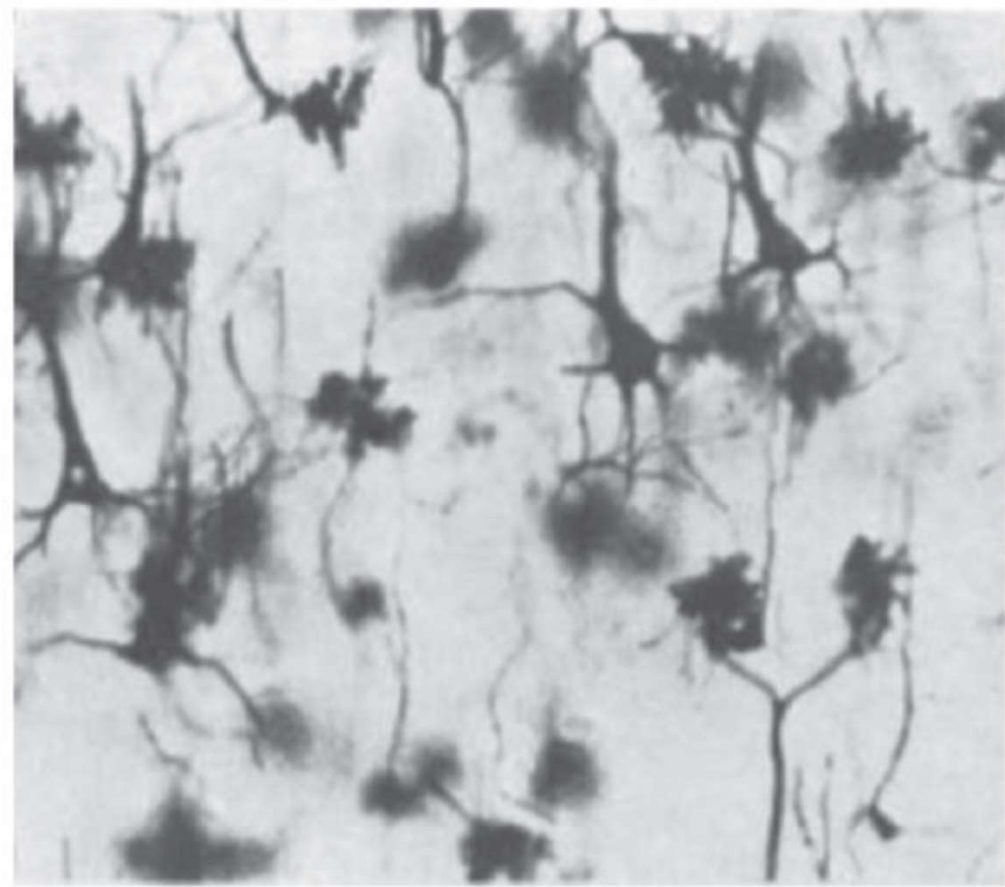
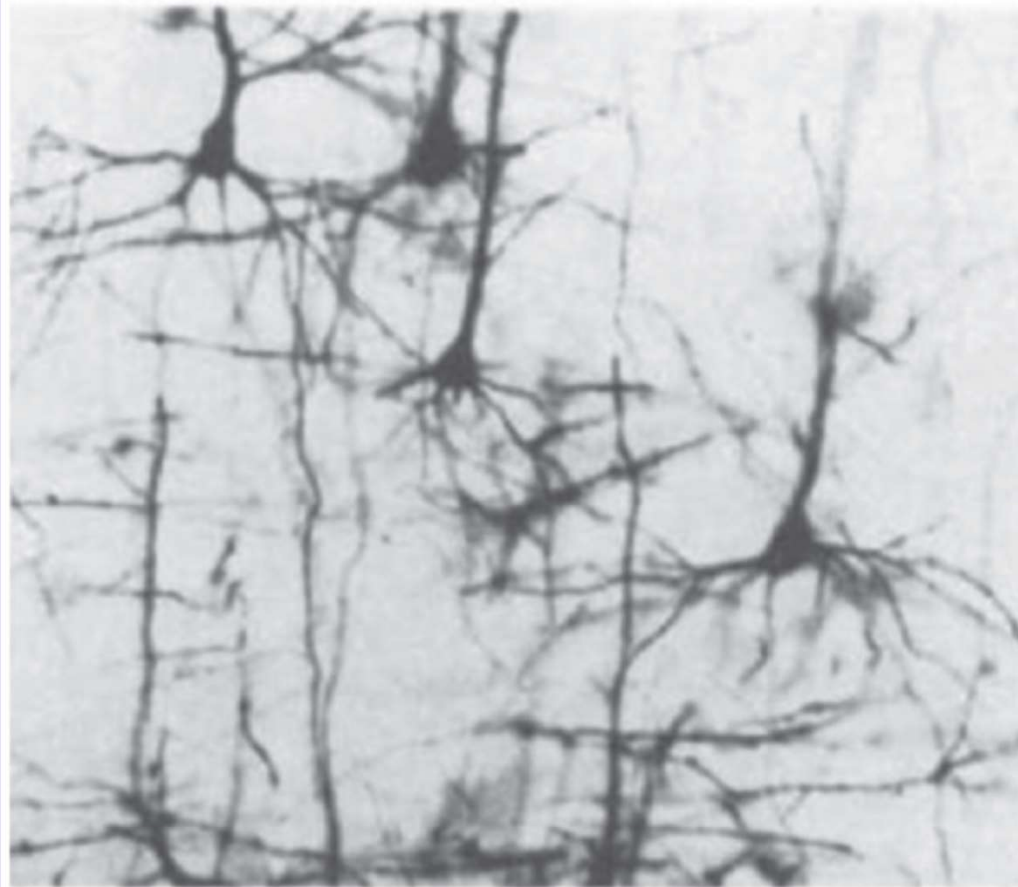


Undernourishment alters brain.

M. de Onis & F. Branca 2016 from Cordero et al. 1993

Well-nourished infant

Undernourished infant



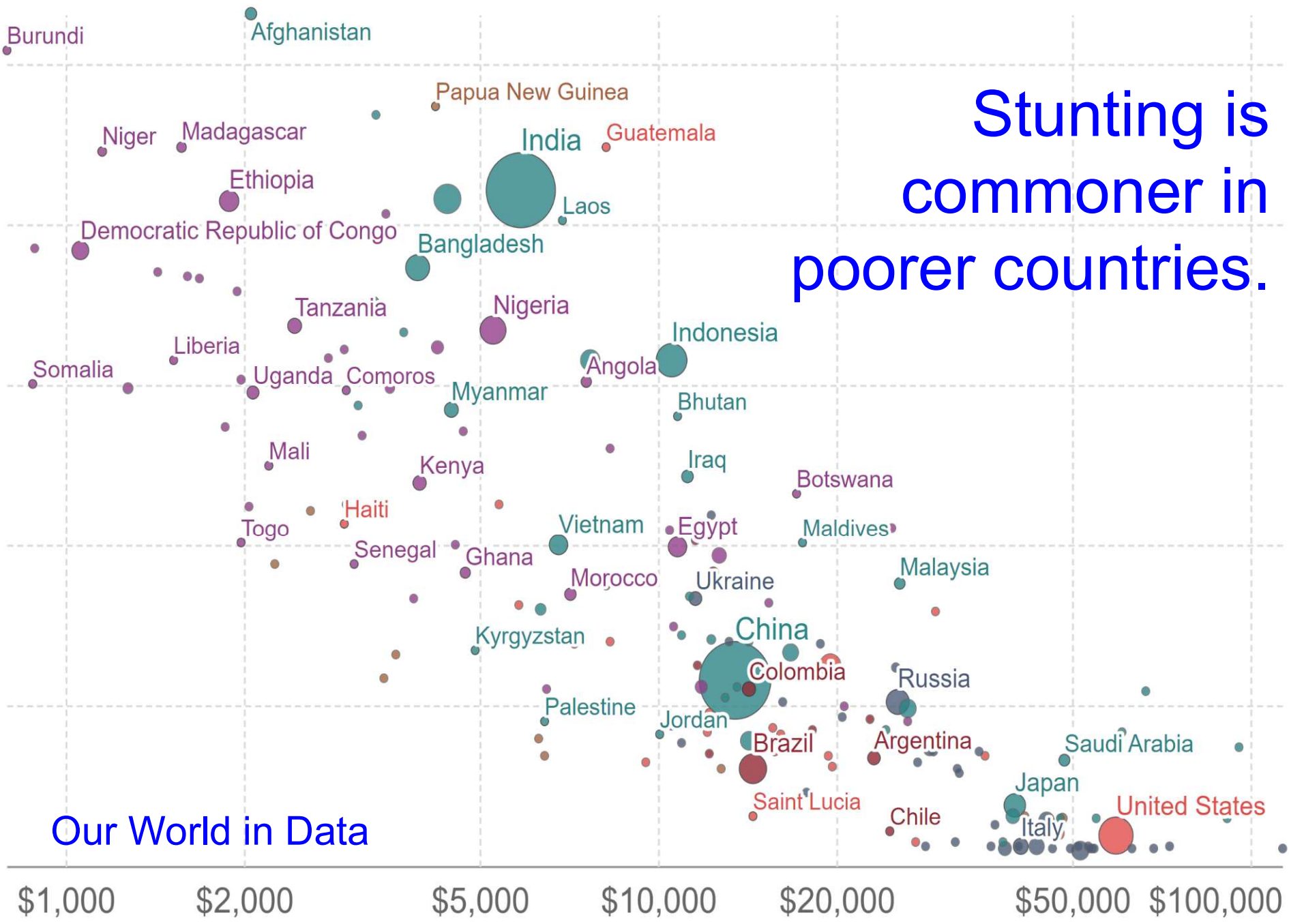
Typical brain cells
Extensive branching

Impaired brain cells
Limited branching
Abnormal, shorter branches

% stunted of children <5, 2016

50%
25%
0

Stunting is
commoner in
poorer countries.

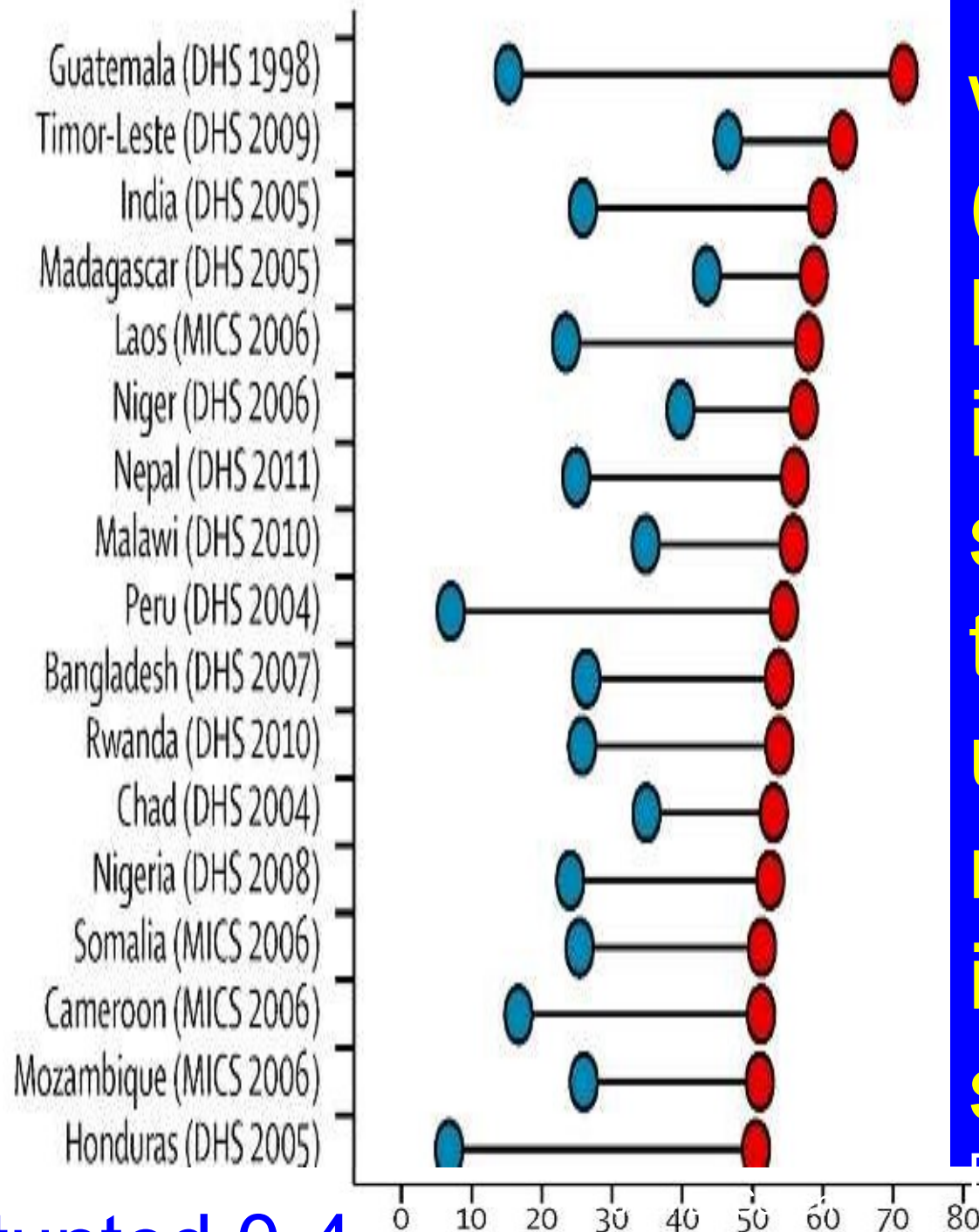


Our World in Data

GDP/person (2017 international \$)

Source: IHME SDG, Data compiled from multiple sources by World Bank

Stunting (HAZ <-2)



Within countries, wealth quintile (lowest=red, highest=blue) influences child stunting more than sex or urban-rural residence influence stunting.

Black et al. *Lancet* 2013¹⁸

% stunted 0-4



Governance of markets
reflects values.

Slavery was acceptable.

Hunger still is.

Hope, Hope, fallacious Hope!

Where is thy market now?

J.M.W. Turner 1840

J.M.W. Turner (1775-1851): The Slave Ship
1840 Museum of Fine Arts Boston

END

Following slides are supplemental.

Summary

The world produces enough food to feed everyone well.

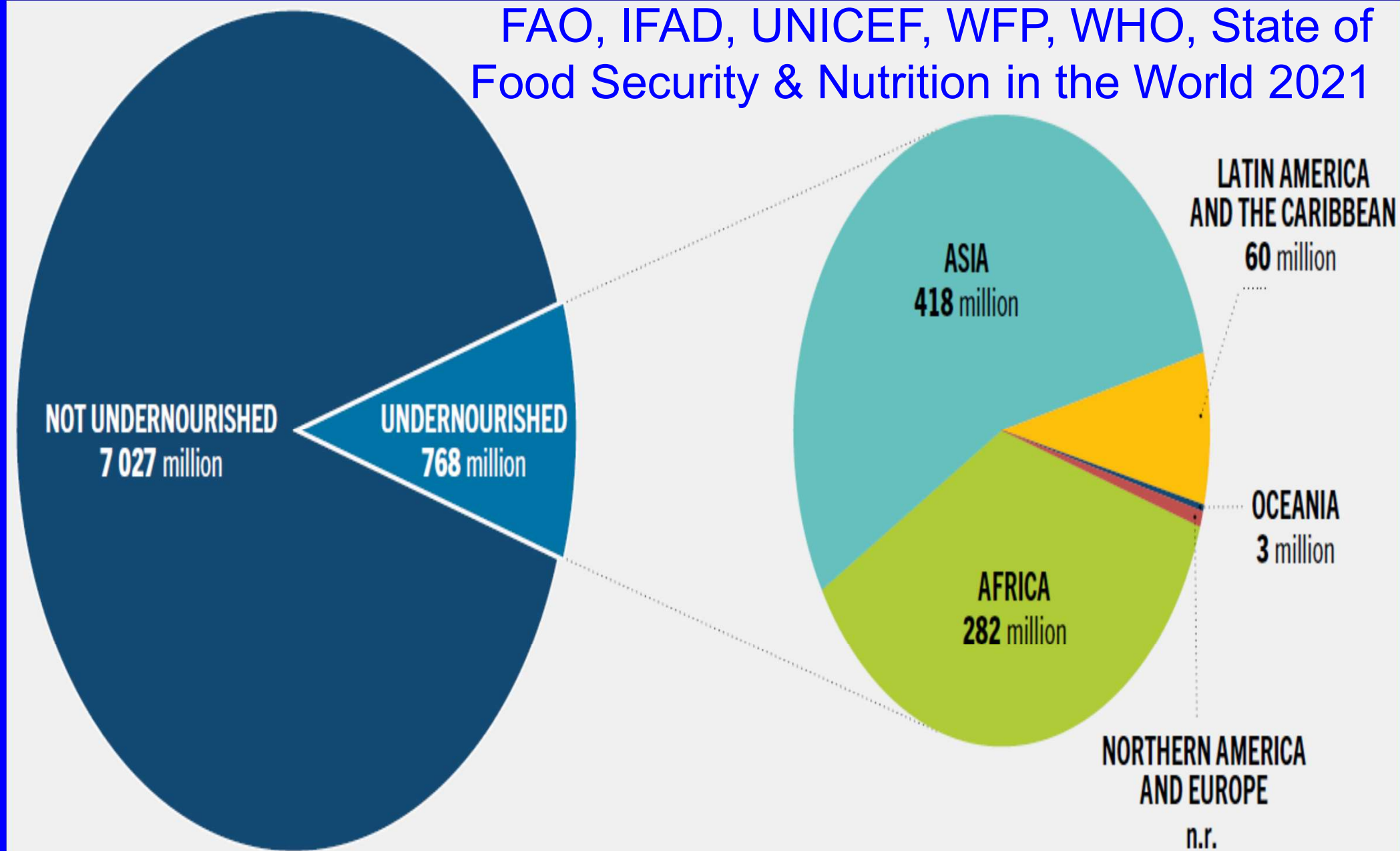
People who are too poor to buy enough food suffer chronic hunger.

Chronic hunger stunts children.

The price of food does not reflect poor people's chronic hunger.

>1/2 hungry people were in Asia,
>1/3 were in Africa in 2020.

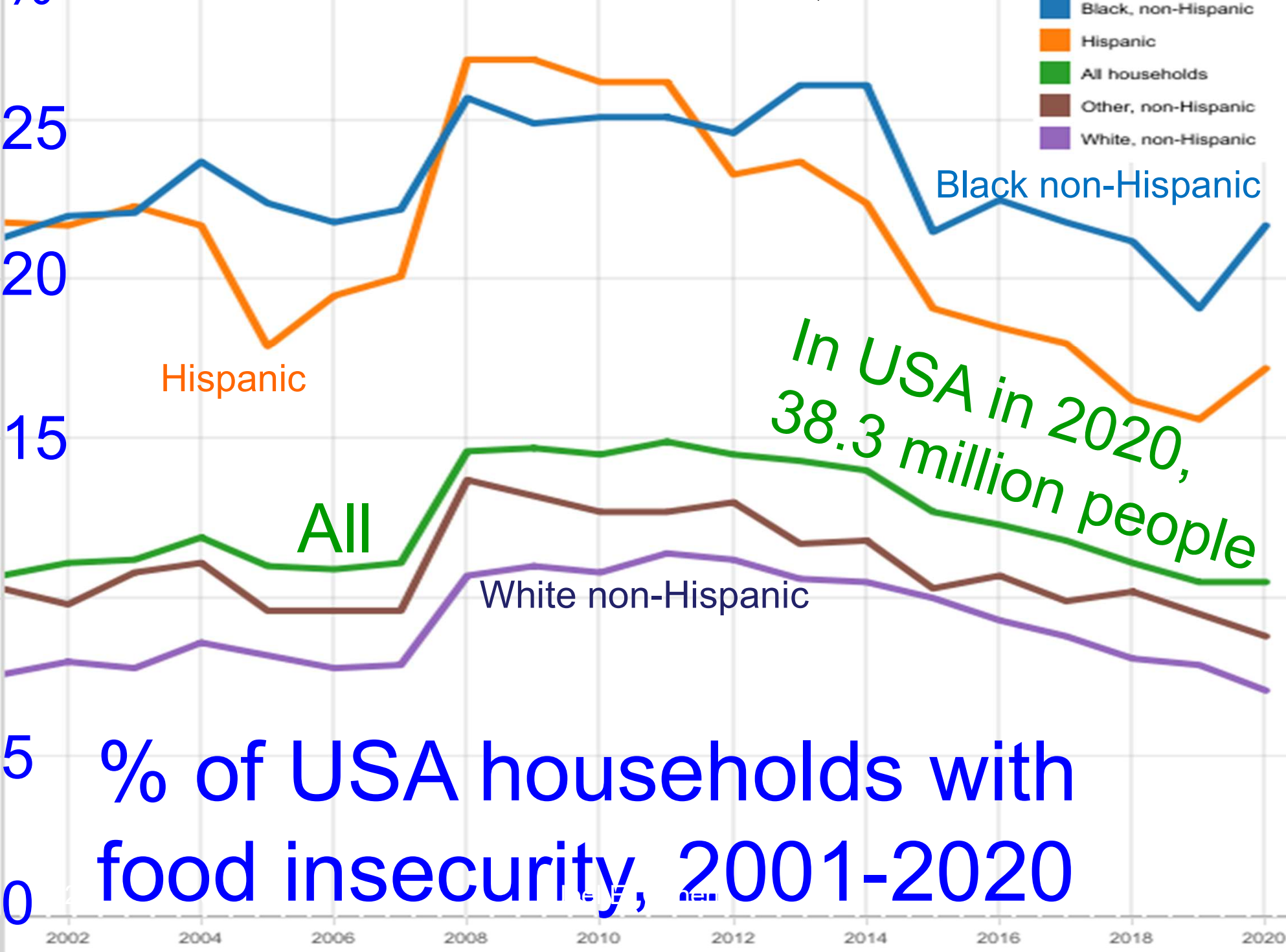
FAO, IFAD, UNICEF, WFP, WHO, State of Food Security & Nutrition in the World 2021



Percent of households

USDA Economic Research Service, 2021

- Black, non-Hispanic
- Hispanic
- All households
- Other, non-Hispanic
- White, non-Hispanic



Black non-Hispanic

Hispanic

All

White non-Hispanic

In USA in 2020,
38.3 million people

5 % of USA households with food insecurity, 2001-2020

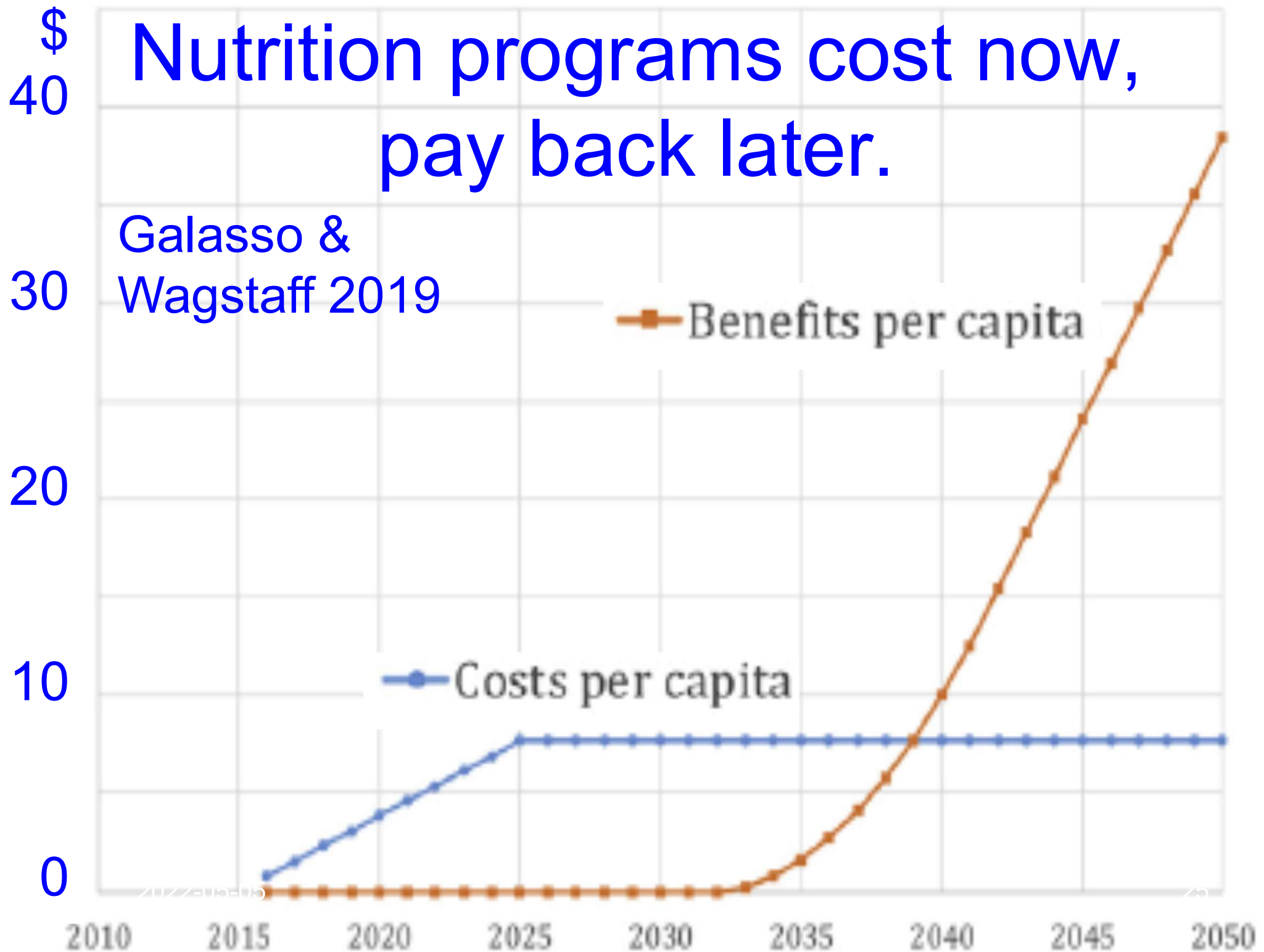
What to do?

1. Food: Feed infants, children & pregnant & lactating women.
2. Education: Girls & boys, especially the poor. Include empathy & human biology.
3. Contraception (voluntary): Provide materials, information, motivation, & reproductive health care.



Nutrition programs cost now, pay back later.

Galasso &
Wagstaff 2019



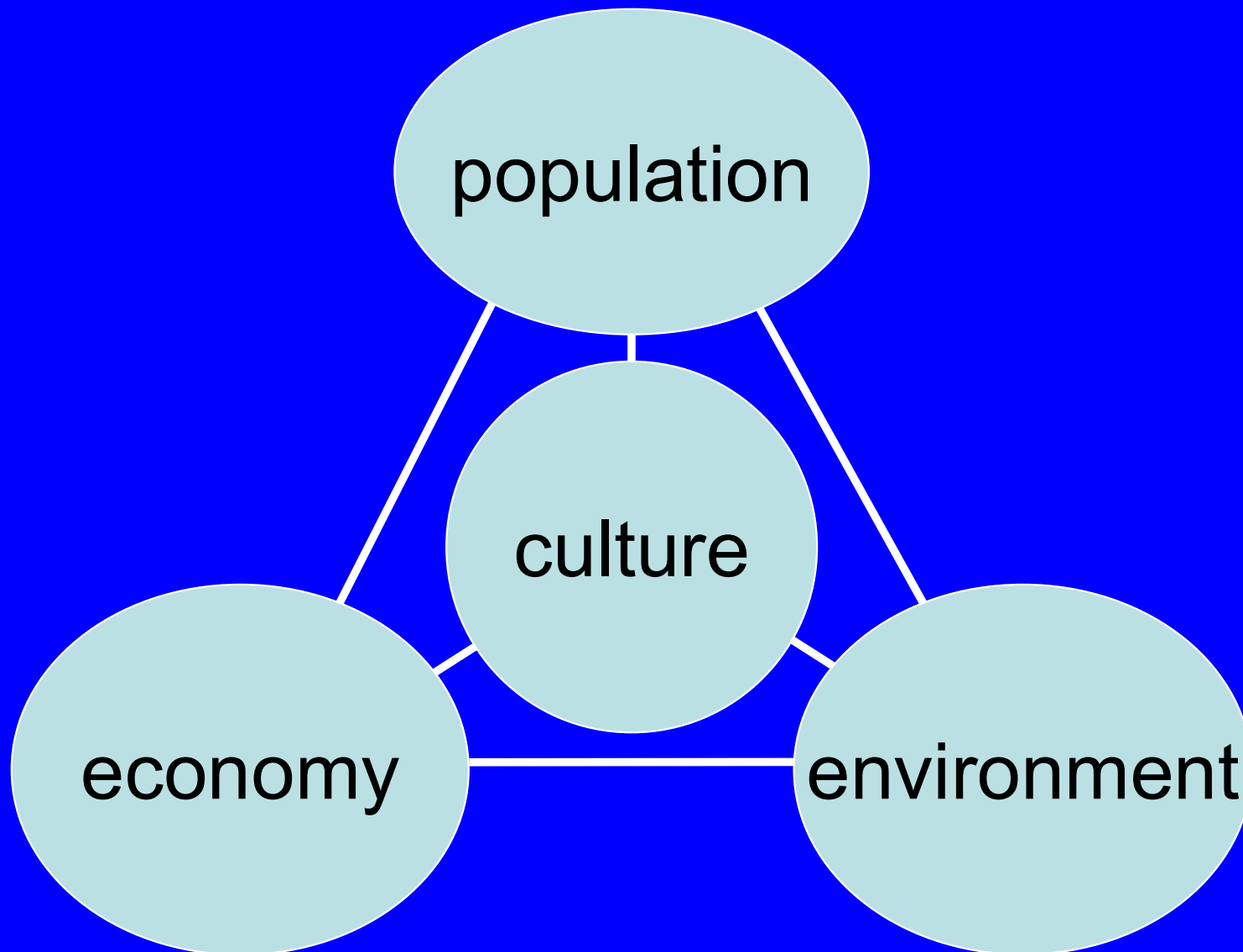
Hunger bonds

Governments or development banks should sell bonds to patient investors to reap returns in the adult labor force of reduced stunting in childhood.

Auditing is required to assure proper use of money.

Political stability is required.

Population, economics, environment & culture interact.



Stunting threatens human development.

“The severe irreversible physical and neurocognitive damage that accompanies stunted growth poses a major threat to human development.”

Mercedes de Onis, Francesco Branca
Maternal & Child Nutrition 2016

Undernourishment or chronic hunger

"an individual's **habitual** food consumption is insufficient to provide the amount of dietary energy required to maintain a normal, active, healthy life."

Prevalence of undernourishment is based on each country's average dietary energy consumption, inequality in access to dietary energy, & minimum dietary energy requirement. FAO, IFAD, UNICEF, WFP, WHO

State of Food Security & Nutrition in the World 2021

Example: stunting in India

India 2005-06 boys (n=25,118)
India 2005-06 girls (n=22,977)
WHO standards

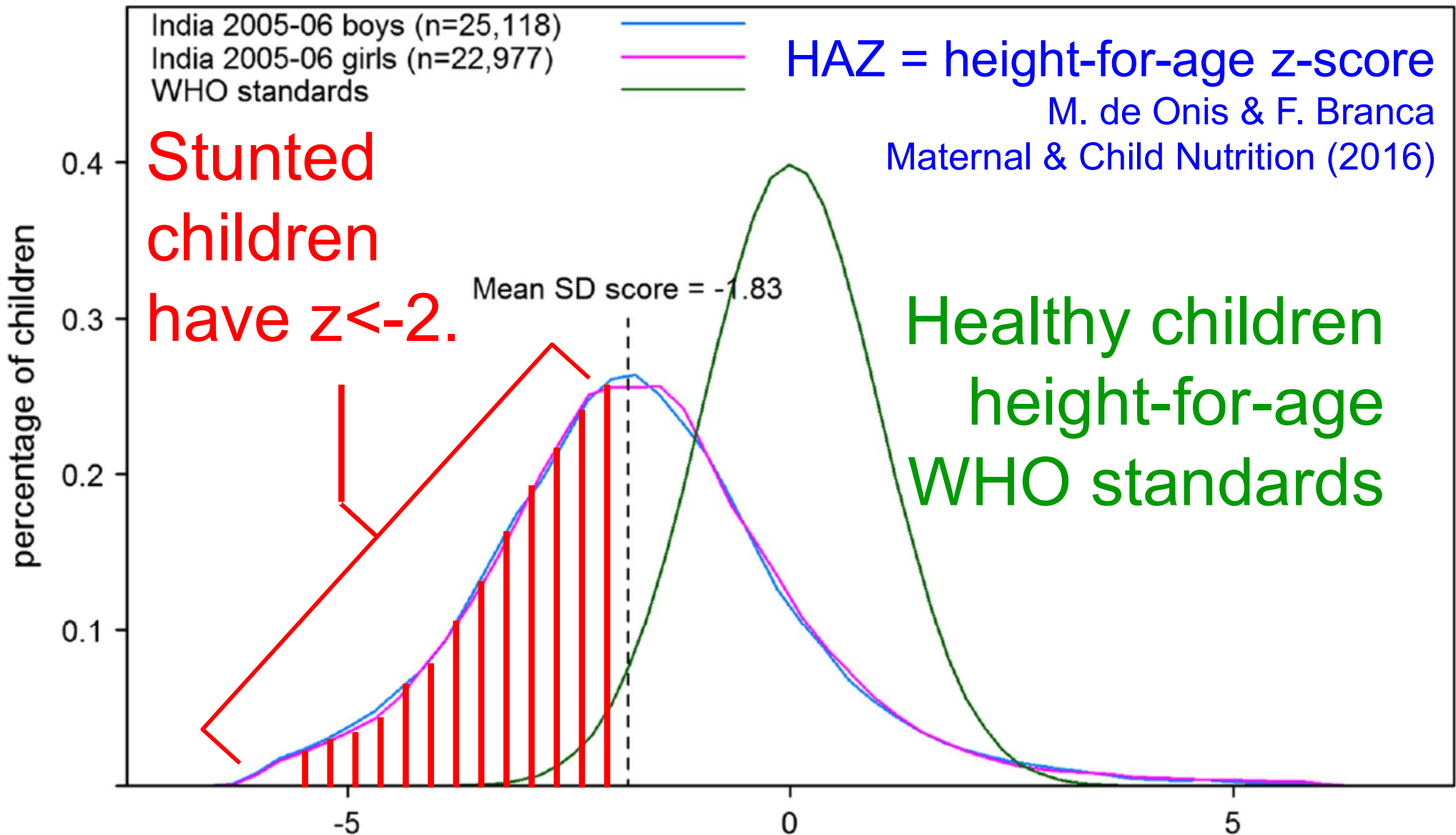
HAZ = height-for-age z-score

M. de Onis & F. Branca

Maternal & Child Nutrition (2016)

Stunted
children
have $z < -2$.

Healthy children
height-for-age
WHO standards



Mean SD score = -1.83

-5

0

5

z-score = standard deviations from median for age

Stunting is not obvious to eye.

2 girls in Maldives

