



Christian-Albrechts-Universität zu Kiel

PLANETARY HEALTH  
ACADEMY



## Sustainable Nutrition for prevention of NCDs

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energy balance center



# The Global Syndemic of Obesity, Undernutrition and Climate Change: The *Lancet* Commission report



The pandemics of

obesity,  
undernutrition, &  
climate change

interact in time and place,  
have synergistic adverse effects  
on each other,  
share common underlying social  
or economic determinants and  
policy drivers.

→ syndemic

*Swinburn BA, et al. Lancet. 2019;  
393(10173):791-846.*



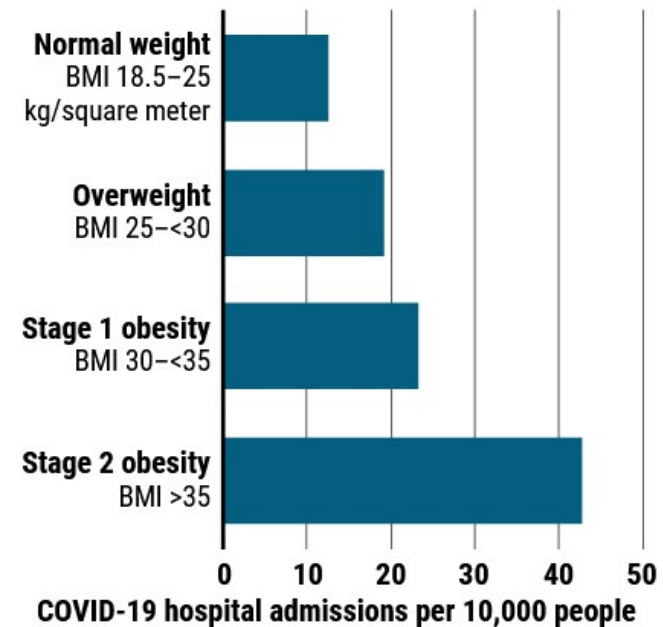
# COVID-19 is more deadly in people with obesity—even if they're young

Wadman M, Science Sep. 8, 2020



Many very sick COVID-19 patients, like some in this Brazilian intensive care unit, have obesity.  
Gustavo Basso/NurPhoto/Getty Images

In Germany 67% of men and 53% of the women are overweight.  
¼ of the population is obese.

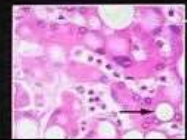


Hamer et al., *PNAS*, 10.1073/pnas.2011086117

OECD Health Statistics 2018

Schienkiewitz et al. *Journal of Health Monitoring* · 2017 2(2);21-28.

## Obesity and NCD



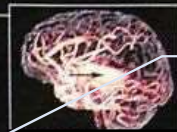
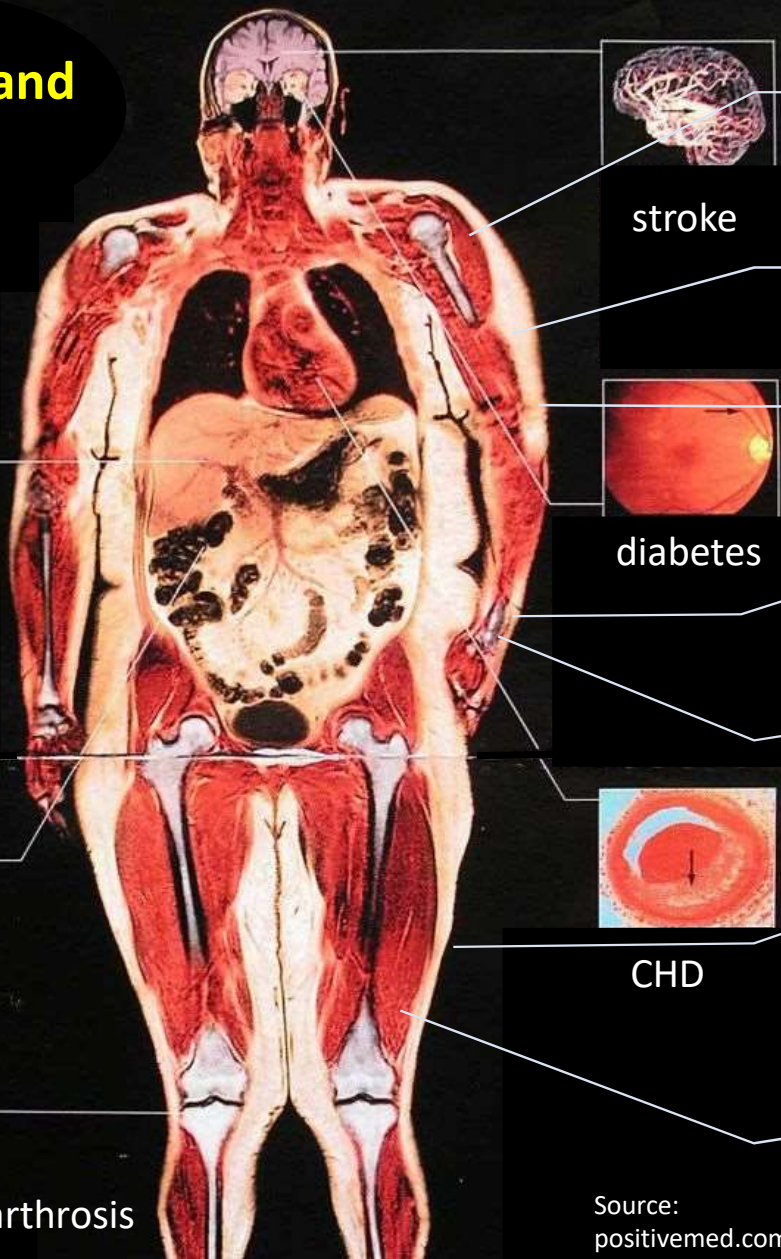
NAFLD



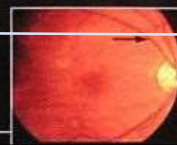
Colon-Ca



arthrosis



stroke



diabetes



CHD

Source:  
positivemed.com

OSA

cancer (cervical,  
kidneys, liver...)

cataract

gout

gallstones

phlebitis

PCOS



The problem of 'overweight'  
is underestimated

Limited adipose tissue expandability

→ ectopic fat in organ and tissue masses





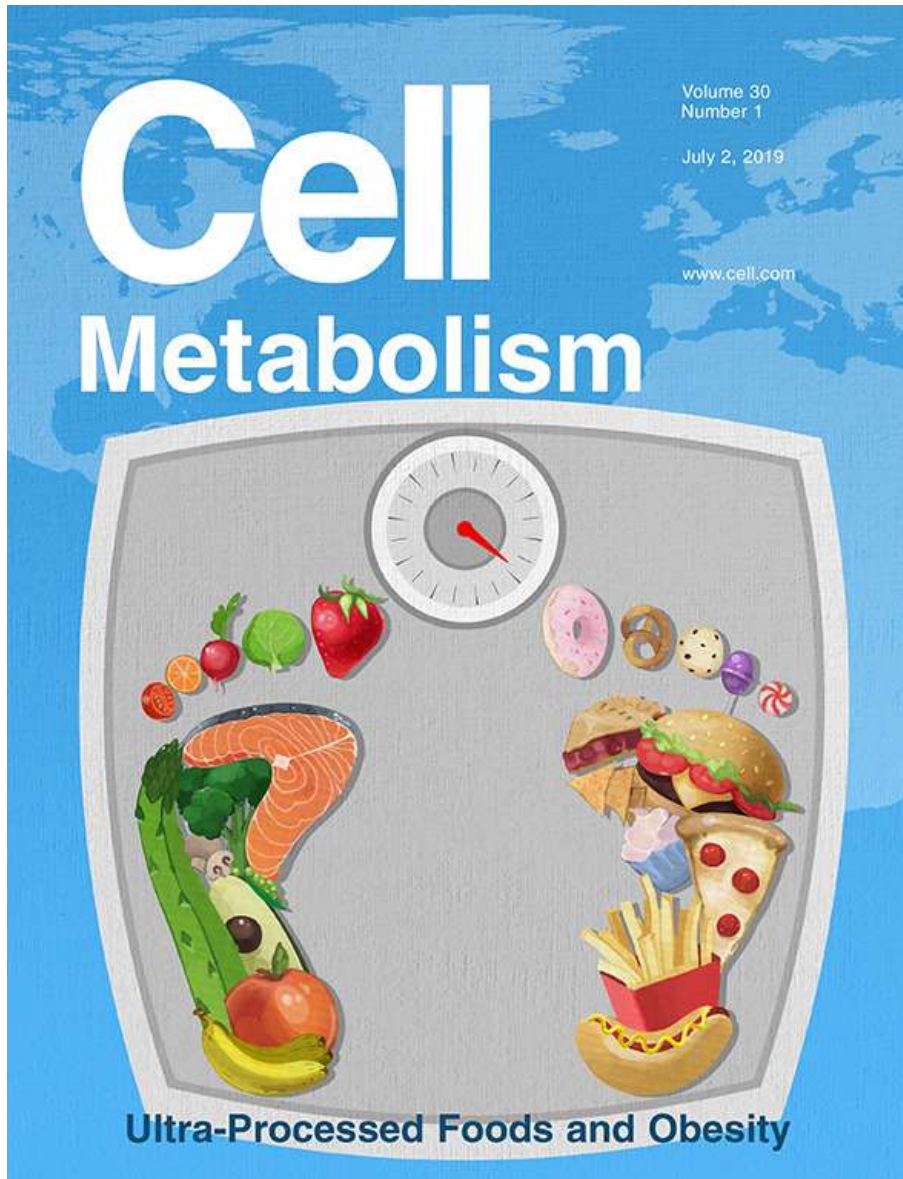
“Holding people responsible for their obesity detracts attention from the obesogenic systems that produce obesity.”

The Global Syndemic of Obesity, Undernutrition and Climate Change

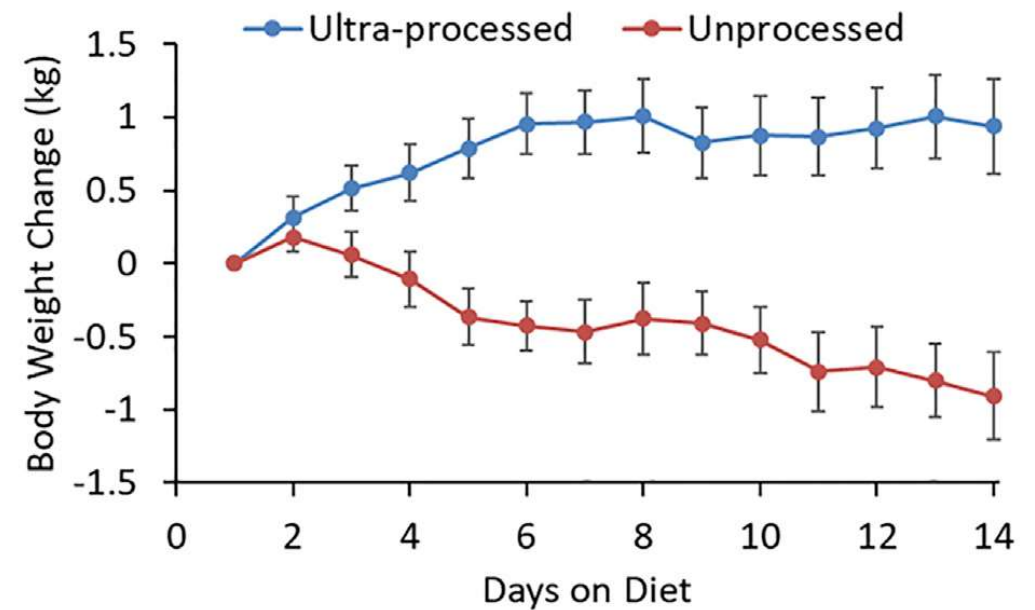
THE LANCET

The best science for better lives

*Swinburn BA, et al. Lancet. 2019 Feb 23;393(10173):791-846.*



Consumption of ultraprocessed food  
→ +500 kcal/d energy intake



Hall et al., 2019, *Cell Metabolism* 30, 67–77



NOVA classifies all foods and drinks into four clearly distinct groups



*Unprocessed or minimally processed foods include fresh, dried, or frozen vegetables, grains, legumes, fruits, meats, fish, eggs, and milk. They are the basis of healthy dishes and meals.*

**NOVA 1**

*Moubarac JC. Ultra-processed foods in Canada: consumption, impact on diet quality and policy implications. Montréal: TRANSNUT, University of Montreal; December 2017.*



## NOVA 2

*Processed ingredients include sugars, fats, oils, and salt. They are used to prepare foods, and to make diverse, nourishing and enjoyable dishes and meals.*



## NOVA 3

*Processed foods include simple breads and cheeses, and canned plant or animal foods. In moderation these foods can be part of healthy diets.*

*Moubarac JC. Ultra-processed foods in Canada: consumption, impact on diet quality and policy implications. Montréal: TRANSNUT, University of Montreal; December 2017.*





*Ultra-processed foods include fast food, sugary drinks, snacks, chips, candies, cookies, sweetened milk products, sweetened cereals, and sauce and dressings. They are nutritionally poor.*

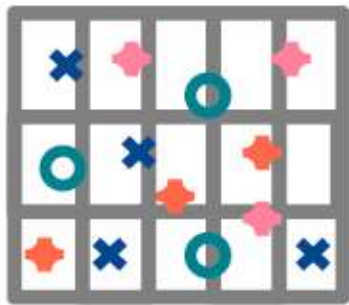
NOVA 4

**Ultra-processed foods** are not modified foods but formulations of industrial ingredients and other substances derived from foods, plus additives. They mostly contain little if any intact food.

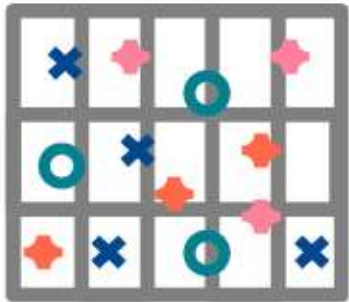
The purpose of ultra-processing is to create products that are **convenient (durable, ready-to-eat, -drink or -heat), attractive (hyper-palatable), and profitable (cheap ingredients)**.

Their effect all over the world is to displace all other food groups. They are usually branded assertively, packaged attractively, and marketed intensively.

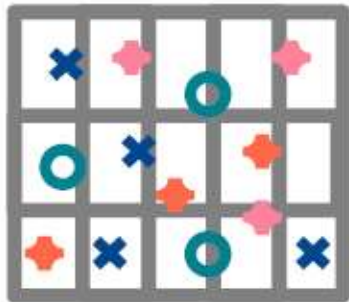
Original raw food A



Original raw food B

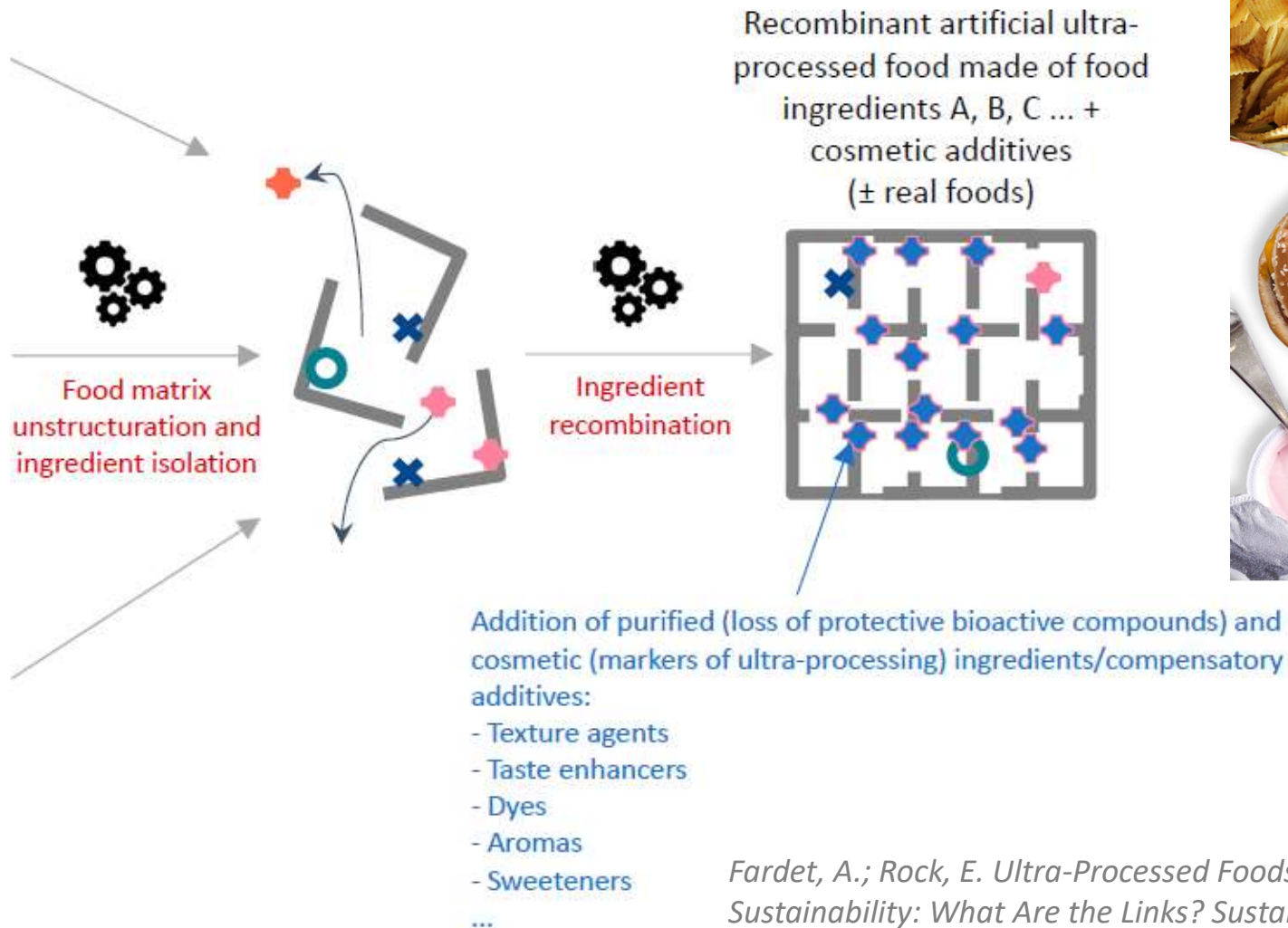


Original raw food C



...

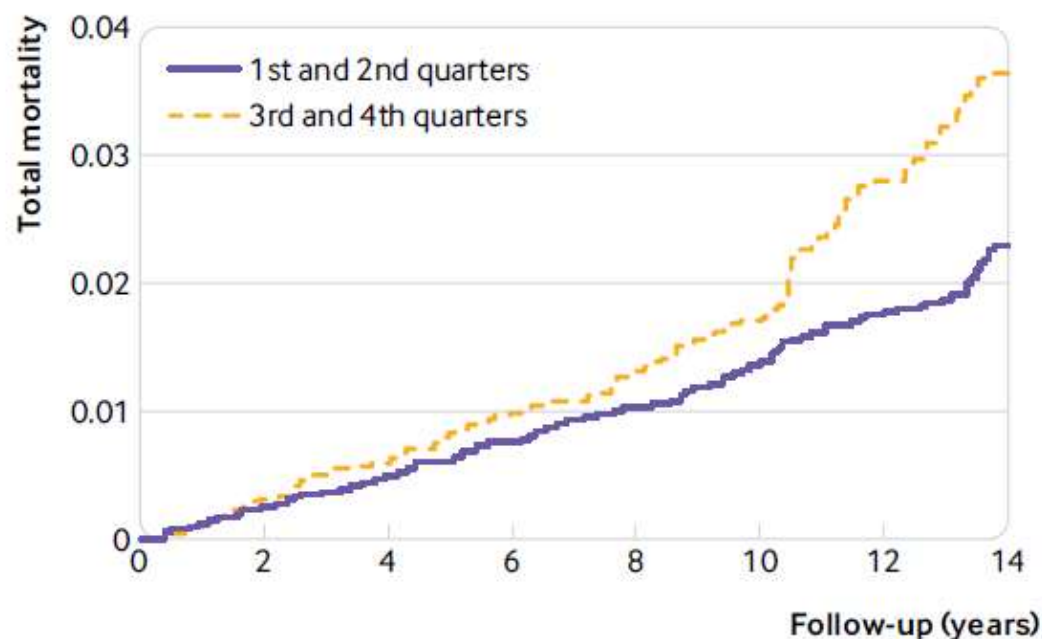
## Characteristics of ultraprocessed food



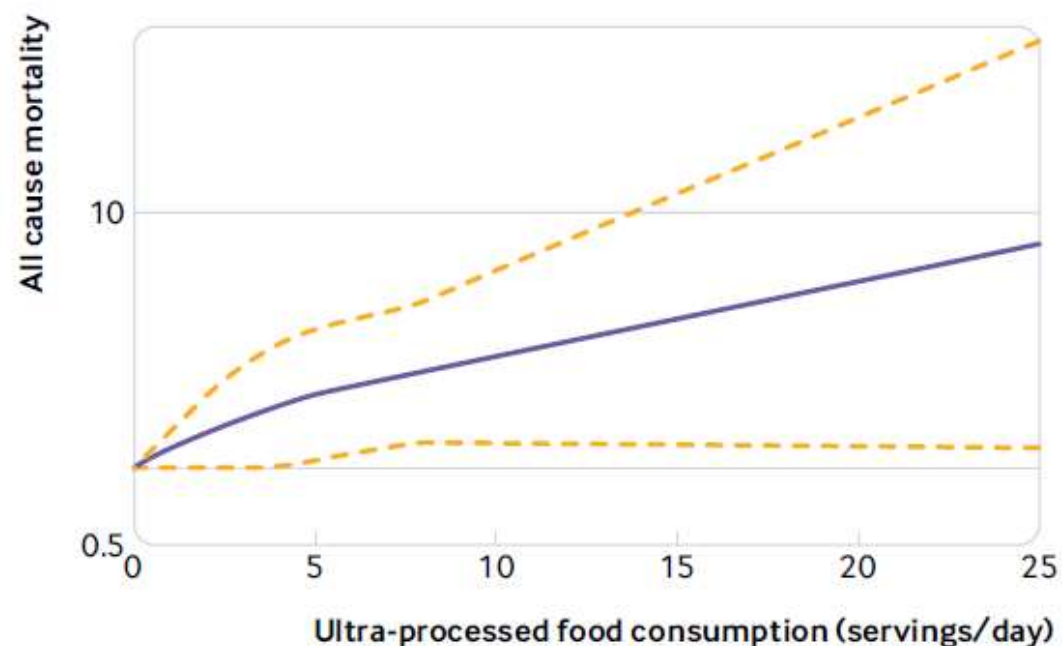
Fardet, A.; Rock, E. Ultra-Processed Foods and Food System Sustainability: What Are the Links? *Sustainability* **2020**, *12*, 6280.



## Association between consumption of ultra-processed food and all cause mortality: SUN prospective cohort study



A higher consumption of ultra-processed foods (>4 servings daily) was independently associated with a 62% relatively increased hazard for all cause mortality.

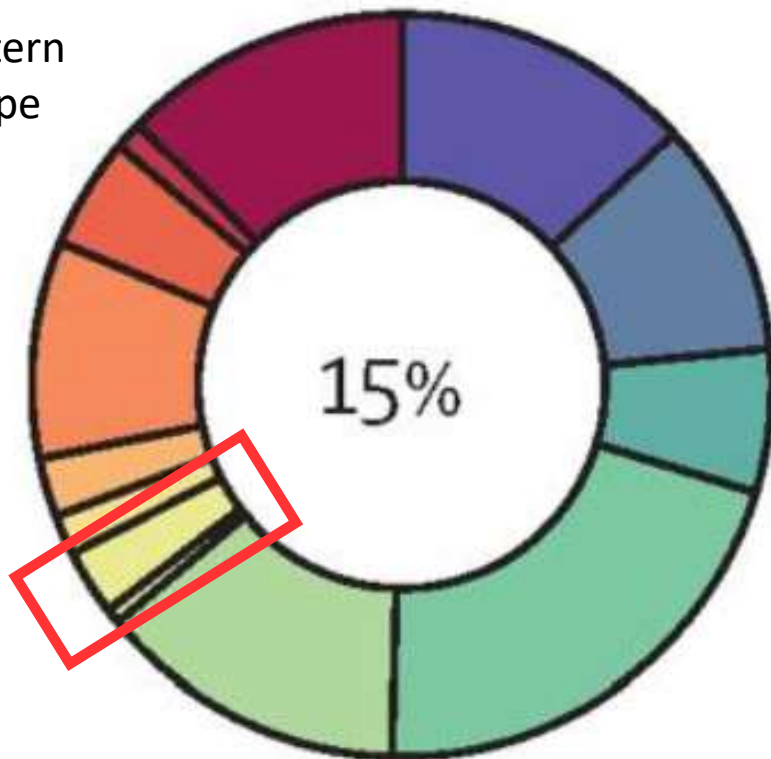


For each additional serving of ultraprocessed food, all cause mortality increased by 18%.

## Health effects of dietary risks in 195 countries, 1990–2017: Global Burden of Disease Study

15% age-standardised proportion of deaths  
attributable to individual dietary risks in 2017

Western  
Europe



- Low fruit
- Low vegetables
- Low legumes
- Low whole grains
- Low nuts and seeds
- High red meat
- High processed meat
- High sugar-sweetened beverages
- Low calcium
- Low omega-3
- Low PUFA
- High trans fats
- High sodium



## Adverse effects of ultra-processed food

### Choose high quality carbohydrate

- refined starch and added **sugar** ↓
- low **GI**, low GL
- high **fibre** ↑
- **sugary drinks** ↓



### Sustainable flexitarian diet

**SFA, energy dense** animal food ↓



**Avoid highly processed energy dense convenience foods**

Low in: fibre, prebiotics, phenolics, minerals, vitamins and other bioactives...

High in: starch and sugar, sodium, preservatives, additives, SFA, trans-fats, **non-nutritive sweeteners, emulsifiers, thickeners**





Foto: Premier Foods/PA

## Apparent food variety

>50% of calories from plant based food are from rice, maize and wheat (FAO 1995)



Foto: Fotolia/gradt

### Noodle-Snack „chicken type"

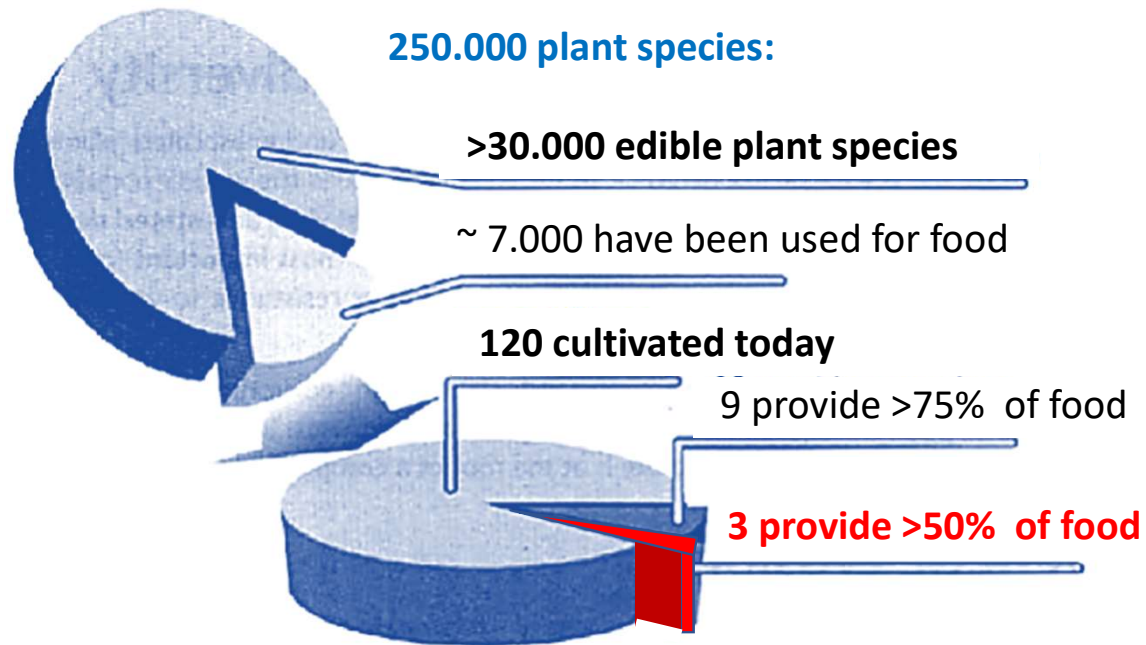
wheat, salt, sugar, soy sauce, spices, flavour enhancer, acidity regulator, thickener



### Chicken Nuggets

Chicken meat (corn fed)  
corn starch, cornmeal (panade)  
acidifier, emulsifier from corn, deep-fried in corn oil  
+ sauce made from corn syrup





*FAO Bifani (2017)*

## Green Revolution

- crop diversity ↓
- fertilizer ↑
- pesticides ↑
- water use ↑
- soil contamination ↑
- ecosystem biodiversity ↓
- ...

external  
costs to  
**industrial  
farming**

FAO : since the beginning of the last century >75 % loss of genetic crop diversity





“The current food systems are becoming more industrialised, globalised, and dominated by large actors capable of economies of scale and of maintaining long supply chains.”

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THE LANCET

The best science for better lives





## Some Food for Thought....

A healthy dietary pattern is more than the sum of individual foods



*“...ultraprocessed products are the symbols of the Western reductionist thinking, ... If the food is only a sum of nutrients then why not splitting or cracking the food then recombine the ingredients in endless combinations. It is however to forget that the whole is greater than the sum of the parts...”*

*Anthony Fardet. Advances in Food and Nutrition Research, Vol 85; 2018*





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# Thanks !

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