

## Famine & Malnutrition

World Food Problems  
ApEc/Agro 4103  
Kent Olson  
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- Starvation
    - Estimated 100,000-200,000 deaths per year
  - Famine
    - “localized, temporary, & severe food shortages”
  - Hunger-related deaths
    - 6,000,000 children die each year from hunger
    - One death every five seconds!
    - Most of the concern is with pre-school children

### Four critical factors for food supply and demand

- Population
- Prosperity
- Pollution (or environmental quality)
- Productivity in agriculture

### Most important actions for a gov't:

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- Promote general economic growth
- Promote agricultural research

### Famines

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- “localized, temporary, & severe food shortages”
- Natural disasters & poor policy response
- Government policies
  - Laissez-faire versus centrally planned economies

### Irish potato famine, late 1840s

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- Major part of diet for poor, rural people
- Potato blight (a fungus)
- Technology policy – too late
- Trade policy
  - Quote on page 9 (role play)
- Poverty alleviation policy
  - Importation of grain, “work houses,” public works programs, soup kitchens
  - Financed by tax
  - Unintended consequences

### Famines created by Policies

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- Ukraine, 1932-1933
- Chinese “Great Leap Forward”, 1959-61

### Recent famines

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- North Korea
- Southern Africa

### Famine & disaster relief

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- Good
- Bad
- When is food aid is not needed?
  - Northern Kenya
  - Guatemala

### Famines’ most likely victims

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- Small-scale farmers or tenants
  - Crops fail, no other employment
- Landless ag workers
  - Lose jobs, food prices rise, constant or declining wages
- Other rural people
  - Decline in real income, beggars
- Pastoralists
  - Herds die off, animal prices drop, grain prices up

Source: Reutlinger et al, 1986, from Leathers & Foster, 2009, p.20

### Lessons for policy responses

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- Better governance
- Early warning and rapid response
- Increased aggregate food availability
- Distribution policies
- Stabilization policies
- Other policies

Source: Ravallion, 1997, from Leathers & Foster, 2009, p.21

### **MALNUTRITION DEFINED**

## Malnutrition

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- Overconsumption or under consumption of any essential nutrient
- Four types:
  - Overnutrition
  - Secondary malnutrition
  - Dietary deficiency or micronutrient malnutrition
  - Protein-calorie malnutrition

## Secondary malnutrition

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- “Undernutrition” due to interrelatedness
- Loss of appetite, anorexia
- Alteration of normal metabolism
- Prevention of nutrient absorption
- Diversion of nutrients to parasitic agents

## Micronutrient malnutrition

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- Dietary deficiency
- Vitamin A
  - Night blindness, respiratory & gastrointestinal disease
- Iodine
  - Goiter, reduction in mental abilities, “cretinism”
- Iron
  - Anemia, reduced capacity to work, diminished capacity to learn, increased susceptibility to infection, greater risk of death during pregnancy and childbirth
- also: Zinc, vitamin D, vitamin C

## Protein-Calorie Malnutrition

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- Kwashiorkor
  - Protein deficiency
  - “the evil spirit which infects the first child when the second child is born”
- Marasmus
  - Calorie deficiency
- Which is the bigger problem?
  - Calorie or protein deficiency?

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## HOW MUCH DO WE NEED?

## RDA versus EAR

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- Recommended Daily Allowance (RDA)
  - 97-98% will be adequately nourished
- Estimated Average Requirement (EAR)
  - 50% will be adequately nourished

How many calories do we need each day?

Men:  $661.8 - 9.53 * \text{age}$   
 $+ \text{PAC} * [ ( 15.92 * \text{kg} ) + ( 539.6 * \text{m} )]$

Women:  $354.1 - 6.91 * \text{age}$   
 $+ \text{PAC} * [ ( 9.36 * \text{kg} ) + ( 726 * \text{m} )]$

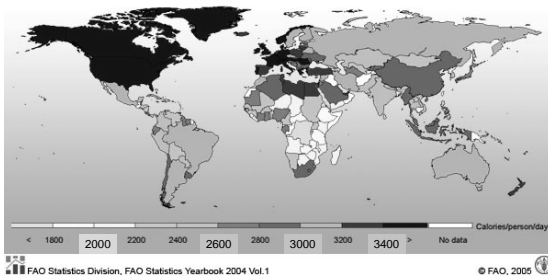
- PAC: sedentary =1; mildly active = 1.12; active = 1.27; very active = 1.45
- Kg = weight in kilograms, 1 pound = 0.4536 kg
- M = height in meters, 1 inch = 0.0254 meters

Source: Leathers & Foster, p.34

How much do people in developed countries consume compared to people in developing countries?

Dietary Energy Consumption

Calories per person per day:



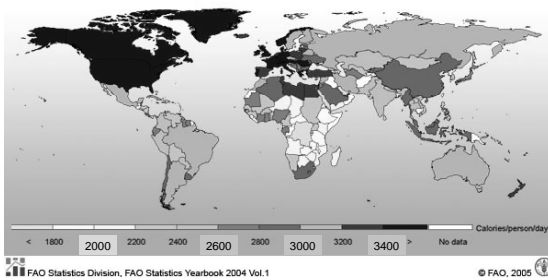
A few comparisons:

- Subway (6 inch sandwich):
  - Turkey breast (no cheese): 280 calories (4.5 grams fat)
  - Cold cut combo: 410 calories (17 grams fat)
  - Meatball marinara: 560 calories (24 grams fat)
- McDonald's:
  - Big Mac: 540 calories (29 grams fat)
  - Large French Fries: 500 calories (25 grams fat)
- Hardee's
  - 1/3 lb. Original Thickburger: 910 calories (64 grams fat)
  - 2/3 lb. Monster Thickburger: 1420 calories (108 grams fat)

Source: company websites accessed 26 January 2009

Dietary Energy Consumption

Calories per person per day:



- Questions?
- Comments?