


# Dynamics of the Global Nutrition Transition

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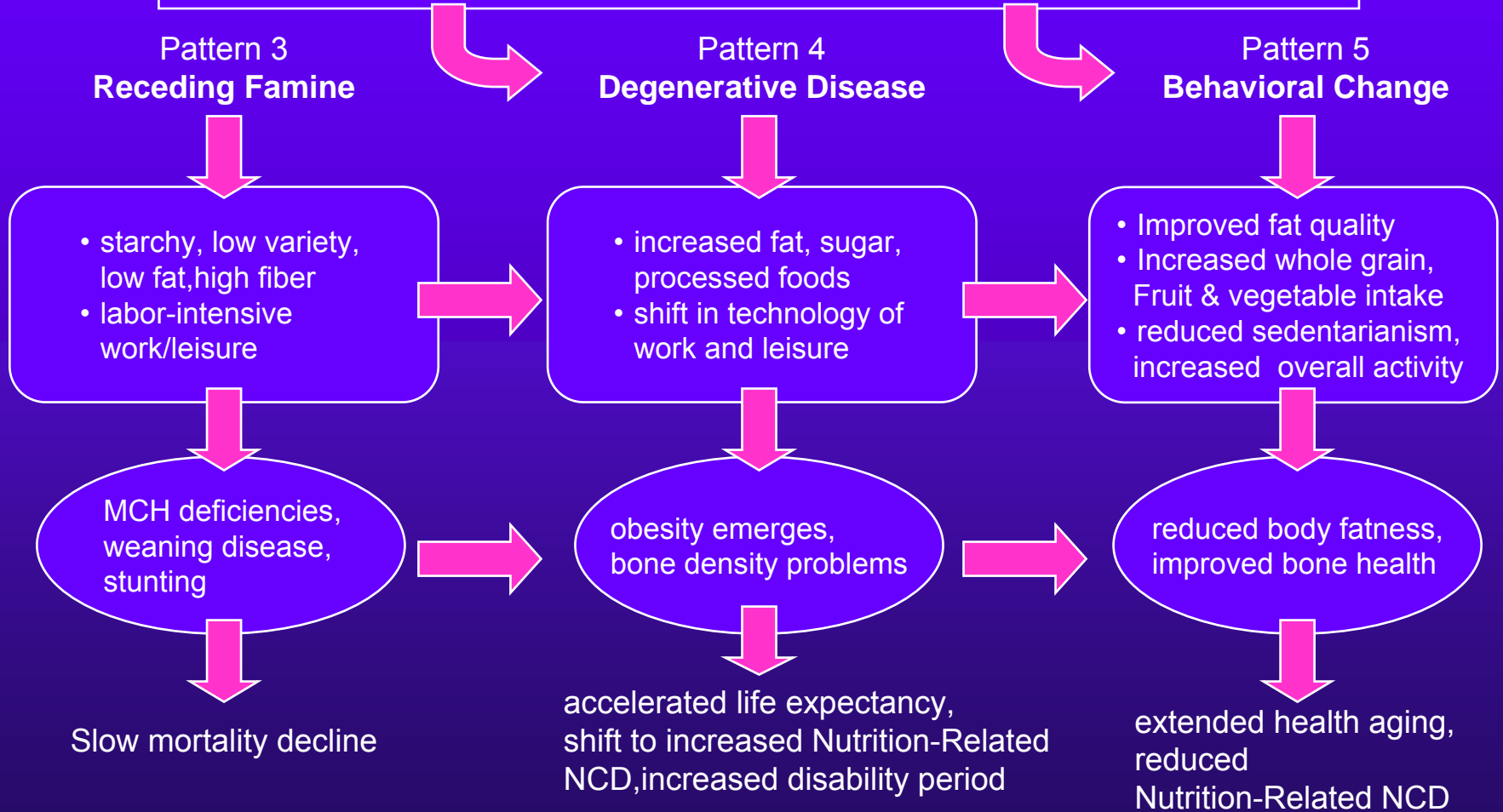
# I. Introduction: Background

- ◆ What is the nutrition transition?
- ◆ Background: obesity, diet, activity dynamics – shifting to the poor, begins with adults, global acceleration
- ◆ Underlying dynamics: Key demographic factors (age structure, urbanization), economic (price, income), and technological factors are changing!



# Later Stages of the Nutrition Transition

Urbanization, economic growth, technological changes for work, leisure, & food processing, mass media growth, global capital flows





# Obesity Dynamics

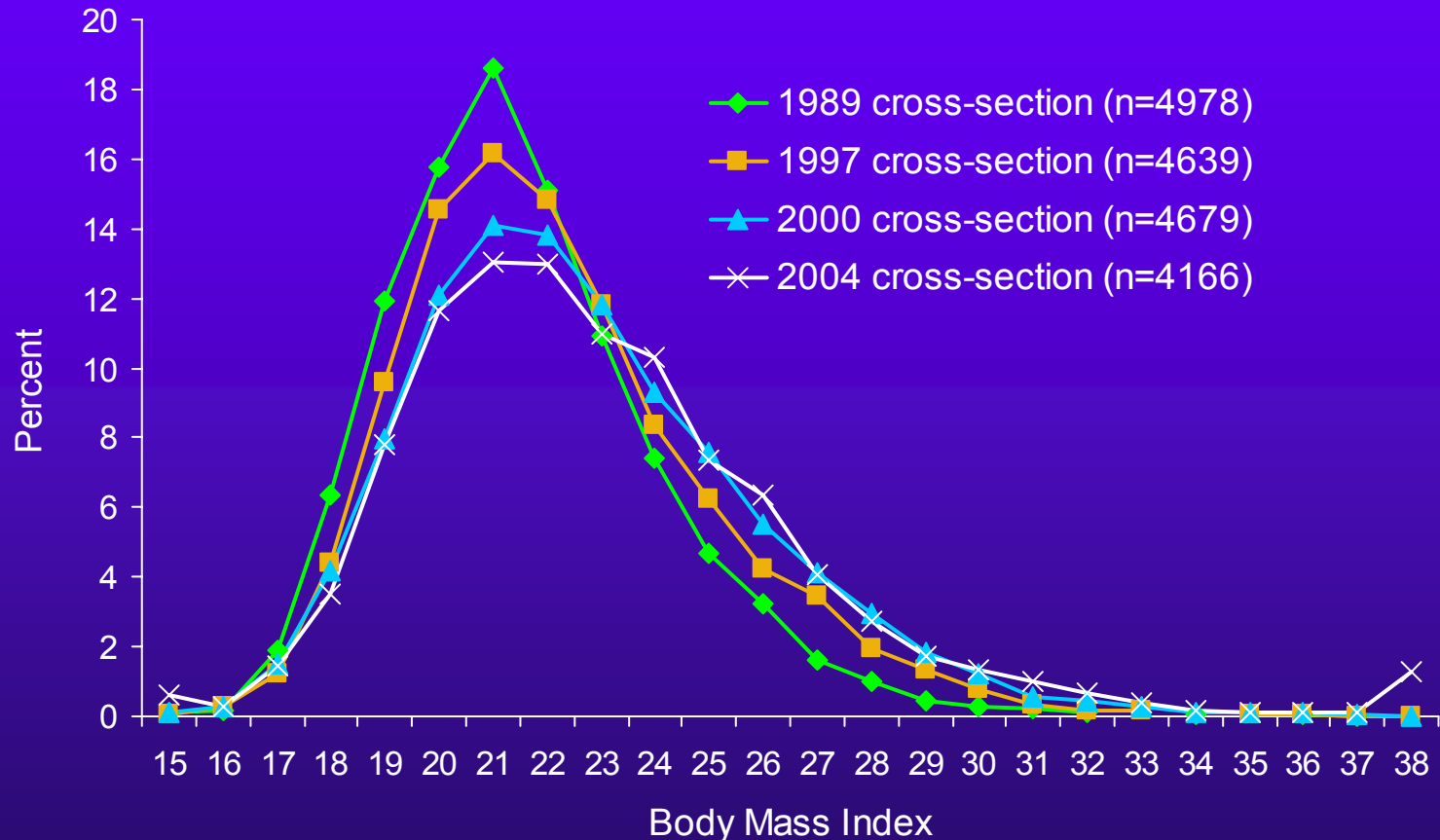
- ◆ Adult increases seem to emerge earlier than child ones. Unclear why?
- ◆ Shifts occurring in both urban and rural areas.
- ◆ Poor assuming the burden of obesity and noncommunicable diseases





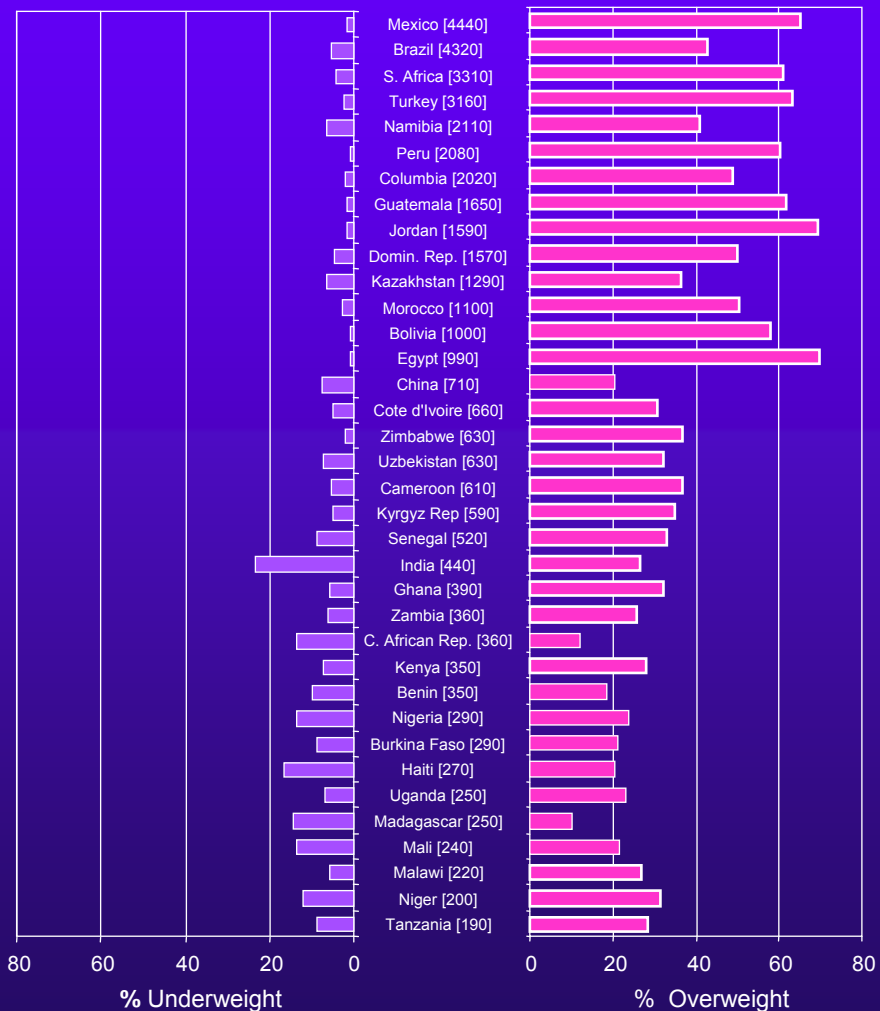
El 54% de los uruguayos tiene sobrepeso u obesidad.

# Overweight more than tripled among Chinese men and doubled among women. The 11-Year Change in the BMI Distribution for a Cross-Section of Chinese Adults 20-45.

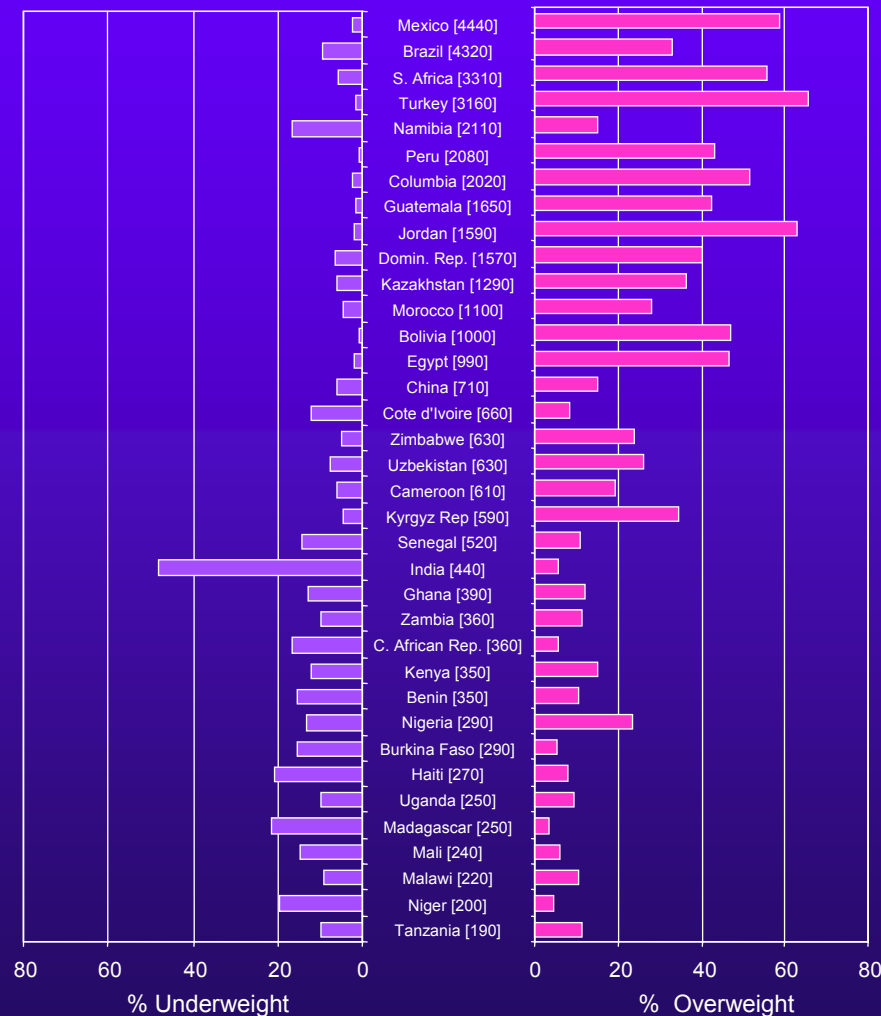


# Overweight and Underweight Prevalence in Women 20-49y in 36 Developing Countries Ranked by Gross National Income (GNI) Per Capita

(1a) Urban Women



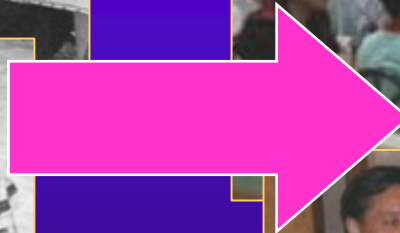
(1b) Rural Women



Overweight = BMI  $\geq 25$ ; underweight = BMI  $< 18.5$ .

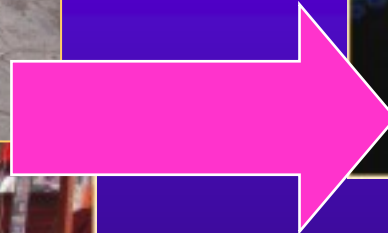
Mendez, Monteiro, Popkin (2005): AJCN

# From Traditional to Modern Meals





# From Traditional to Modern Snacking



# From Traditional to Modern..... Marketing of Food





# The Key Diet-Related Changes

## Major shifts in diet are taking place:

- ◆ Major nutrient profiles: shift toward large energy density and refined carbohydrate increases. For example, In a decade the energy density of food consumed by Chinese adults aged 20-45 increased by over 13%
- ◆ Added caloric sweeteners (mainly sugar and High Fructose Corn Syrup) increases across the developing world are equally dramatic, with an extra 100-300 kcals per day among all individuals in each low and moderate income country over the past 25 years
- ◆ Large increases in edible oil and animal food source intake, and reductions in fiber and total fruit and vegetable intake

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## Total Fat Intake

- ◆ For every 10% increase in income, intake of the proportion of energy from fat is increasing greater among the poor than the rich in China. Most importantly there are significant changes found in all income groups
- ◆ Source: Popkin and Du (2003) J Nutr. 133:3898S-3906S. & Guo, Mroz, Popkin (2000). Econ Dev Cul Chg 48:737-760
- ◆ Log-log Longitudinal model: this one fixed effects with income-time interactions

# CHNS Edible Oil Consumption Still Rising (daily grams per capita of intake)

Year	1989	1997	2000	2004
Poorest (lowest income tertile)	11.8	29.8	29.4	33.6
Middle income tertile	15.0	30.6	34.0	32.6
Richest (highest income tertile)	17.4	33.0	38.8	39.4
Average for total adult population	14.8	31.0	34.1	<b>35.1</b>
% of all calories per capita from edible oil	<b>4.9</b>	12.2	12.2	<b>13.7</b>

Source: China Health and Nutrition Survey 1989, 1997, 2000 and 2004 for adults. Based on 3 days average dietary intake

Ref: Ng, et al, (in press) impact of China's edible oil pricing policy on nutrition. [SS & Med](#)

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## The Beverage dimension of the sugar issue is particularly important for obesity

- ◆ Studies of appetitive sensations (e.g hunger, fullness, prospective consumption) support the view that fluids are less satiating than solid foods. In fact beverages are not satiating at all during a specific meal and there is no energy adjustment
- ◆ Further dietary compensation (energy intake adjustments made during the day to compensate for earlier intake) have been studied with solid, semisolid and fluid foods. For fluids, compensation is very high in the sense that minimal calorie reduction in other foods occurs



# Dynamics of the Food Sector

- ◆ Supermarkets: a new actor in the process!
- ◆ What about away-from-home consumption?
- ◆ McDonald's and friends: what role? Heterogeneity
- ◆ Agribusinesses: production of livestock, other commodities is changing rapidly!
- ◆ Then what about the international food companies – Nestle's, Unilever, Kraft General Foods, etc.?




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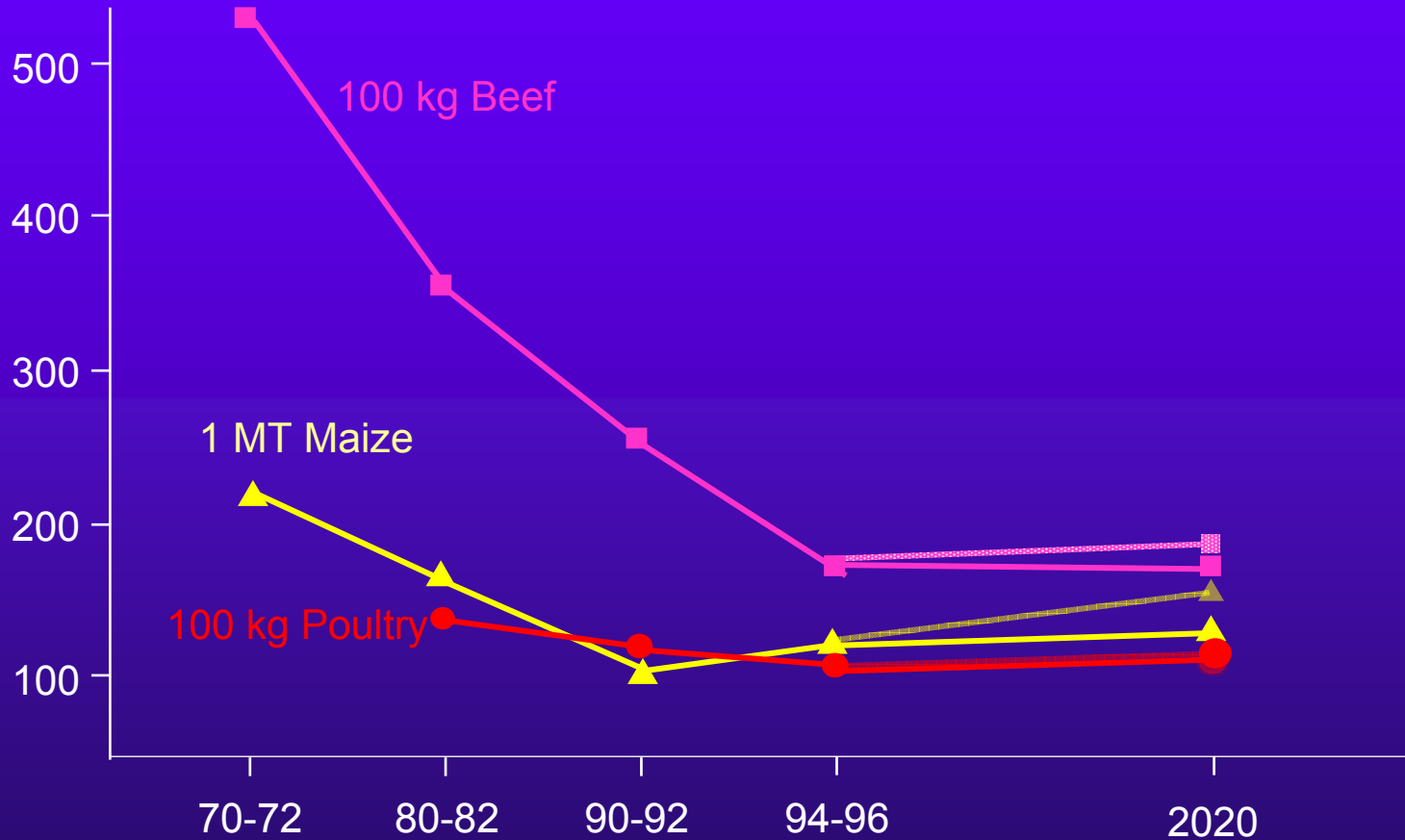
## Supermarkets: a new actor in the process!

- ◆ In 1990 15-20% of food sold in supermarkets in Latin America. Now this is 60% of the average population share. They are becoming the main buyers in the supply chains for processed foods
  - ◆ Top 5 chains control two-thirds of the supermarket sector in Latin America (Walmart, Carrefour, Ahold)
  - ◆ Asia, urban Africa, Middle East are experiencing similar change now
- 





# Real World Prices, 1990 US\$



# Key issue is relative price changes

## Real Prices of Select Food Items from 1991-2004 in China



Source: China Health and Nutrition Survey 1991 to 2004 Ng et (in press) Impact of China's edible oil pricing policy on nutrition. [Social Science & Medicine](#)