#### Outline



#### Examples from the literature, could be used in a final exam

- The rising cost of low-energy-density foods
- Social evaluation by preverbal infants

The rising cost of low-energy-density foods

P. Monsivais and A. Drewnowski. Journal of the American Dietetic Association 107:2071-2076 (2007)

Surveyed 372 foods and beverages

Prices from major supermarket chains in Seattle, 2004 and 2006.

"low-energy-density diets tend to be higher in nutrient" and "associated with lower body mass index". "sweets and fats [...] tend to be energy-dense but nutrient poor"

between diet quality, food prices, and diet costs. The importance of this issue is illustrated by a study (14) showing that variations in the prices of fruits and vegetables across major metropolitan markets were sufficient to explain, in part, the observed variations in childhood obesity rates. Studies conducted by the US Department of The rising cost of low-energy-density foods

Data:

2004 and 2006 prices (\$/100g) Energy density (kcal/g) Energy cost (\$/1000g) in 2004 Inflation rate over 2004-2006: % change in 2004 price

Main hypothesis:

prices of low-energy-density foods goes up faster than those of energy-dense foods.

## Small group discussion

What tool should be used to relate 2004 prices to 2006 prices? energy cost 2004 with energy density? inflation rate (% price change from 2004 to 2006) with energy density?

Each time

what assumptions should be verified?

if some assumption not met, what correction action could be taken?



Reliability of food price collection. Comments?



**Figure 2.** Relationship between monetary cost of dietary energy (\$/ 1,000 kcal) and energy density (kcal/g) of 372 foods from Seattle-area supermarkets for which nutrient and energy data were available. Energy cost was inversely associated with energy density. The data were fit by a linear regression:  $r^2$ =0.38. Retail prices for 372 foods and beverages were for 2006.



**Figure 3.** Mean 2-year inflation rate by energy-density quintile for 341 foods (31 caloric and noncaloric beverages excluded). Low-energy-density foods showed the highest 2-year inflation rate. Inflation rate was highest for the low-energy-density group at 19.5% compared to -1.8% for the high-energy-density group. \**P*<0.05 compared to high-energy-density group.

# Social evaluation by preverbal infants

J.K. Hamlin, K. Wynn and P. Bloom. Nature 450:557-559 (2007)

#### 6- and 10-month-old infants looked at social interactions. Video:

www.yale.edu/infantlab/socialevaluation/Helper-Hinderer.html Measured:

choice between 2 characters

looking times (long if surprised)

Experiments:

- helper/hinderer: 12/0 in 6-month olds, 14/2 in 10-mo.
  Average looking times: 3.82s/4.96s.
- pushed/pulled a ball (neutral): 4/8 and 6/6
- helper/neutral: 7/1 and 7/1, or neutral/hinderer: 7/1 and 7/1.

Goal: evaluate infants' abilities to evaluate social interactions



### Small group discussion

What tool should be used to relate Infant's choice with puppet's role? Infant's looking time with puppet's role? within one experiment? across 2 experiments? Assumptions and potential corrective actions?

Experimental design:

why these several different experiments? which aspects are kept fixed to reduce variability? which features must be varied and should be randomized?



**Figure 2** | **Choice results.** Percentage of infants choosing each character across experiments 1, 2 and 3. NS, not significant. Asterisk, one-tailed P < 0.05; double asterisk, P < 0.05.