

# Evidence or decision

## Evidence versus Decision

**Evidence** → *What I know?* → Knowledge : Science

Fisher *evidence*: induction → Inference

P value: evidence against H

Report  $P$ : minor  $P$ , higher evidence

Only H (or  $H_0$ ) : "absence of evidence is not evidence of absence"

**Decision** → *What I do?* → Action: Technique

Neyman Pearson *minimization of errors*: deduction

It is frequentist: we fix a maximum risk for error I (usually 5%)

and we minimize the risk for error II

Report both  $\alpha$  and  $\beta$ , but no  $P$

Both decisions (actions) are allowed

## Tobacco: evidence or decision?

**Evidence** → *What I know about tobacco effects?*

**Fisher:** as no human trials → NO evidence

→ maybe some gene confounder

**Hill:** Koch criteria revisited: strength, animal evidence,  
pseudo-experiments, monotonicity, replicability, ...

→ causality is most reasonable interpretation

**Decision** → *Do I smoke?*

Greenland, I there is smoke in Tibidabo:

Do we send scientists of firefighters?

# Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials

**Objectives** To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.

**Design** Systematic review of randomised controlled trials.

**Data sources:** Medline, Web of Science, Embase, and the Cochrane Library databases; appropriate internet sites and citation lists.

**Study selection:** Studies showing the effects of using a parachute during free fall.

**Main outcome measure** Death or major trauma, defined as an injury severity score  $> 15$ .

**Results** We were unable to identify any randomised controlled trials of parachute intervention.

**Conclusions** As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials. Advocates of evidence based medicine have criticised the adoption of interventions evaluated by using only observational data. We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.

## Readings

- Confusion Over Measures of Evidence ( $p$ 's) Versus Errors ( $\alpha$ 's) in Classical Statistical Testing *The American Statistician*, August 2003, Vol. 57, No. 3

<http://drsmorey.org/bibtex/upload/Hubbard:Bayarri:2003.pdf>

- Invited Commentary: Science versus Public Health Action: Those Who Were Wrong Are Still Wrong

<http://aje.oxfordjournals.org/content/133/5/435.extract>

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