



NHS

*National Institute for
Health Research*

Making Sense of Evidence: Using Research to Inform Decision Making

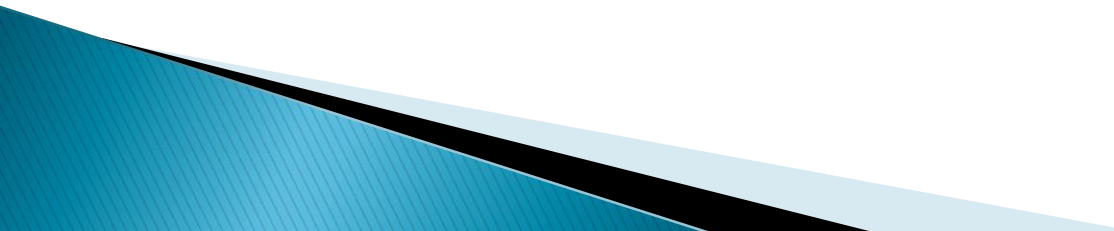
<http://clahrc-peninsula.nihr.ac.uk>



Thinking about evidence

- ▶ There is a gap between research and practice
- ▶ Errors in the interpretation of research evidence
- ▶ Pressure from “payers” for justification for services

Thinking about evidence

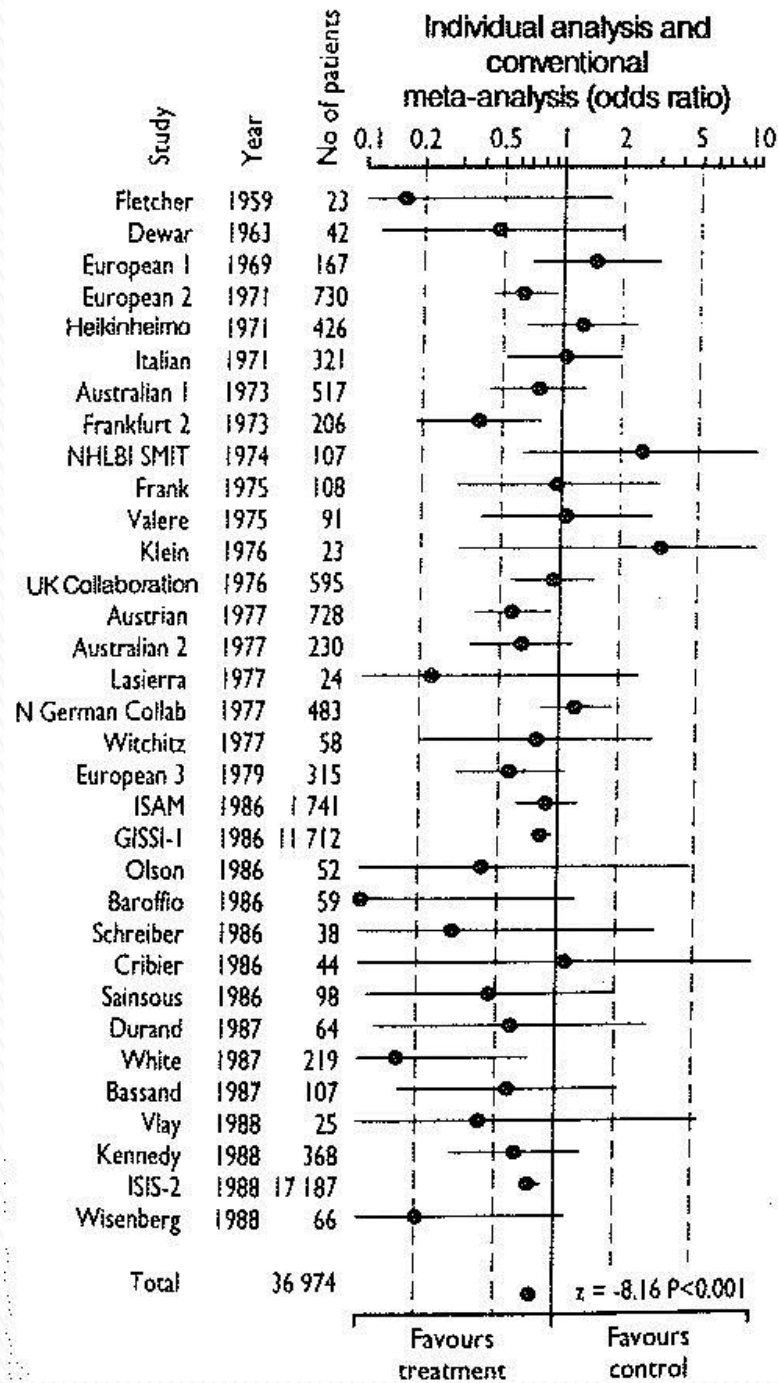
- ▶ We may not know about evidence
 - ▶ We misinterpret evidence
 - ▶ We reason from “first principles”
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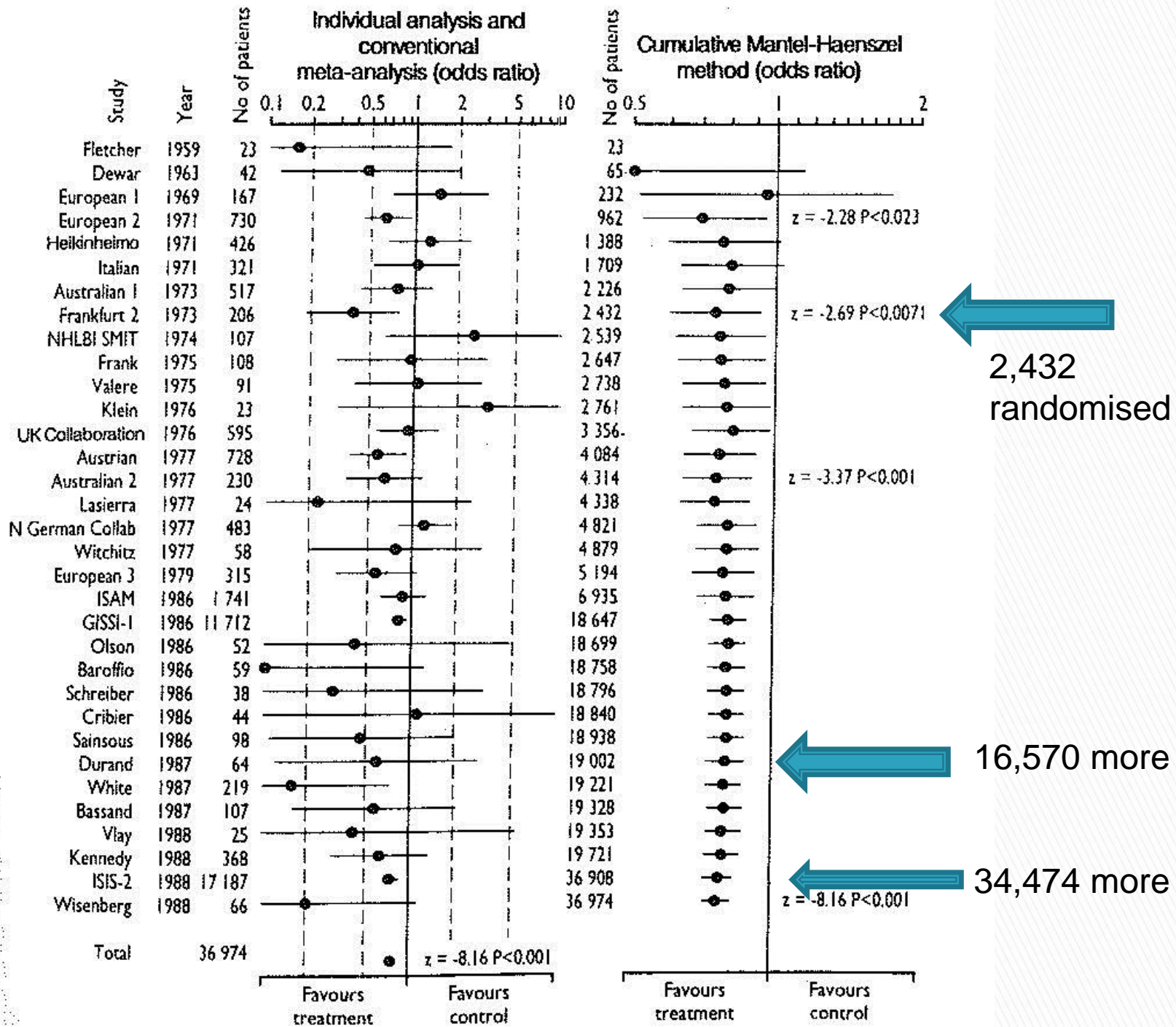
The clinical value of thrombolysis for
myocardial infarction

... remains uncertain.”

Oxford Textbook of Medicine, 1987







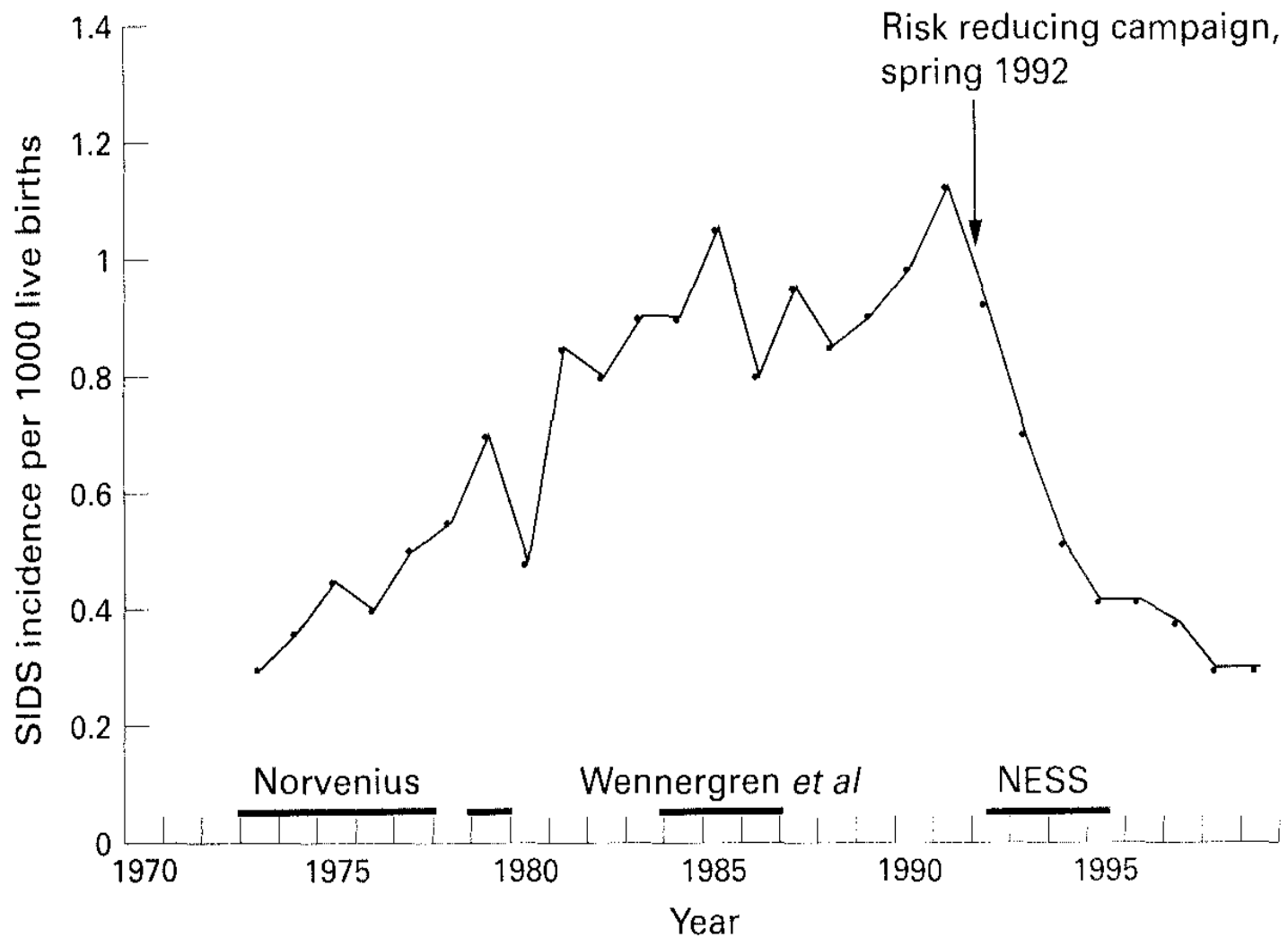


Figure 1 Incidence of SIDS in Sweden 1973–1999. Data from the Medical Birth Registry of Sweden. Time periods for studies mentioned in the text are indicated by bold lines.

Cot death

Doctors recommended putting babies to sleep on the front

Advice changed to sleep on back

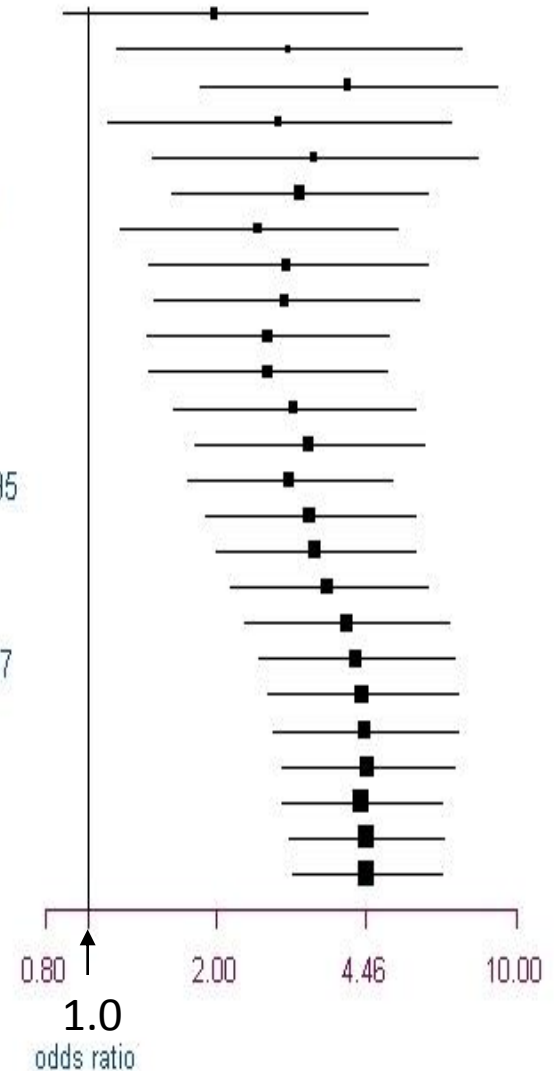


Gilbert et al. International Journal of Epidemiology 2005;34:874-887

Front vs. back sleeping

Study

Carpenter 1965
Frogatt 1970
Beal 1 1986
Tonkin 1 1986
Lee 1988
McGlashan 1989
Tonkin 2 1989
Fleming 1 1990
Dwyer 1 1991
Engelberts 1991
Ponsonby 1993
Gormally 1994
Jorch 1994
Klonoff-cohen 1995
Fleming 2 1996
Brooke 1997
Mitchell 3 1997
Oyen 1997
Schellscheidt 1997
L'Hoir 1998
Dwyer 1999
Mitchell 2 1999
Hauck 2002
McGarvey 2003
Carpenter 2004



prone position better ← → prone position worse

Treating heart attacks

Disturbances in cardiac rhythm are one of the main causes for death after heart attacks.

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Lidocaine reduces the risk of rhythm disturbance.

Lidocaine will reduce the risk of death after heart attack.

Treating heart attacks

Use of lidocaine in acute myocardial infarction is associated with a 14% increase in mortality.

(systematic review of RCTs)

Furberg 1993

We need research to overcome bias**

- ▶ We see patterns where there are none
- ▶ We see relationships where there are none
- ▶ We seek out evidence that confirms our views

It is in the Lancet so it must be good?

**Bias: preconceived ideas, prejudice, partiality, unfairness...



“Scared Straight”

16 of the 17 delinquents remained law-abiding for three months after attending ‘Scared Straight’ – a 94% success rate

(Fickenauer 1982).



“Scared Straight”

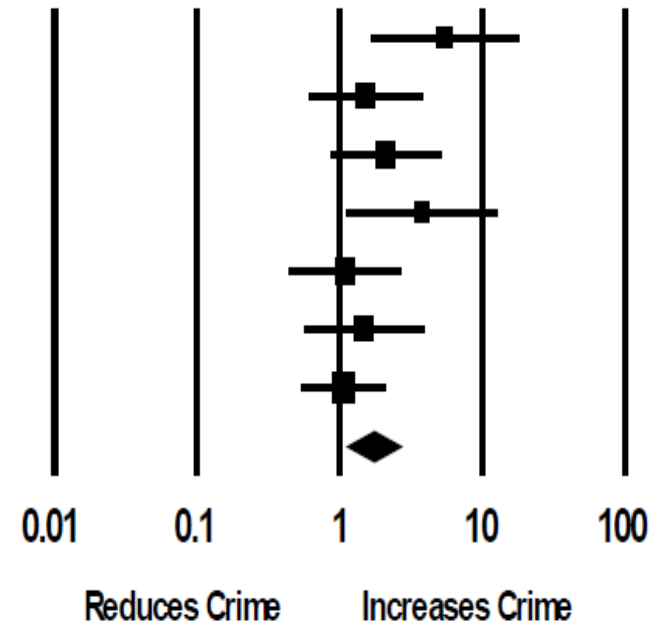
Effects of Scared Straight and other similar programs: Meta-analysis of first effect crime outcomes (Random Effects Analysis)

Study name

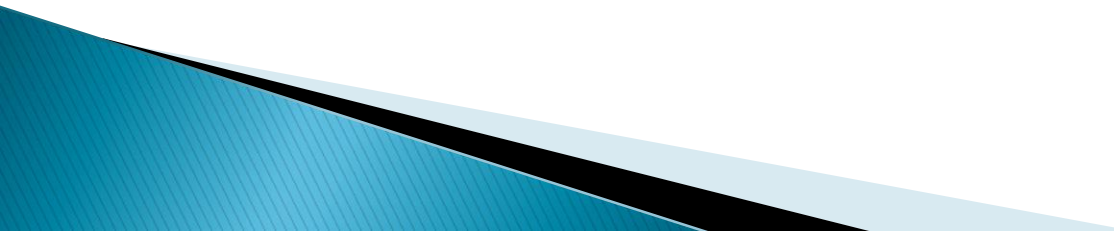
Statistics for each study

Odds ratio and 95% CI

	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Finckenauer (1982)	5.454	1.650	18.022	2.781	0.005
GERPDC (1979)	1.513	0.607	3.772	0.888	0.374
Lewis (1983)	2.092	0.860	5.090	1.627	0.104
Michigan DOC (1967)	3.750	1.110	12.669	2.128	0.033
Orchowsky (1981)	1.087	0.444	2.660	0.183	0.855
Vreeland (1981)	1.476	0.569	3.832	0.801	0.423
Yarborough (1979)	1.054	0.537	2.070	0.153	0.879
	1.724	1.134	2.619	2.550	0.011



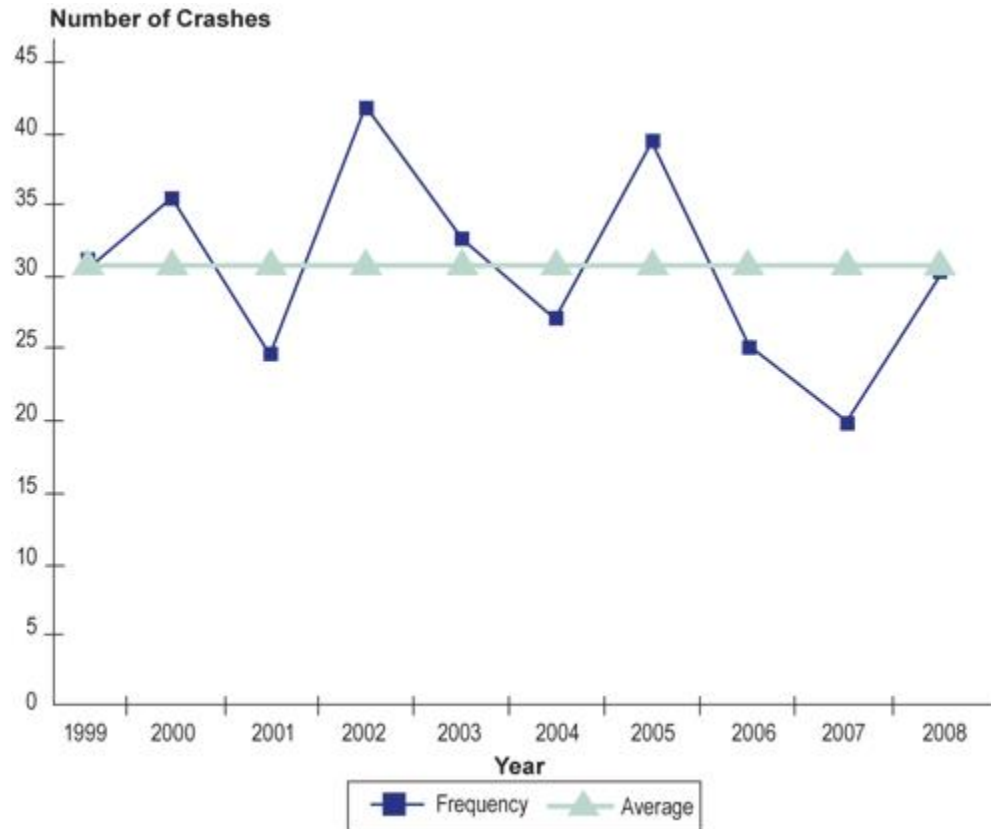
How can we decide if evidence helps us?

- ▶ Find the right evidence
 - ▶ Decide whether it fits our question
 - ▶ Decide to what extent the study can be believed
 - ▶ Think about how it applies in our situation
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Speed cameras and road accidents

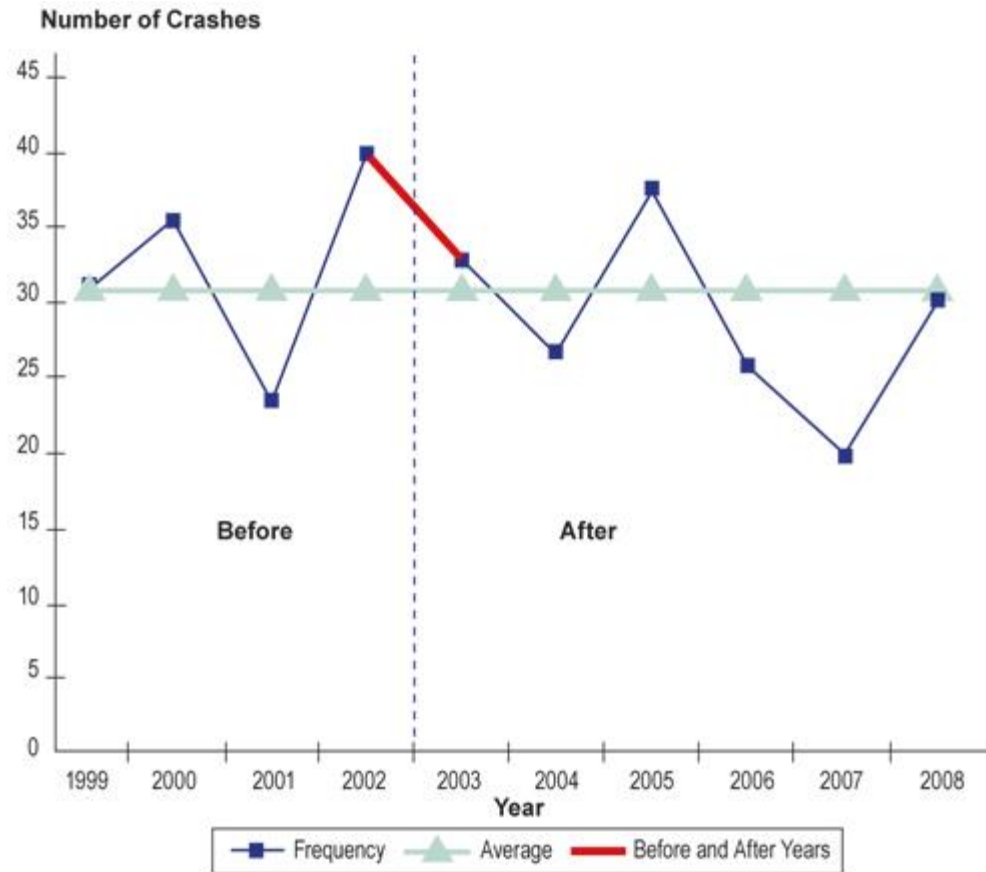
- ▶ Speeding is associated with an increase in accidents
- ▶ Putting up speed cameras in accident blackspots reduces accidents

Example graph showing number of crashes at an intersection



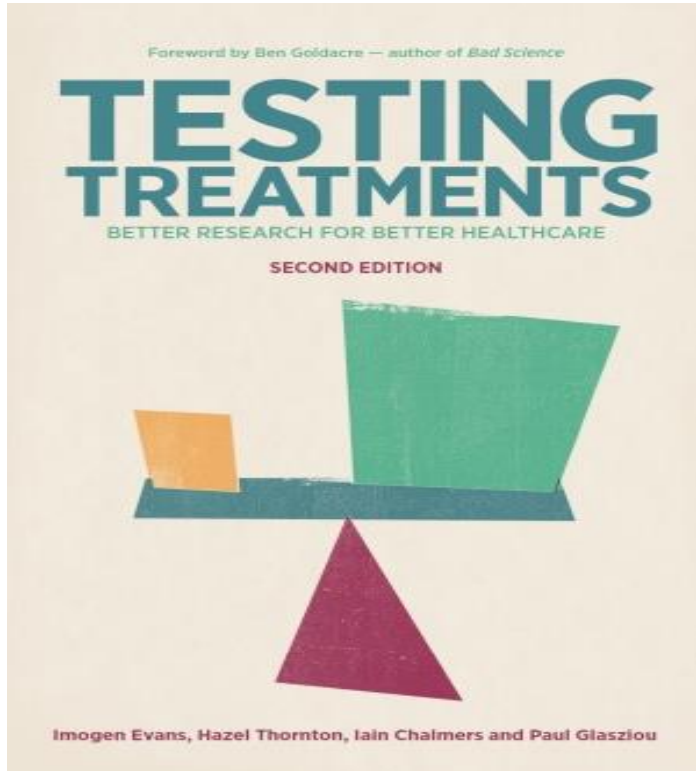
US Department of Transportation Federal Highway Administration (2010) *Highway Safety Improvement Program Manual*

Example graph showing number of crashes at an intersection before and after an intervention to improve safety



US Department of Transportation Federal Highway Administration (2010) *Highway Safety Improvement Program Manual*

Resources



<http://www.testingtreatments.org/>

