

Public health evidence: what is good enough evidence, and what evidence do we need?

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- **1. What is “good enough” public health evidence?**



- The word “Evidence” is often used synonymously with randomised controlled trials
- Sometimes these are possible and sometimes not, particularly when evaluating the wider social determinants of health, which are difficult to randomise

Is the best the enemy of the good?

- Making the case for collecting better public health evidence is very often seen as synonymous with “doing trials”
- As opposed to making the case for collecting “best possible” evidence in complex settings
- Sophistication of research design needs to be matched to the research question, the intervention, the degree of certainty we require, and the sort of effect we are trying to measure (among other things)



- **2. What evidence do we need?**

Methodological “aptness”

Research question	Qualitative Research	Surveys	Case control studies	Cohort Studies	RCTs
Effectiveness Does this work?				+	++
Effectiveness of service delivery: How does it work ?	++	+			
Salience Does it matter ?	++	++			
Acceptability Will children/parents want to use it?	++	+			+
Appropriateness Is this the right service for these children?	++	++			



What public health policymakers say they don't like

- “Policy-free evidence” - research that does not answer clear, or policy relevant questions
- “Researcher naïveté” of the policy environment (which militates against knowledge transfer between science and policy)
- Evidence from far down the causal chain, (often concerned with health behaviours and clinical issues, not with broader social determinants of health)

- “Researchers are overly concerned with critically appraising internal validity (bias)”
- “Not concerned enough with assessing whether research evidence is generalisable”

DEMOS

PROJECTS PUBLICATIONS AUDIO/VIDEO **BLOG** EVENTS

Evidence based conservatism

by Max Wind-Cowie

- *“an openness to the importance of proof for things in which you believe and, therefore, the possibility of being proven wrong sometimes as well”*

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- Working *in partnership* with colleagues in Local Government requires a better understanding of what counts as “evidence”, how decisions are made, and what influences decisions to use evidence and to conduct evaluations
- i.e. Understanding “**Evidence cultures**” in housing, transport, planning etc
- As a prelude to developing meaningful and useful new public health evidence



Systematic review of evidence use outside the health sector

- The aim of this review was to synthesise qualitative research studies about local decision-makers in policy sectors broadly related to the built environment
- To find out how research evidence is used and perceived in those sectors



Evidence use outside the health sector: some similarities, some differences

- **Much is the same** as in health-related fields, particularly the finding that evidence is often used ‘tactically’, as a means of obtaining support for decisions which have already been made.



But! some important differences:

- First, **direct collaboration** between researchers and policy-makers or practitioners are much more rarely mentioned
- Second, '**credibility**' is an important perceived facilitator of evidence use, and appears to have as much to do with the personal status of academic researchers as with the robustness of the evidence.
- Third, many decisions in non-health sectors are limited much more by **political or legal constraints** than those in public health or clinical practice; since these factors must generally be prioritised over the use of evidence, the scope for the latter to inform decisions is often limited.
- (also: money)



What is “good enough evidence?”

- It depends on: the effect size, the risk of harm, the cost, the causal path, how well theorised the intervention is, existing knowledge about whether is likely to work (“ equipoise ”)
- Interventions with large, rapid effect sizes, which have been consistently replicated – methods are enough. Straightforward description is enough (if the sources are credible, transparent, and can back it up with evidence which can be checked independently... That’s what keeps historians and journalists in a job



- If interventions are cheap and harmless we don't need to evaluate them at all (astrology, homeopathy, smiling at people)
- If they are expensive, and grand claims are made, there is uncertainty about effects, particularly small effects, and have a risk of harm, then we can demand stronger evidence
- Some things don't need "evidence", though it can be useful (building warm dry homes for people to live in); though if we are choosing between options - with little to choose between them - then better evidence becomes important

Design	Good for...	Not so good for...	e.g.	Other Issues
Case studies (descriptive)	<ul style="list-style-type: none"> - Interventions that have already happened - Hypothesis generation - Identifying possible adverse effects - "Thick description" - Describing implementation 	<ul style="list-style-type: none"> Hypothesis testing - Quantifying small effects - Inferring causation 	Case studies of active travel cities	<ul style="list-style-type: none"> - "Power to convince" varies between sectors
Uncontrolled before/after studies	<ul style="list-style-type: none"> - Quantifying impacts - Monitoring adverse effects - Identifying large, rapid effects 	<ul style="list-style-type: none"> - Assessing effectiveness - Small possibly confounded effect sizes 	Evaluations of national/state smoking bans (at least 8 studies)	<ul style="list-style-type: none"> - May be few measurement points before/after (may not matter) - Baseline can be difficult to establish - No counterfactual
Controlled before/after studies	Assessing effects of interventions (compared to no intervention, or alternative)	Thick description	<u>McGonigle and Kirby (1936)</u> - rehousing from slums in Stockton on Tees	<ul style="list-style-type: none"> - Difficult to find appropriate "control" areas - Can't take account of unknown confounders

- Context, Mechanisms, Outcomes: realist or other theory-based evaluation, or indeed some standard evaluation approach – which are also capable of addressing context, mechanism, outcomes



Design	Good for...	Not so good for...	e.g.	Other Issues
RCTs ("True experiments")	Assessing effectiveness	<ul style="list-style-type: none"> - Assessing wider structural changes (there will never be an <u>RCT of new roadbuilding</u>) - Integrating multiple health and non-health outcomes across different sectors 	Well London etc etc	Criticised for trading off internal vs external validity (though can do <u>CRCTs</u>)

By definition, not possible for Natural Experiments, (because they are Unnatural Experiments) (though nesting of RCTs within Natural Experiments is possible)

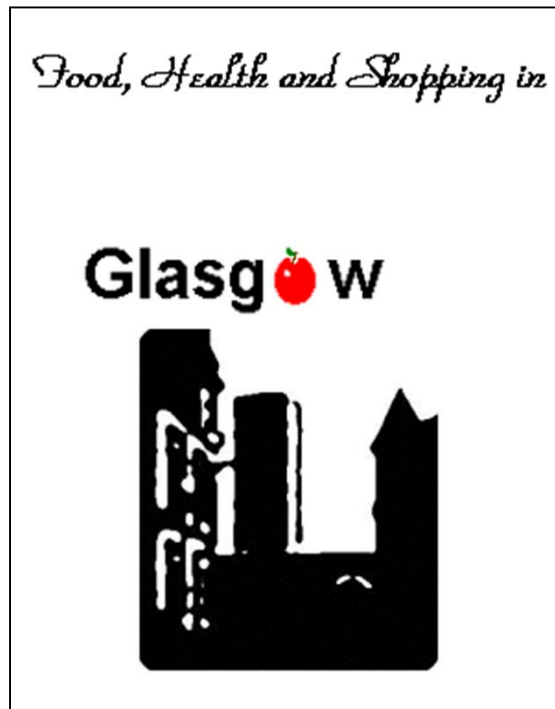
- *“Certainly in British politics, the power of a story beats almost anything.”* (Policy advisor, UK)
- This suggests that the well-rehearsed ethical, methodological problems with evidence are only part of the story
- Politicians often prefer like “softer,” descriptive evaluations, which are more expedient/more acceptable



In a nutshell

- ...there is such a thing as “good enough” evidence...but we often don’t admit it.

Reducing geographical inequalities in diet: a study of the effects of a new supermarket in a deprived area of Scotland



What did previous research tell us?

- Numerous observational quantitative studies in the UK, USA and elsewhere indicate that there are geographical variations in food price and availability
- Residents of deprived neighbourhoods are at a particular disadvantage
- Deprived neighbourhoods that have poorer access to affordable food have been termed 'food deserts'



Policy context

‘Improvements in the local food retail economy can provide employment for local residents, a pathway in to new skills and training opportunities, reduce crime and improve health by providing a range of quality goods at affordable prices....we have to tackle social exclusion and make it easier for people living in poor neighbourhoods to make healthy lifestyle choices’

Department of Health (1999) Improving shopping access for people living in deprived neighbourhoods. Policy Action Team 13.

- A new 24-hour hypermarket (Tesco) in Shettleston was planned for 2001
- This provided an opportunity to explore supermarkets' contribution to health/area regeneration - and impacts on “food deserts”



What is the area like...?

“You'll be lucky to live to 60 here. But it's not the third world ... it's Glasgow's East End.

Shettleston's diet of chips [fries], fags [tobacco] and booze means that life expectancy is actually falling in one of the most deprived parts of the UK”

Sunday Observer March 14, 2004

Male life expectancy is 63 in Shettleston, Glasgow

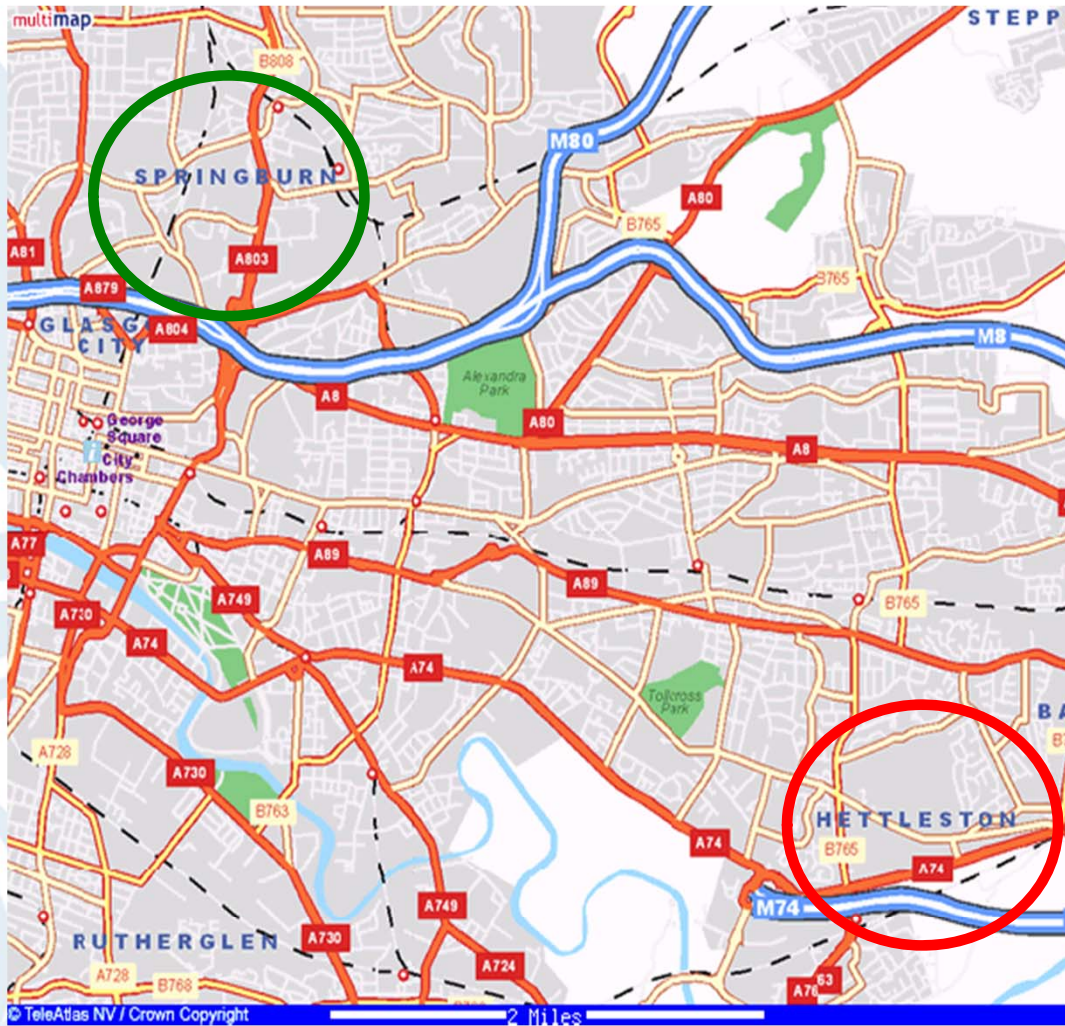
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Q: What might the a) positive and b) negative effects of this intervention be?



Springburn



Shettleston

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- Shettleston (control area) and Springburn in Glasgow (intervention area) - 2 of most deprived areas in the UK - closely matched (DEPCAT-7)
- New superstore (Tesco) in Shettleston planned for 2001
- Turned down, built in Springburn
- Opportunity to explore supermarkets' contribution to health/area regeneration - and impacts on "food deserts"
- Postal survey before (n=3975) and 1 year after; focus groups; retail survey



- Outcomes:
 - Fruit consumption (portions per day)
 - Vegetable consumption (portions per day)
 - Fruit & Vegetable consumption (portions per day)
 - Self-rated health (excellent, good, fair, poor)
 - GHQ-12 (measure of psychological well-being)



Results – dietary change within sites

<i>Outcome</i>	Intervention area		Control area	
	Baseline	Change	Baseline	Change
Fruits	1.97	+0.09 (p=0.35)	2.11	+0.12 (p=0.19)
Vegetables	2.06	+0.15 (p=0.14)	2.16	+0.25 (p=0.01)
Fruits & Vegetables	3.92	+0.29 (p=0.07)	4.16	+0.25 (p=0.003)
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Summary

- Inconclusive evidence for an intervention effect for diet and general health in main sample
- Marginal improvement or substantial negative change – statistically inconclusive
- Even if randomisation is not possible, it is very important to use ‘controlled’ studies

**Cummins S, Petticrew M , Higgins C , et al. J
Epidemiol Community Health 2005;59:1035–40**

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