

Just what research design am I using?

Shona J. Kelly

Professor of Interdisciplinary
Research

Presentation Plan

- o an introduction to the basics of research study design
- o a brief overview of the most common designs
- o exhortation to use mixed methods

Background

- o how I became an 'expert'
- o badly taught and badly described
- o interdisciplinary differences in expectations
- o no single decent textbook/guide
- o much misuse of jargon

Start with the research question

- o Do you want to ...
 - o show that a government programme works
 - o show that intervention A is better than intervention B
 - o demonstrate that X causes Y
 - o describe how a client uses a service
 - o see how a new role fits into a team
 - o count how many people ...
 - o measure knowledge about a topic
 - o ...

Research Design Basics 1

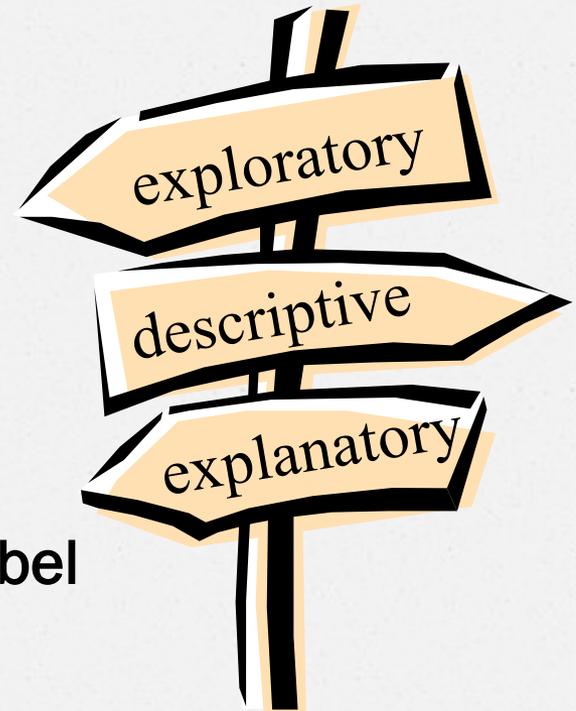
- o the terminology is poorly used
- o Start by describing your project with these 4 classifications and then select your design

1. Purpose
2. Time Frame
3. Context
4. Structure

Classification: Purpose

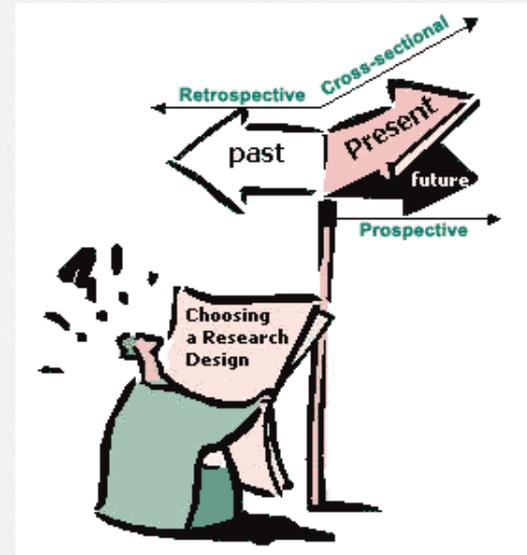
- o Exploratory
- o Descriptive
- o Explanatory

none of these are a sufficient label



Classification: Time Frame

- o Retrospective Studies
- o Prospective Studies
- o Cross-sectional Studies
- o Longitudinal Designs



none of these are a sufficient label



Classification: Context

- o field setting
- o laboratory setting
- o clinical setting

none of these are a sufficient label

Research Design Basics 2

- o it is not qualitative v quantitative
- o the fundamental division is between **experimental v non-experimental**
- o and the key to understanding this is how you engage with the research participant

Classification: Structure

- o (True) experimental designs
- o Quasi-experimental designs
- o non-experimental designs

This should be the basis for choosing your research design

Criteria for experimental designs

- o random assignment
 - o so, a minimum of 2 groups
- o control - experimental NOT statistical
- o manipulation
 - o YOU must do something
- o RCTs are only one little subtype of experimental designs

Criteria: Quasi-experimental designs

- o one of the experimental criteria is missing
- o usually randomisation
- o term frequently misused

Non-experimental designs

- makes up most of published health research
- just because there are numbers/counts doesn't make it experimental
- a mixed bag ... includes surveys, using administrative data, interviews, analysis of text, etc

'Rigor' hierarchy

- o NIHR or NICE
- o the 'official' list



Figure 1. Levels of evidence

- o not reality
- o particularly for 'soft' stuff like patient experience, public health, or problems with multiple causes and solutions

General principles that sit behind research

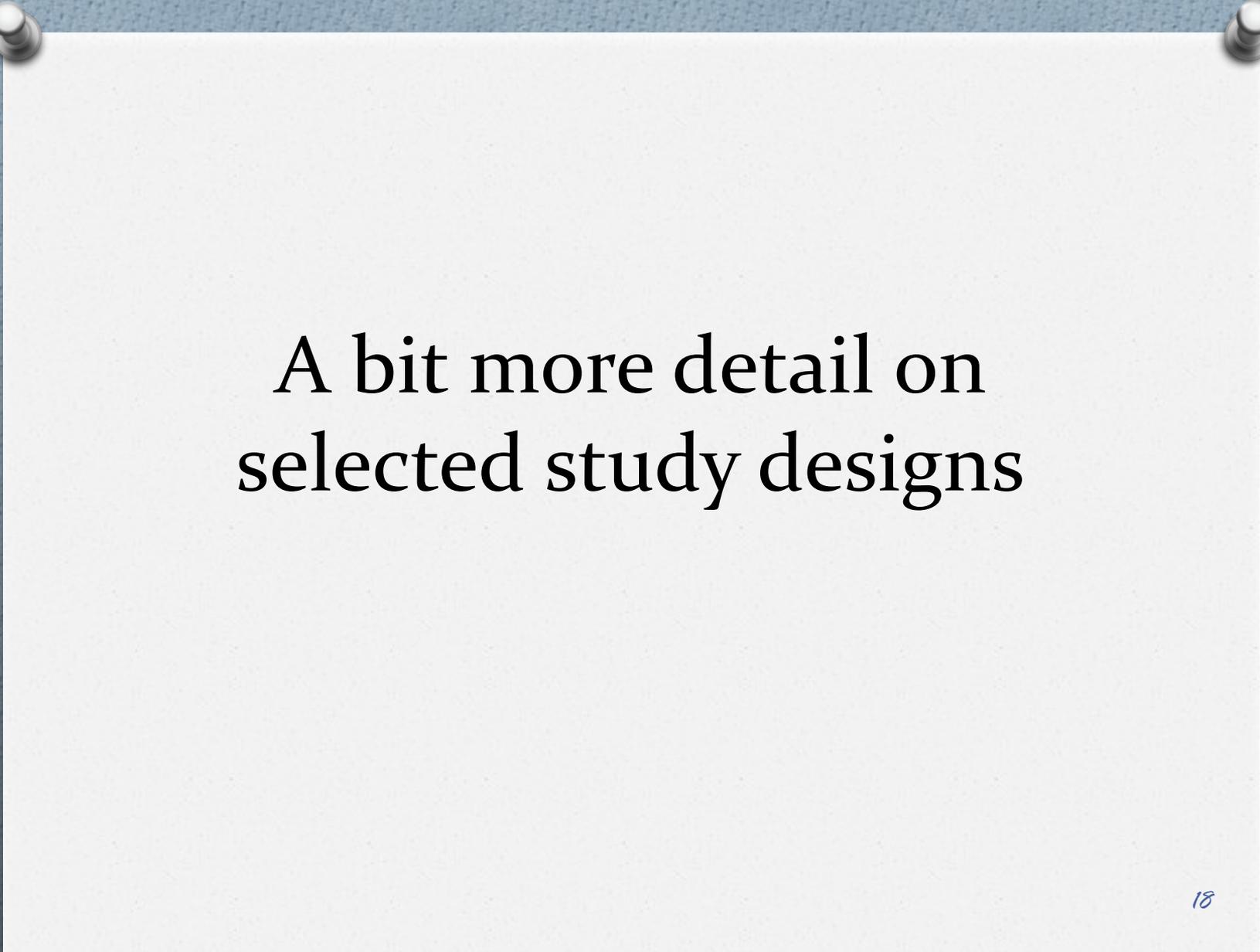
- o the purpose of peer review
- o reproducibility - can someone replicate?
- o generalisability
- o blinding to remove unconscious effects
- o bias as opposed to random error

Recommendations

- o Don't get stuck in a philosophical debate about methodology
- o Go as rigorous as can be reasonably expected
- o most researchers DON'T use multiple methods because they were 'apprenticed'
- o Don't assume qualitative is easier
- o Make sure any data you might need actually exists

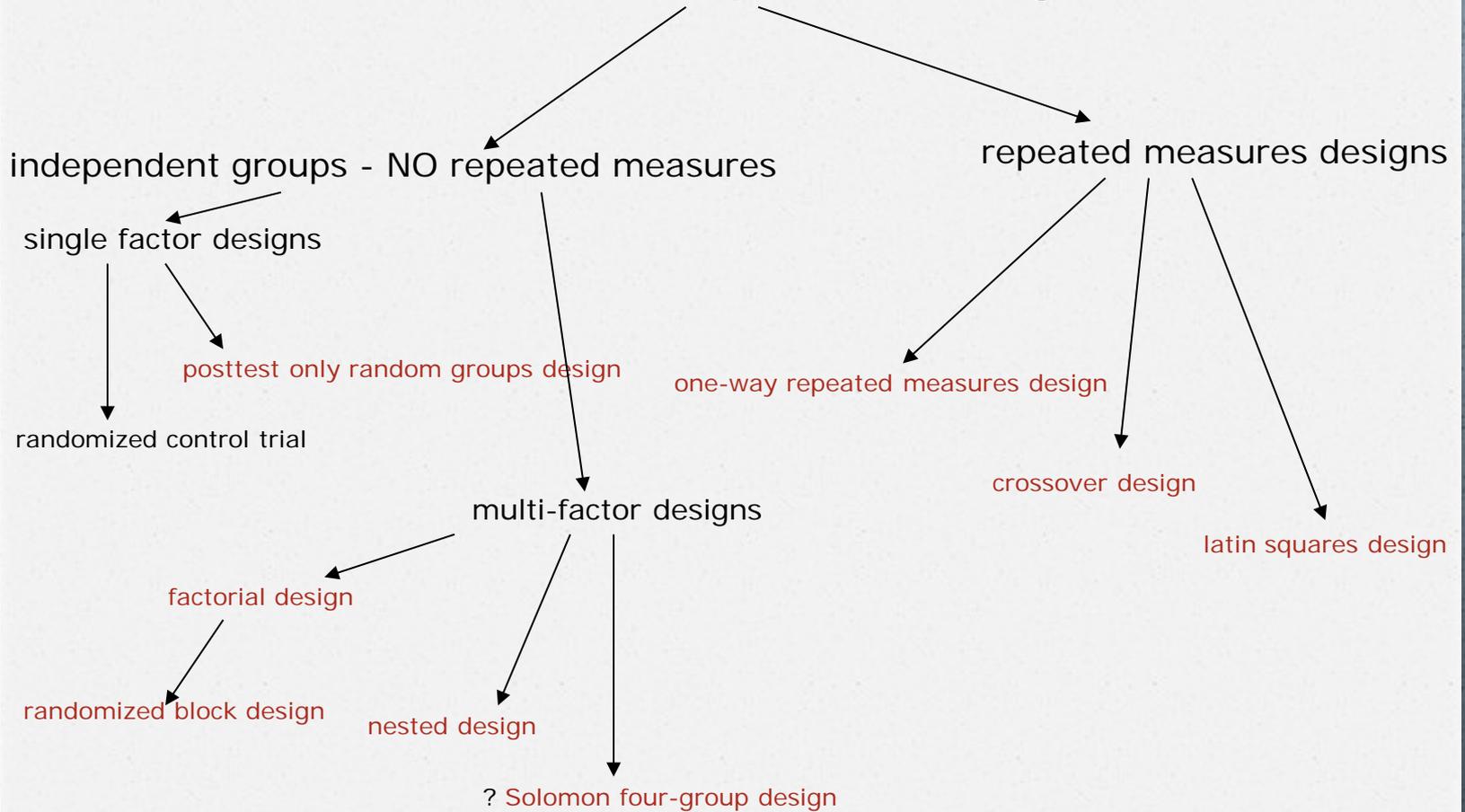
Discuss

- Break into pairs and discuss your research



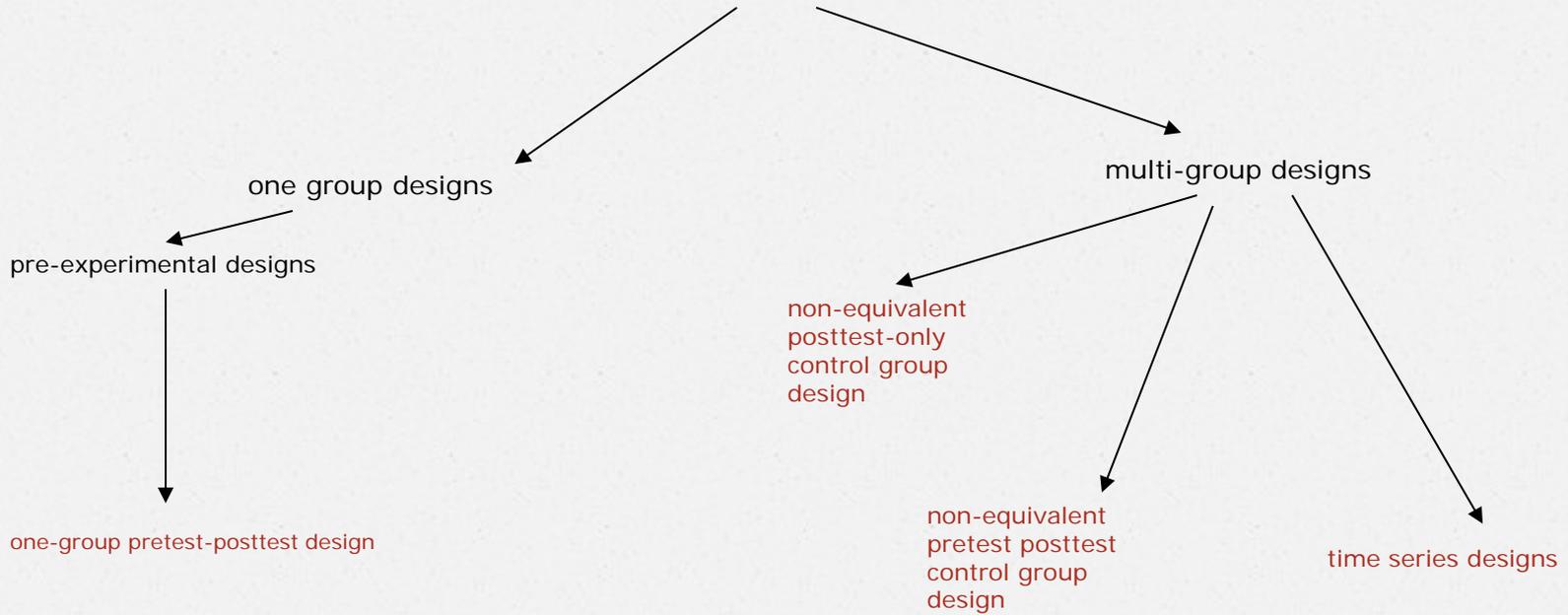
A bit more detail on
selected study designs

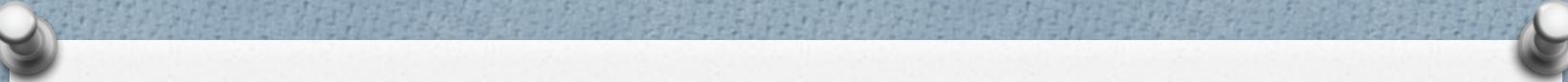
True Experimental Designs



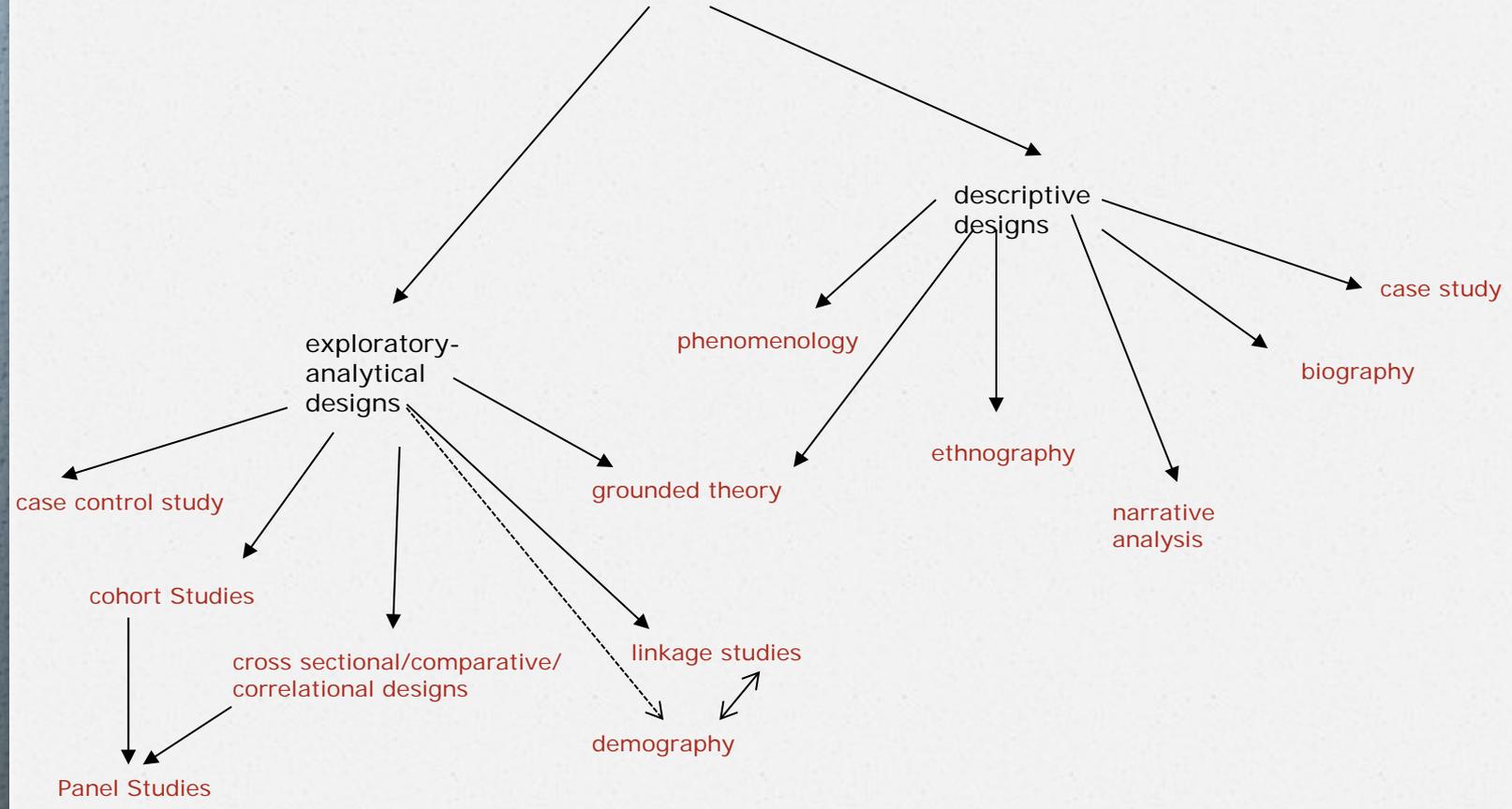


Quasi-Experimental Designs





Non-Experimental Designs



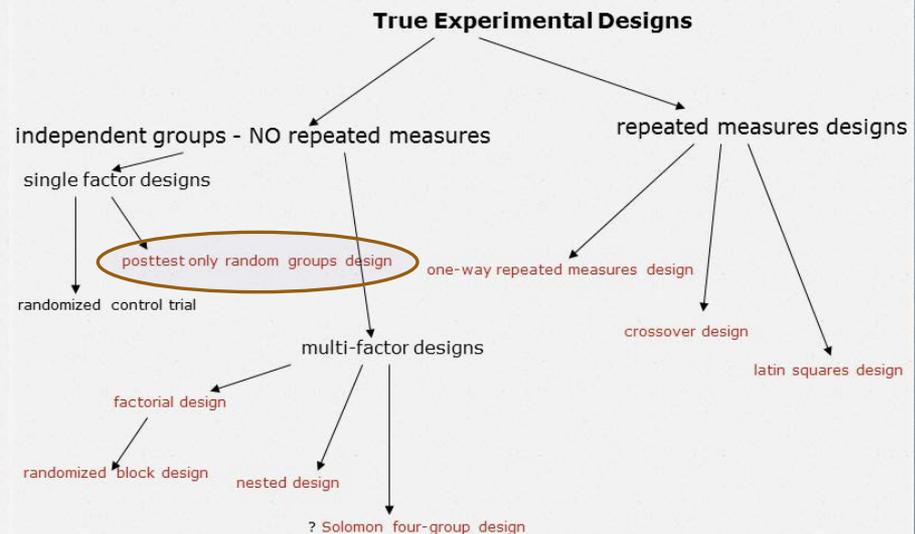
Why are there all these different designs?

- o the nature of your question
- o the nature of your study participants
- o ethics or governance issues
- o cost and time available

- o Let's look at some specific designs

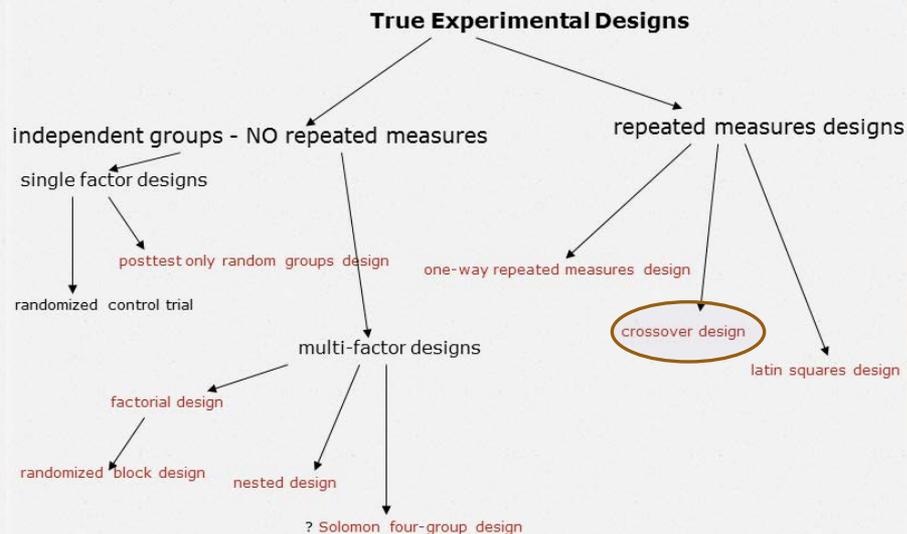
Does this intervention increase seat belt use?

- o could use an RCT but asking participants if they use one before may remind them to use them

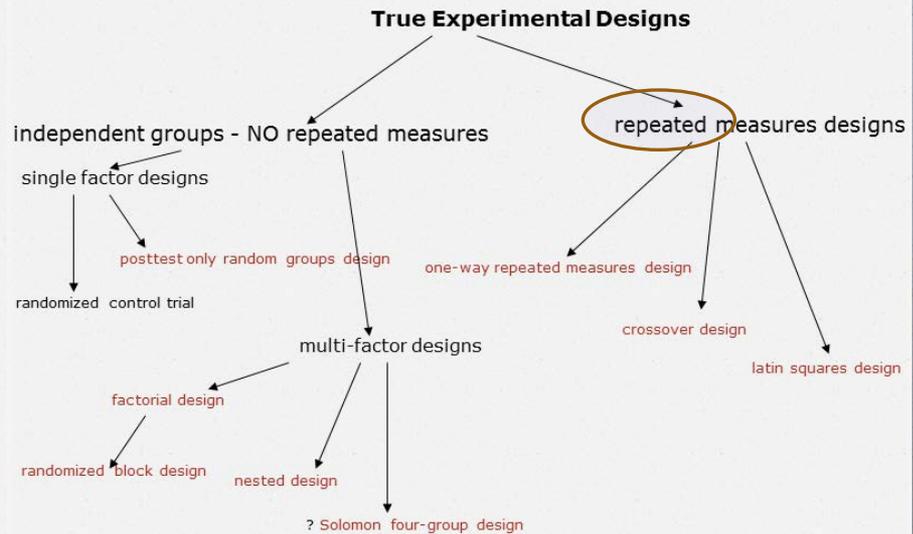


Benefits must continue

- o for example ending benefits may lead to homelessness

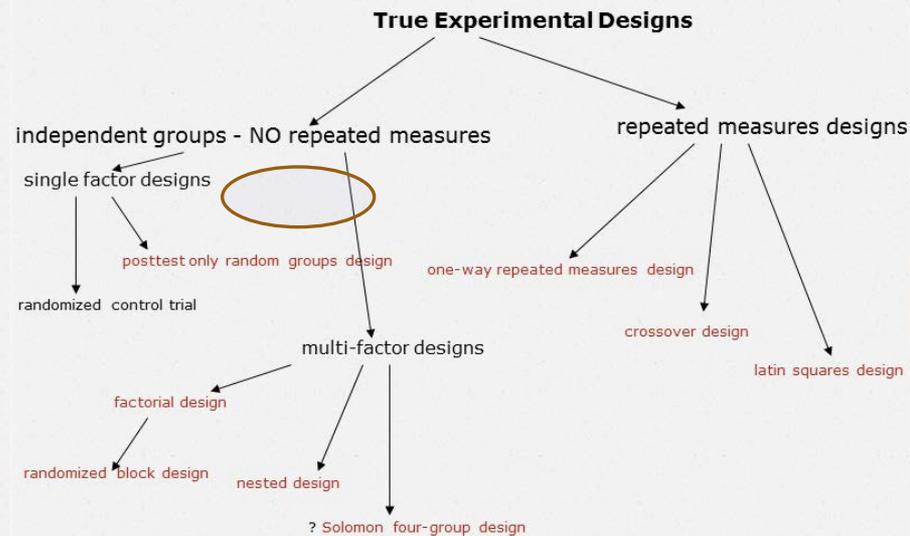


What is the optimal length of a TV advert campaign?



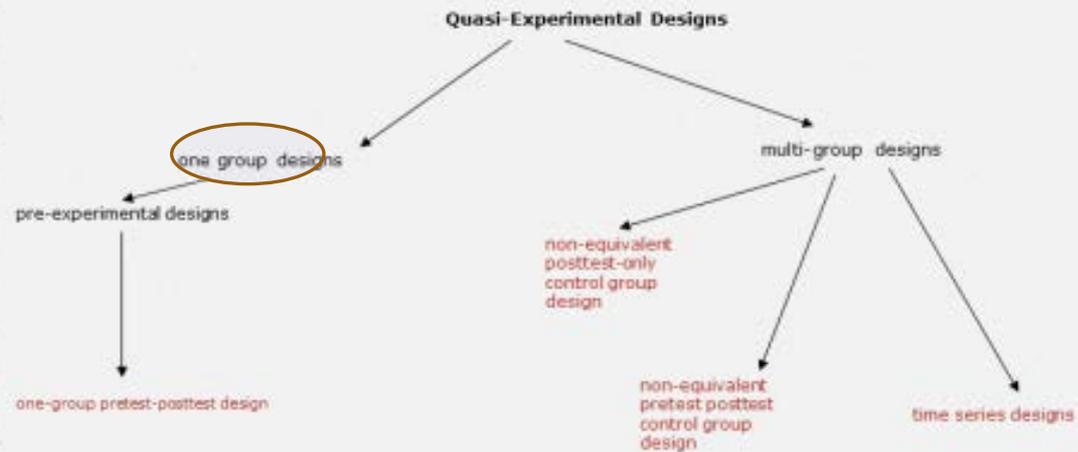
Participants might share what they learn about your intervention ...

- o You can randomise groups



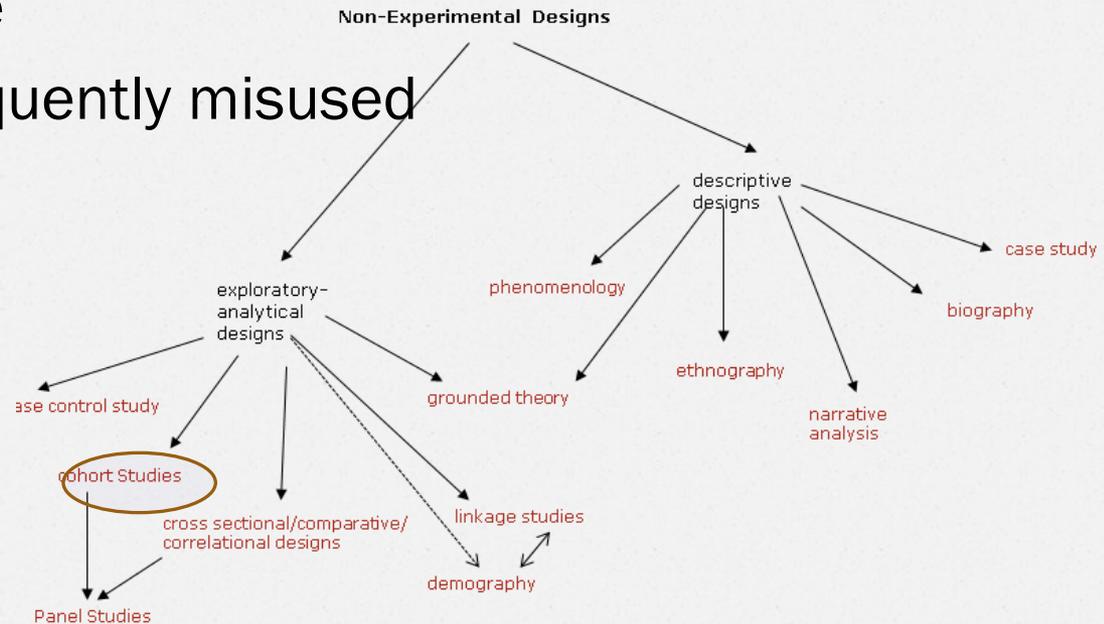
Does this treatment improve a patient's condition?

- o Instinctively use this design. But be careful! Without a comparison group how do you know they didn't just get better anyway?



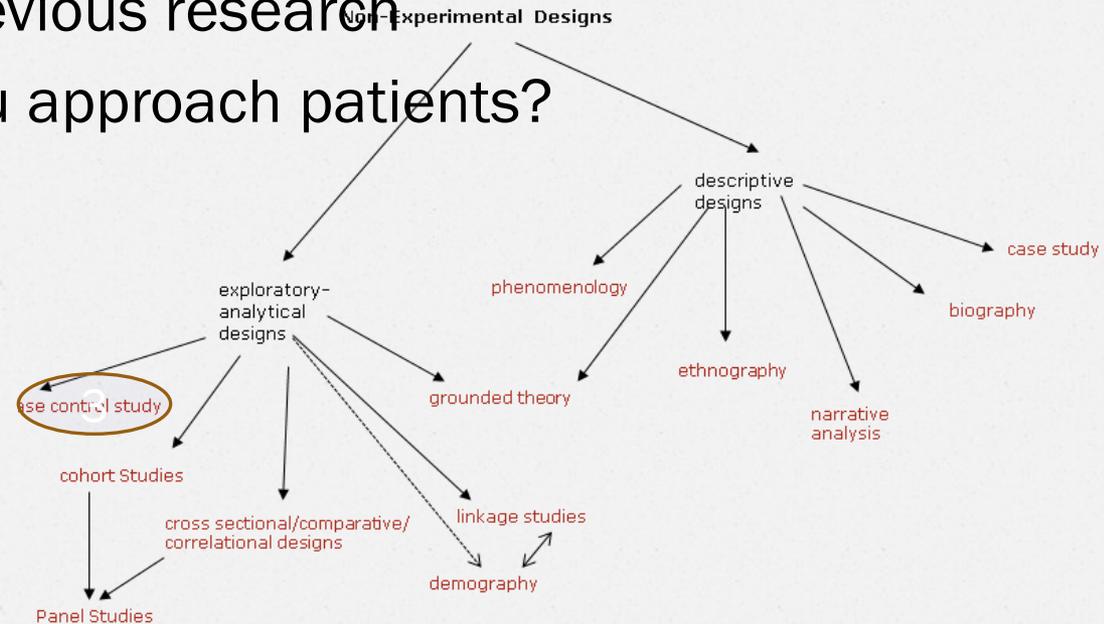
Can't ethically expose people to hazardous substances

- o find a group with a RANGE of potential exposure
- o term frequently misused



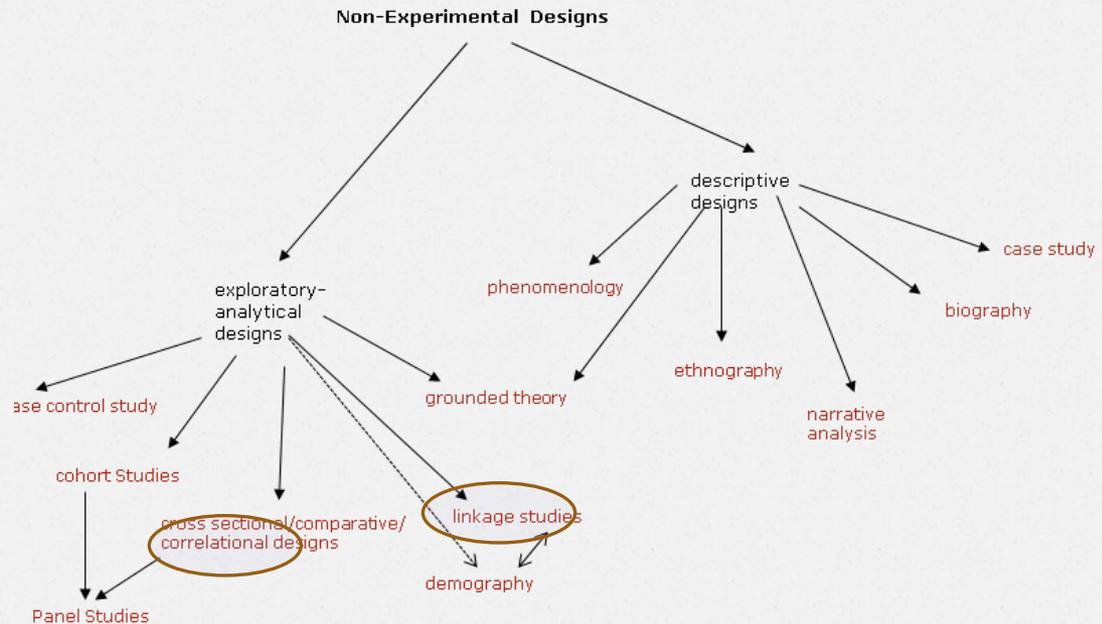
What causes this radicalisation?

- o blinding crucial
- o relies on previous research
- o when do you approach patients?



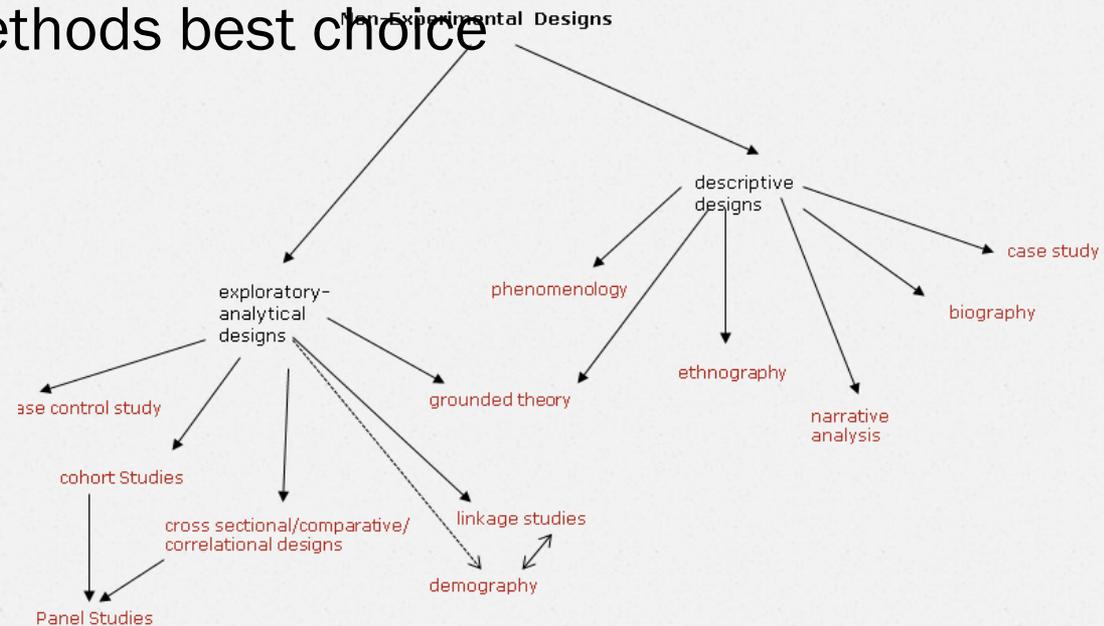
How many people have diabetes?

o two choices - both have limitations



Why don't patients take their tablets?

- o two choices - both have limitations
- o mixed methods best choice



Additional issues - data

- o Where is your data coming from?
 - o don't assume the data already exists - check and confirm YOURSELF
- o data storage has changed over time so older records are more parsimonious
- o linking data is probabalistic

Additional issues - ethics

- o Understand the ethical and governance issues
- o who gives permission for access to people or data?
- o who owns the data if you didn't collect it?
- o change of ownership change of access

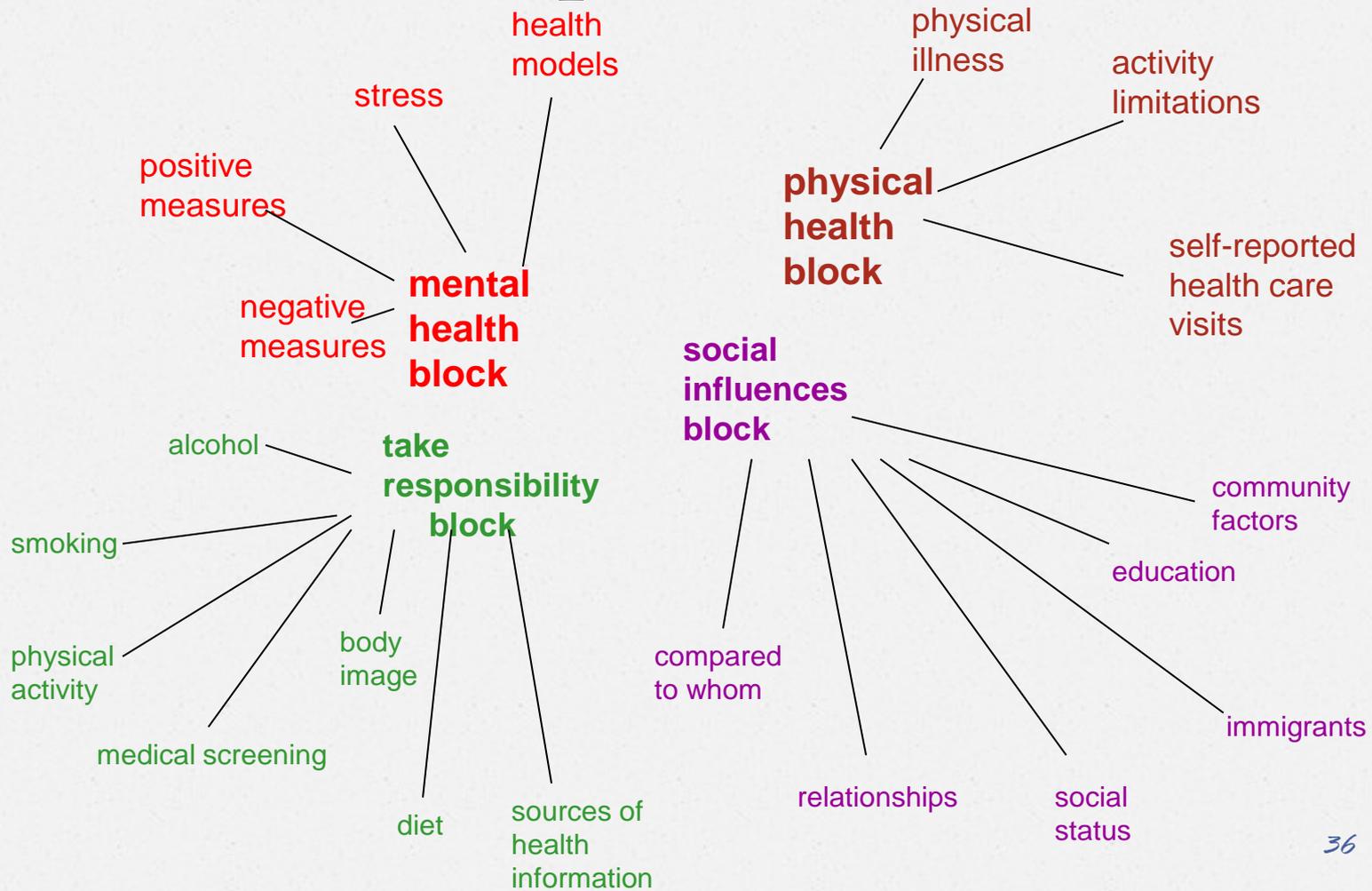
Mixed Methods

- o YES!!!! maybe always!
- o But ... not an excuse for poor quality or lack of rigor
- o stop agonising over combining them in conclusions
 - o convergent parallel mixed methods
 - o triangulation
- o some examples

Example: SRH 1

- o In general how would you describe your health? excellent, very good, good, fair or poor.
- o focused on E VG and G
- o interested in gender and SES differences
- o data: 23 interviews; health survey data; provincial healthcare records data
- o analysed independently then fused and re-visited some analyses

Example: SRH 2



Example: role substitution 1

- o NIHR call
- o background
 - o shortage of doctor trainees in region
 - o out of hours & weekend care
 - o HEE funded 300 ANP posts
 - o little research and most qualitative which suggested problems

Example: role substitution 2

o We proposed

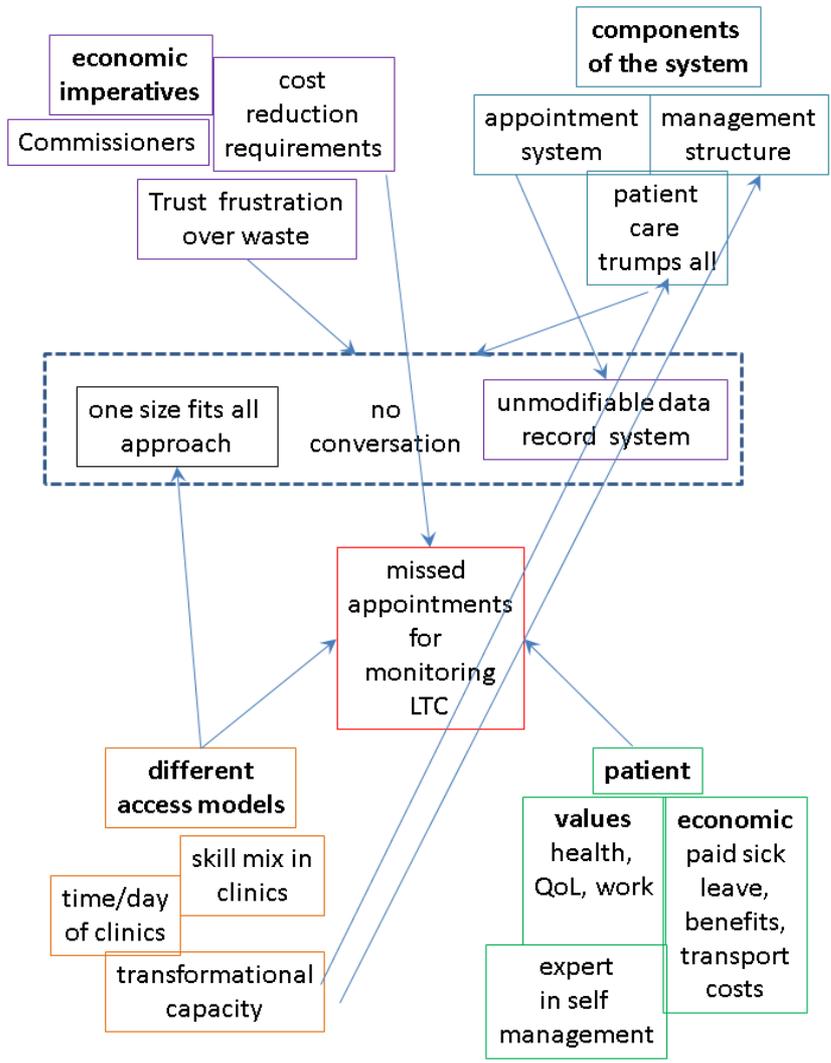
1. Calderdale Framework
2. quasi-experimental component
3. ethnographic observation
4. economic evaluation
5. synthesis & dissemination into practice

Example: DNA 1

- o 10-15% of hospital outpatient appointments are missed
- o Sionnadh - literature review
- o UK situation
 - o little studied
 - o easy interventions already in place
 - o 'easy' place to save money

Example: DNA 2

- o multiple causes:
 - o patient factors - age, ethnicity, economics
 - o purpose of appointment - pre-op, chronic conditions, post-op follow-up
 - o clinic factors - patient mix, hierarchy', research
 - o appointment system - externally supplied, mostly unchangeable,



Current Working Model

Questions