



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Research Design

Trawsnewid Addysg; Trawsnewid Bywydau
Transforming Education; Transforming Lives



www.uwtsd.ac.uk

Writing your research question

- Choose a topic that interests you...
 - ...and **read** everything you can find
- Find an interesting aspect of the topic
 - Ask yourself **who/when/where** questions
- Identify a question within that aspect
 - Ask yourself **how/why** questions
- Is your question
 - **focused?**
 - **complex?**
- Evaluate your question
 - Is it **interesting?**
 - Is it **researchable?**
 - What **types of information** will you need to answer the question? Are those types **accessible** to you?

Crime in apartment buildings

Objectivists wonder:

- Where does crime occur?
- What types of crimes occur?
- Who commits crimes?

Positivists ask:

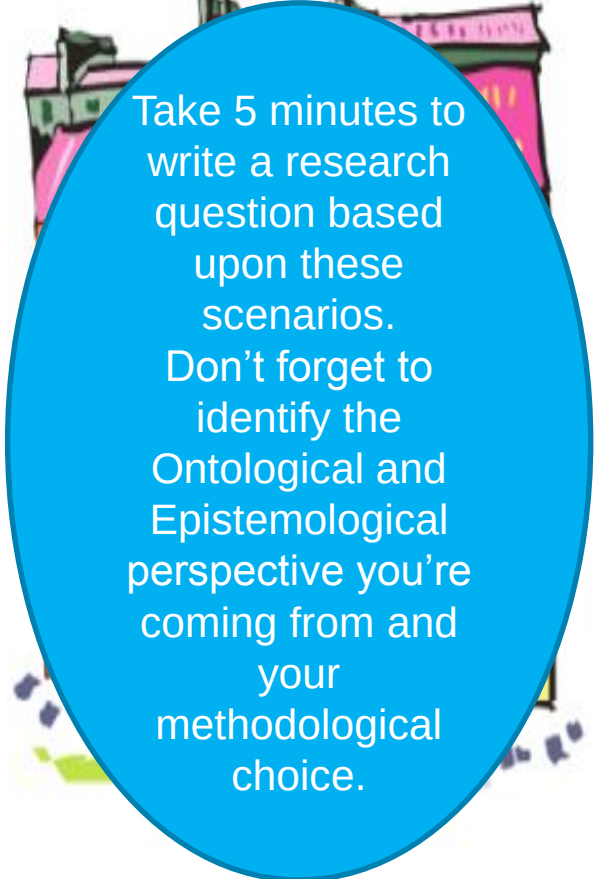
- Do crimes occur in these buildings?
- What crimes occur in these buildings?
- Is there increased risk in these buildings?

Quantitative questions:

- Are crime statistics available?
- Have we categorised the crimes that occur?
- Can we compare these buildings to others?

Quantitative seeks:

- Statistics on crime
- Rates of crime
- Measurements of crime
- Comparison to other buildings



Take 5 minutes to write a research question based upon these scenarios.

Don't forget to identify the Ontological and Epistemological perspective you're coming from and your methodological choice.

Subjectivists wonder:

- What is "crime"?
- Do we all view "crime" in the same way?
- What is the impact of behaviour we call "criminal"?

Interpretivists ask:

- Do residents experience crimes in these buildings?
- What do people in these buildings consider to be 'crimes'?
- Do people feel safe in and around these buildings?

Qualitative questions:

- Have we spoken to residents to get their views?
- Do residents think certain crimes are more or less important?
- Can we observe the interaction of residents or behaviours of passers-by?

Qualitative seeks:

- Experience of crime
- Knowledge of crime
- Interpretations of crime

We've determined our research paradigm based on the ontological and epistemological positions we favour as well as the appropriate methodology...

We've crafted a research question and considered the ethical implications...

So what the f*#\$ do we do now....?



Most effective methods

Learning to select the best research method(s) takes practice

For new researchers, sometimes it's best just to think through a few options and do 'thought exercises'



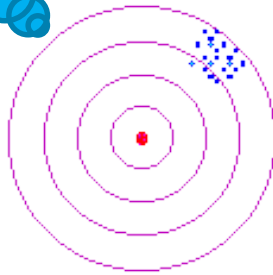
Important things to remember

- Can you justify your methods?
- Do your methods match your methodology?
- Are your methods the most effective for your research question?
- Are your methods suitable for your research context?

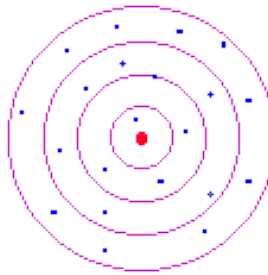
Valid vs. Reliable

A clock that is 5 minutes slow is reliable, but not valid

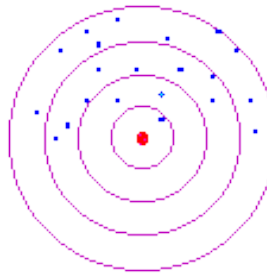
A recently calibrated bathroom scale is both reliable and valid (and often depressing...)



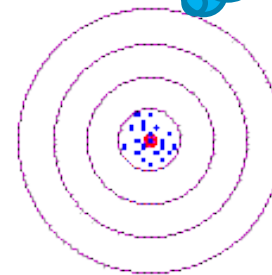
Reliable
Not Valid



Valid
Not Reliable



Neither Reliable
Nor Valid



Both Reliable
And Valid

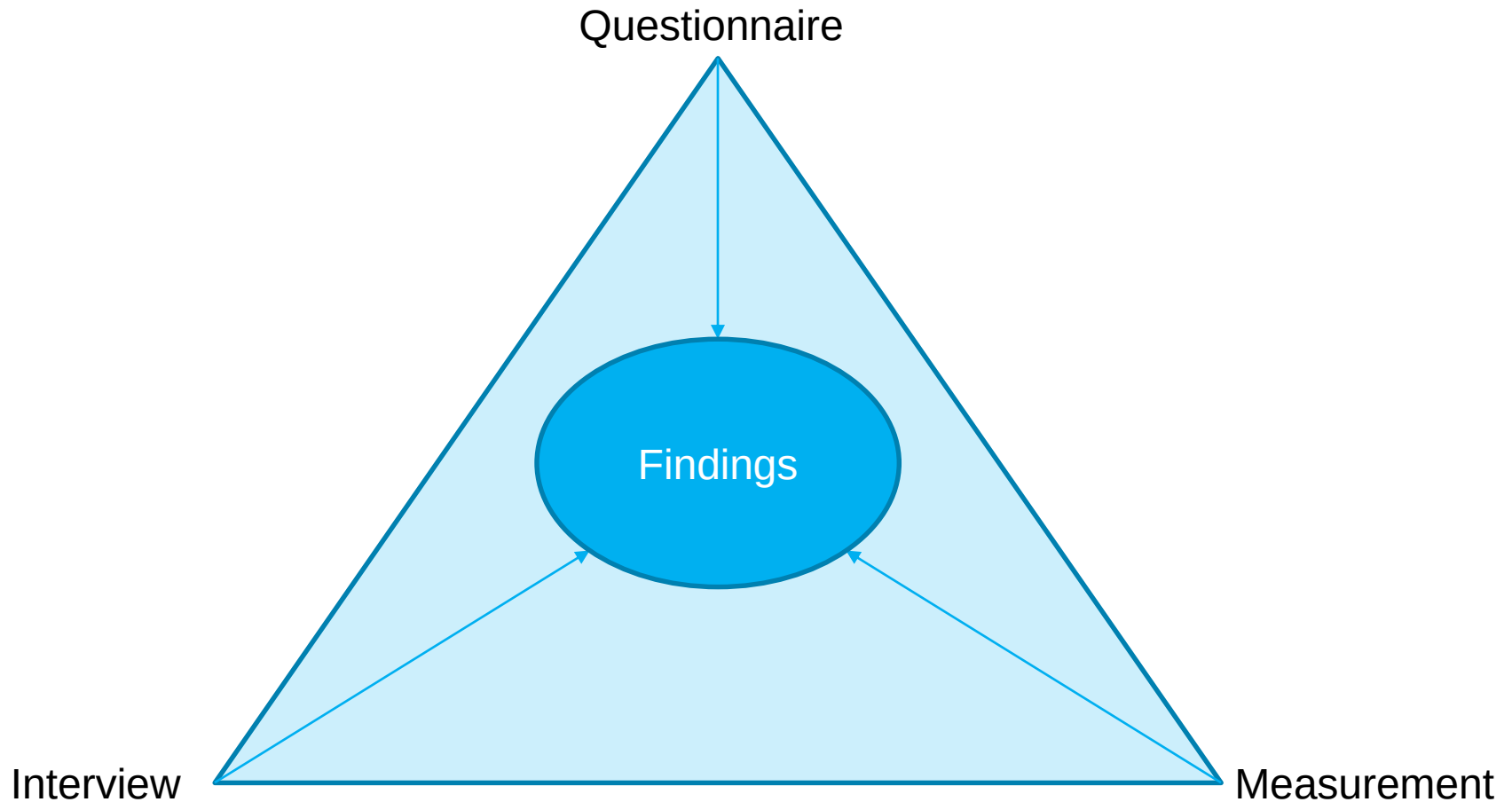
“French people drink more wine than Brits” is valid of a wider population, but not reliable as a measure of specific individuals

Measuring skull circumference to determine running speed is neither reliable nor valid

How do we design for...

- Validity?
 - Does the tool you are using have the ability to measure what you want?
 - What's the best tool for measuring temperature? Distance? Reaction time?
 - Is your tool the *best* possible tool for measuring what you want?
 - Both a ruler and a hand can be used to measure length, but one is better than the other
- reliability?
 - Can your research be replicated and generate similar results?
 - Have you triangulated your methods?
 - Is your sample large enough to be representative?
 - Have you been clear, detailed, and specific in your design?

Triangulation of data



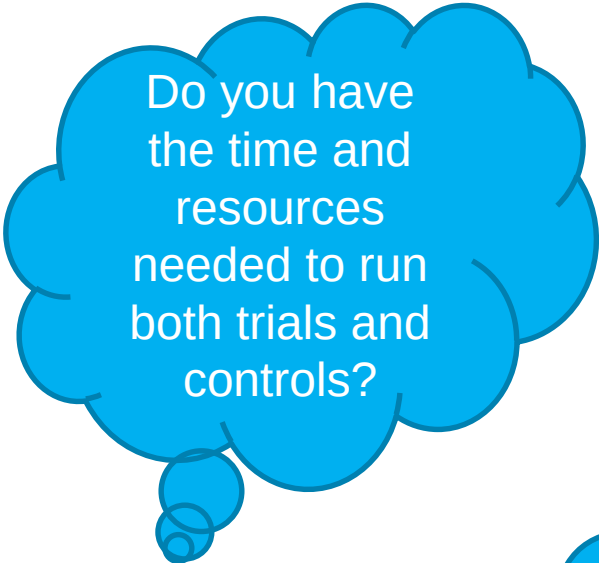
Sample size selection

- $N = (z^2 * SD^2) / E$
 - The minimum sample size (N) is the degree of confidence required (z) squared, times the standard deviation (SD) squared, divided by the acceptable amount of sample error...
 - Generally requires the existence of a pilot study and/or baseline data
- ... or you could just use the bloody chart!
 - Gray p. 232/google (is your friend)
- When using a chart to set your sample size, you can work the same formula BACK after the fact to provide your degree of confidence in the outcome at a specific sample error level—yay algebra!

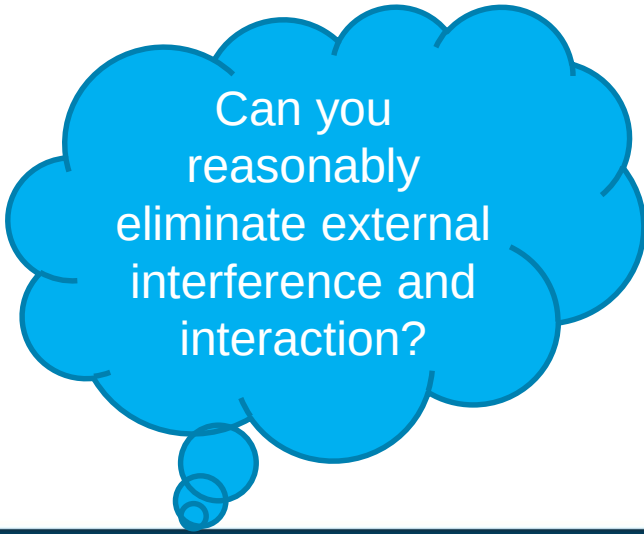
Sampling

- Random
 - Remember that true random has to use a generation system you don't control (e.g. drawn from a hat, random number generator)
- Systematic
 - Selecting every x^{th} element from a population (e.g. every 10th name on a list)
- Stratified random
 - Taking a random sampling from various strata of a population (e.g. 3 randomly selected students from every class in a school)
- Cluster
 - Randomly selecting a percentage of clusters within a population (e.g. surveying all the households on 5 streets in a city)
- Multi-stage
 - Additional stages of random selections (e.g. selecting 5 random counties in the UK, then selecting 3 schools within each county, then selecting 5 classes within each school)
- Quota
 - Stratified sample, but individuals are selected in order to meet quota targets rather than randomly identified (e.g. 3 girls and 3 boys from each class, at least 1 of whom is BAME)
- Purposive
 - Small number of (or even an individual) case specifically selected for attributes (e.g. choosing a female executive to interview about gender bias in corporate hiring)
- Convenience
 - Sampling based on those available to you as a researcher (e.g. giving a questionnaire to the first 500 willing participants outside Tesco)

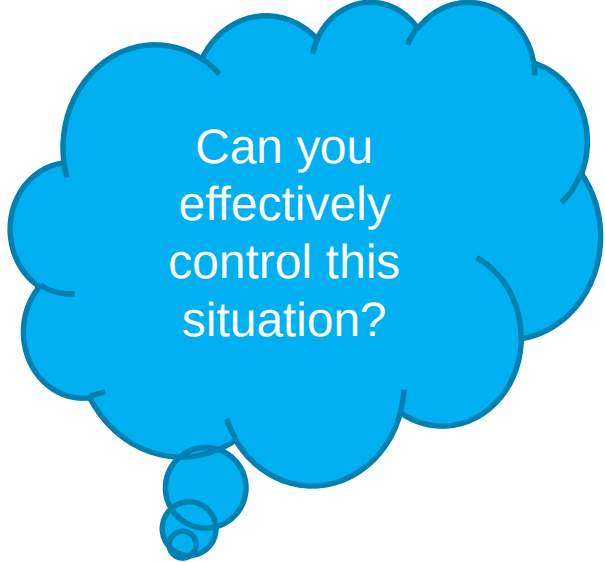
Designing an experiment...



Do you have
the time and
resources
needed to run
both trials and
controls?

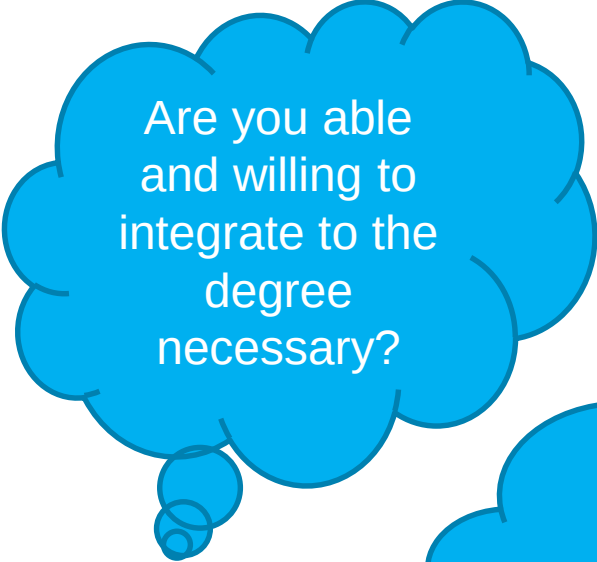


Can you
reasonably
eliminate external
interference and
interaction?

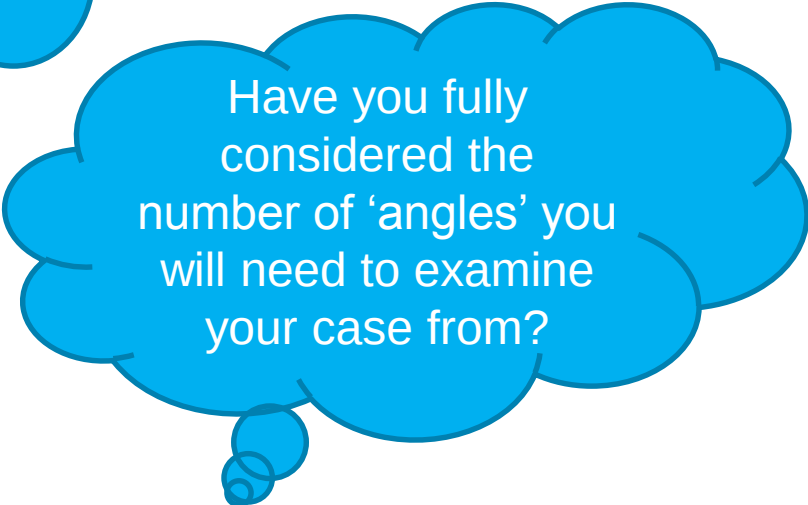


Can you
effectively
control this
situation?

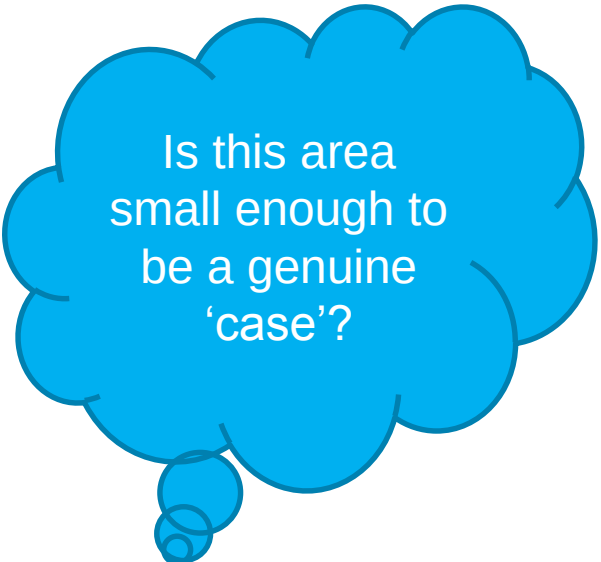
Designing a case study...



Are you able
and willing to
integrate to the
degree
necessary?

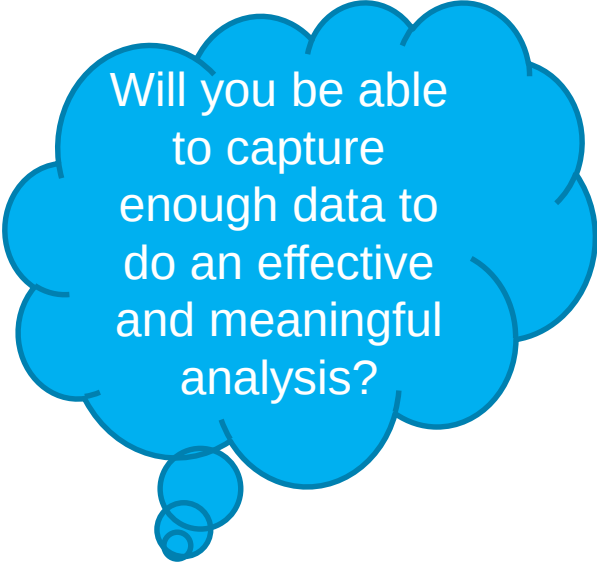


Have you fully
considered the
number of 'angles' you
will need to examine
your case from?



Is this area
small enough to
be a genuine
'case'?

Designing a cross-sectional study...



Will you be able to capture enough data to do an effective and meaningful analysis?

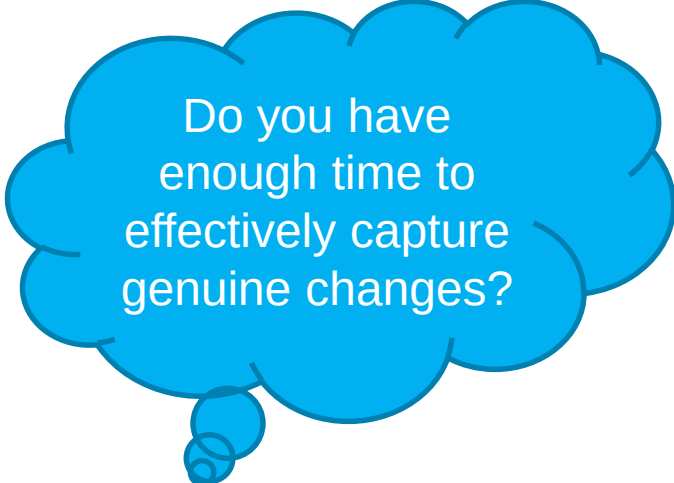


Can what you're seeking be captured in a snap shot?

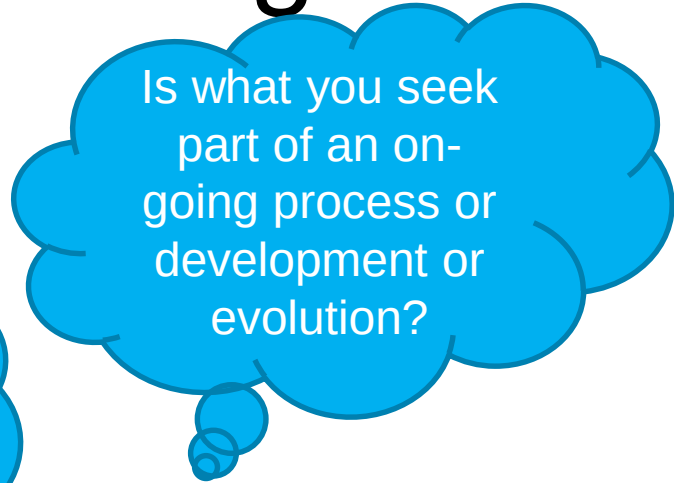


Are you seeking primarily *what is*?

Designing a longitudinal study...



Do you have enough time to effectively capture genuine changes?



Is what you seek part of an on-going process or development or evolution?



Are you seeking primarily ***what is changing?***

Designing an action research study...

Have you considered the need to ***do*** and ***research doing*** simultaneously?

Are your participants truly on-board and fully aware of what is needed?

Do you have enough time and space to operate through several action learning cycles?

Crime in apartment buildings

Objectivists wonder:

- Where does crime occur?
- What types of crimes occur?
- Who commits crimes?

Positivists ask:

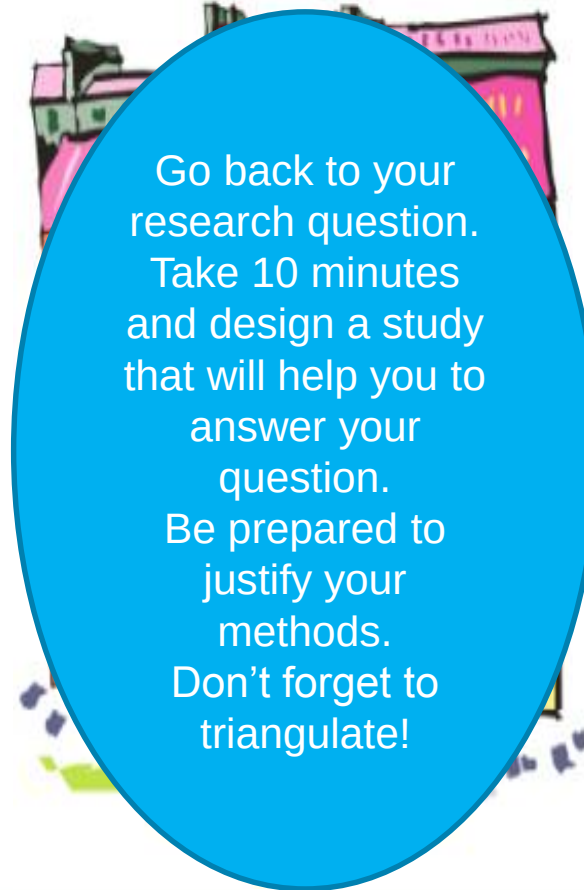
- Do crimes occur in these buildings?
- What crimes occur in these buildings?
- Is there increased risk in these buildings?

Quantitative questions:

- Are crime statistics available?
- Have we categorised the crimes that occur?
- Can we compare these buildings to others?

Quantitative seeks:

- Statistics on crime
- Rates of crime
- Measurements of crime
- Comparison to other buildings



Subjectivists wonder:

- What is "crime"?
- Do we all view "crime" in the same way?
- What is the impact of behaviour we call "criminal"?

Interpretivists ask:

- Do residents experience crimes in these buildings?
- What do people in these buildings consider to be 'crimes'?
- Do people feel safe in and around these buildings?

Qualitative questions:

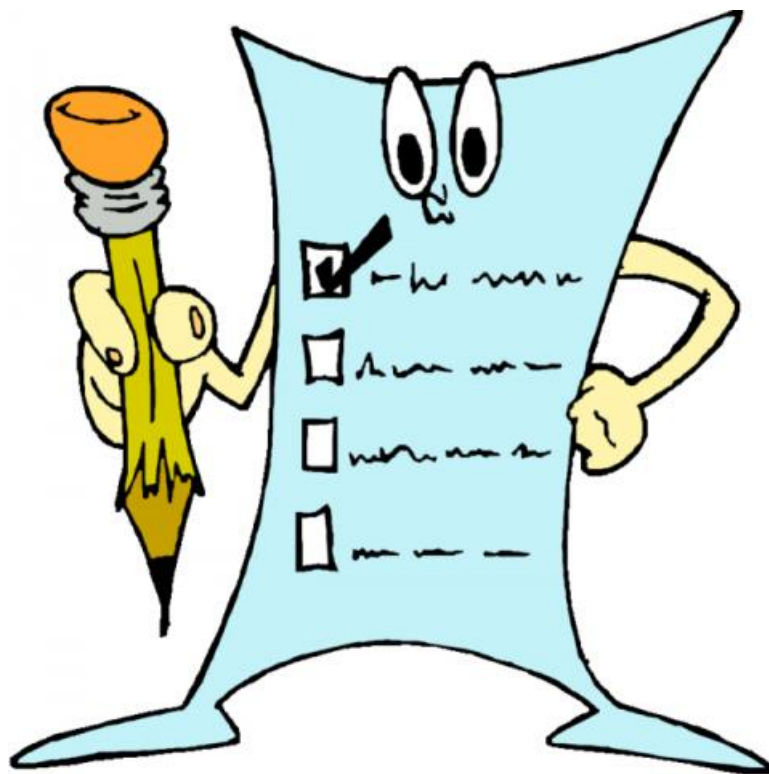
- Have we spoken to residents to get their views?
- Do residents think certain crimes are more or less important?
- Can we observe the interaction of residents or behaviours of passers-by?

Qualitative seeks:

- Experience of crime
- Knowledge of crime
- Interpretations of crime

Making the best research instruments and making the most of our methods

Build a better questionnaire



- Do you prefer outdated, boring films like ‘The Matrix’ or timeless classics like ‘Return of the Jedi’?
- Leading Questions
 - Are written in such a way as to suggest there is a ‘right’ or ‘acceptable’ answer

- Do you feel certain elements of ethnographic discourse have been omitted from the current debate on socio-economic conditions?
- Highbrow/Complicated Questions
 - Even if you think your target respondents will understand what you are asking, simple is always better for a questionnaire

- Would you prefer to take a credit bearing course (Level 4, 5, or 6) that meets weekly for half-day (morning) sessions over 12 weeks or a non-credit bearing course (Level 4 or 6) that meets monthly for one year, but is offered in full-day sessions and provides compensation (which the former course does not)?
- Complex Questions
 - You run the risk of either confusing your reader to the point that his/her response is not an accurate reflection, or just annoying him/her into not responding

- Please select your level of education:
 - Poorly Educated (below GCSE Level)
 - Educated (up to A-Level)
 - Well-Educated (University Level)
- Insulting Questions
 - Alienating your respondents, making them feel angry, making them feel sad, etc. are never good ways to go about conducting research!

- Do you agree that no one should not vote Labour in the next election?
- Questions that include a negative (or double negative)
 - Negatives and double negatives are unnecessarily confusing, and can lead to poor and/or inaccurate responses

- Do you exercise regularly?
 - Yes
 - No
- Ambiguous Questions
 - Never ask a question that doesn't have clearly defined parameters. What does 'regularly' mean? What constitutes 'exercise'?

- Where do you live?
 - Wales
 - England
 - UK
- Unclear Answers
 - Always make sure that that there can only be one ‘correct’ response for individual participants
 - Always make sure there is a ‘correct’ response available for any potential participants

Other questionnaire pitfalls...

- Too long
- Too many open-ended questions
- Typos, grammatical errors, poor writing
- Bad/unprofessional formatting
- ...

Being a good interviewer

- How to ask questions
- How to give time and space for answers
- How much is too much to clarify
- Staying on track

Managing an effective focus group

- Selecting your groups
- Staying focused
- Ensuring everyone has a voice
- Keeping track of the conversation

What else is there...?

- The best research is that in which the researcher has taken consideration of the most externalities and possibilities
 - What else could possibly happen?

Review Research Design

- Chevalier J. M. and Buckles, D. J. (2013) *Participatory Action Research*. Abingdon: Routledge.
 - Modules 1-3, p. 47-252
- Cohen, L., Manion, L. and Morrison, K. (2011) *Research Methods in Education*. Abingdon: Routledge.
 - Chapters 6-10, p. 105-216
 - Part 3, p. 217-374
- Costley, C., Elliott, G., and Paul Gibbs (2012) *Doing Work Based Research, Approaches to Enquiry for Insider-Researchers*. London: Sage.
 - Chapter 7, p. 80-101
 - Chapters 9&10, p. 115-158
- Gill, J and Phil Johnson, (2012) *Research Methods for Managers*. (4th ed) London: Sage.
 - Review Parts 1&2, p. 1-184
- Blaxter, L., Hughes, C. and Tight, M. (2010) *How to Research*. (4th ed) Maidenhead: Open University Press.
 - Chapters 4-6, p. 99-182
- Davies, M.B., (2007) *Doing a Successful Research Project - Using Qualitative and Quantitative Methods*. London: Palgrave.
 - Chapters 2&3, p. 19-50
- Easterby-Smith, M., Thorpe, R., and Jackson, P., (2012) *Management Research*. (4th ed) London: Sage.
 - Chapter 5, p. 81-112
- Gray, D. E. (2004). *Doing Research in the Real World*. London: Sage.
 - Chapters 2&3, p. 15-66
- Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students*. (5th ed) London: Pearson Education Ltd.
 - Chapter 2, p. 20-57
 - Chapter 5, p. 136-167
- Walliman, N. (2001) *Your Research Project: A step-by-step guide for the first-time researcher*. London: Sage
 - Chapter 1, p. 1-56
- Bell, J. (2005) *Doing your Research Project*. (4th ed) Buckingham: Open University Press.
 - Chapter 2, p. 28-42