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Evidence into Policy
Guidance Note #5

Policy-relevant research design

Picking your method

Prepared by the Department of
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Introduction

The Evidence into Policy Guidance Notes are a series of short briefs produced by the Research and Evaluation Unit to enhance evidence-informed policy making. These guidance notes provide advice and information on key stages of the research to policy process. To date these Guidance Notes have looked at topics such as:

- Why research is important for your policy ‘problem’ (note #1)
- Defining your policy ‘problem’ in order to identify evidence needs (note #2)
- Evaluating government funded human services (note #3).
- The use of Growing Up in Ireland data (note #4).

This note provides guidance for developing a research design for your particular research project. Research design describes *how* you will answer your research question. The research design phase determines your research methods. Research methods are the specific tools used to answer your research question.

This note starts with an overview of the key components of a research design. It then moves into a consideration of *implementing* your research design through the selection of the most appropriate research methods¹ or ‘tools’ for collecting the data you need. In order to inform decisions about research methods, the note also looks at the different data types and different analytical techniques.

Key Messages

- ❖ When the policy problem is identified and you have a clear research question, research design and methods should follow.
- ❖ The research design constitutes an overall strategy for the collection, measurement, and analysis of data.
- ❖ Selection of your research methods will often be driven by practicalities such as by available data and analysis, resources and time.
- ❖ If you are commissioning research, it is important to assess if the research design described in the research proposals is fit for purpose.

¹ Nowadays methodology and methods are often used interchangeably. However strictly methodology is the systematic procedure proper to a particular field (Longman Guide to English Usage 1988) and is therefore the justification for using certain methods.

What is a research design?

After you have identified your policy related research need (see Guidance Note #2), the next step is to outline your research design.

The research design constitutes a general plan for the collection, measurement, and analysis of data. A good research design means that you can integrate the different components of the study in a coherent and logical way. The research question determines the type of design you should use, not the other way around.

A research design may be a broad outline of the proposed approach, or may be a detailed description of all the key stages of your project. A research design may include some or all of the following elements:

1. Review of previously published literature
2. Articulation of the specific research question(s) that needs to be answered
3. Description of the data which will be required
4. Assessment of how that data will be acquired and any data limitations
5. Description of how the data will be analysed
6. Outline of how the findings will be communicated

See Appendix 1 for two examples of research designs.

As your research question is a policy relevant question,^{2 3 4} it is important to loop back and ask:

² Policy-relevant research is related to, but a different approach from, evaluation. Guidance Note #3 provides more information on how to approach evaluating Government funded human services.

³ See: Horowitz, M. (2015) 'What is policy relevance?', <https://warontherocks.com/2015/06/what-is-policy-relevance/> accessed 3rd February 2020 which sets out four principles for policy relevance: policy significance; policy accessibility; policy action ability; and public debate; and Paul Cairney: Politics and Public Policy blog series 'Policy Analysis in 750 words' which includes links to numerous resources for policy analysis and for policy studies. <https://paulcairney.wordpress.com/policy-analysis-in-750-words/> accessed 3rd February 2020.

⁴ See, for example, Echt, L. (2016) 'What are the principles of policy relevant research?', <https://onthinktanks.org/articles/what-are-the-principles-of-policy-relevant-research/> accessed 3rd February 2020; Franklin, G.M et al (2004) 'Policy-Relevant Research: When does it matter?' *NeuroRx* Vol 1(3): 356-362, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC534939/> accessed 3rd February 2020; Head, B., (2010). 'Evidence-based policy: principles and requirements'. *Strengthening evidence-based policy in the Australian Federation*, 1(1), pp.13-26.

- Does this design respond to the policy context and rationale?
- Will the approach outlined help policy makers meet their goals?
- Does the design incorporate both technical and policy expertise? Does it engage key stakeholders?
- If necessary, will this research inform public debate?

Establishing the research aim of your project

As described in Guidance Note #2, the first stage of building your policy-relevant research design is to consider what policy problem are you trying to solve? Thinking this through will allow you to frame your **research question**,⁵ and subsequently to identify the most appropriate approach or approaches to answering your question. For example, if the policy problem is the high number of people with disabilities who are Not in Employment, Education or Training (NEET) the research aim is to understand why this is the case, examples of research questions might include:

- What are the different characteristics of people with a disability in employment and people with a disability not in employment?
- Why are the training courses not seen as relevant for people with a disability?
- Can people with a disability access relevant training courses?
- How are people with a disability affected by societal expectations around their ability to work?

Establishing the limits of the research

Following the identification of your research question, the next steps are to define the budget, timeline, core focus and what is in and out of scope of your research. These parameters will define some of the *limitations* of your research project. When considering the budget you need to reflect on the amount of time and money a research project will take and evaluate how these will change if you do the research yourself or commission someone else to do it. Include the time involved in commissioning the research.

⁵ Sometimes researchers will refer to a research question, a research objective or a research hypothesis. Each has a slightly different emphasis but are all about what you are trying to learn from the research.

Failure to limit the boundaries of a research question can mean that the research will drift into, often interesting but, less relevant areas. You should set out clearly what the research will do and what it will not do. For example:

- This research is on children who have had three or more care placements. Therefore it will exclude adults, children who have not had a care placement and children who have had two or fewer care placements.
- This research is aimed at understanding the lives of people who have been in direct provision for five or more years. Therefore people who have spent less time in direct provision will be excluded.

Saying why you have chosen these boundaries will help clarify the reach of the research.

Other considerations

During this stage you should also consider how, why and in what way the research will be conducted according to commonly accepted **research standards**, depending on that type of research will be conducted these could include:

- Research ethics
- Data protection requirements (including GDPR)
- Project management.

These topics will be the subject of later Guidance Notes, but it is important to be aware of them as key aspects of research design and planning.

What data do I need?

The next stage is to identify the best approach and methods for answering your research question. A critical question is: What type of data do I need to answer my research question?

Research is a planned process of capturing and then analysing data. This data can come from multiple sources, in different formats and over different time periods but must address your research question.

Data can be broadly described as either **primary data** or **secondary data**:

- Primary data are generated and collected *by the researcher*.
- Secondary data are those collected *by someone else* and then used by the researcher.⁶

A research design will first consider how the existing secondary data can address the research question and then move on to considering whether to collect more specific primary data. Primary and secondary data can be complementary, and the research design may incorporate the use of both primary and secondary data.

Primary and secondary data can be further categorised as 'qualitative' or 'quantitative':

- Qualitative data is non-numerical gathered through recording observations. These can be generated through first-hand observations, interviews, focus groups, audio or video recordings, documents, or artefacts.
- Quantitative data can broadly be described as 'count-centred', numerical and structured data (e.g. closed survey questions or financial information).

What types of data you need - quantitative or qualitative or both - and whether that data already exists or needs to be generated are key factors in determining how your research will proceed. It can be very useful to discuss the types of data you need with experts in the subject area, they will be able to help you determine if the data collected will address your research question.

If you decide to collect primary data - the next question is who you will collect the data from or about. A **population** is the entire group that you want to draw conclusions about, while a **sample** is the specific group that you will collect data from. For instance, you might want to understand how COVID-19 affects school-going children. The population in this case is 'school-going children'. A population often contains too many individuals to study conveniently, so an investigation can be

⁶ Examples of secondary data include national survey data (e.g. Census), Government administrative data, longitudinal data collected in the Growing Up in Ireland study and data presented in scientific/academic publications.

restricted to a sample drawn from it. A good sample will be representative of the whole population and will allow you to say something about the whole population.

The size of the sample depends on what you need to know. If your research aim is to 'explain' causes and consequences, your sample size will need to be representative of all those who are likely to be affected. This usually means you need a representative sample size. If, however, you want to 'explore' issues and concerns, your sample size can be smaller.

Sometimes you may wish to know about the experience of a very specific group, for example people who have experienced intimate partner violence, this will mean that your research approach will have to be responsive to the needs of this group. When and where the research is conducted is important - as the context will impact upon the data you collect. For example, the situation for those still living with intimate partner violence may be very sensitive. Defining who you want to know about, where they are and over which time period will help to determine the most useful research method(s) for data collection.

For the data to produce meaningful insights relevant categories need to be included and the questions must be asked in the appropriate and accessible formats. For example, if you are interested in policy impacts for different age groups, you will want to make sure that age or age ranges are collected. You will also need to ask questions that are accessible to the age of the respondents. If you are interested in the scale of an interventions impact, you will need to include a measurement scale. For example, 'On a scale of one to ten, how positive was remote working impact on your family?'. Alternatively, if you just want to determine whether there was an impact, then your data will be structured to provide *binary*⁷ information from the data: 1) there was an impact 2) there was no impact.

⁷ Binary information is also known as dichotomous data or a 'dummy variable'.

Awareness of data limitations and data quality

Be aware of and document any limitations or quality issues with your data, as data quality can have significant implications for how informative (useful, reliable, etc.) any subsequent findings may be for your policy needs.

Researchers often assess the quality of their data with reference to its reliability and its validity. Reliability refers to the consistency of the measure, in other words, no matter who asks the question the same answer is received.

Validity is about the accuracy of the measure, so the extent to which a measure is relevant to what you are interested in. In your design, it is important to highlight any concerns in relation to both the reliability and validity of your data.

Poor quality data inevitably leads to poor insights.

Data limitations mean:

- **You don't have some or all of the data you need**
- **The data you do have doesn't have all the information you need, or is incomplete**
- **The data you collect is not relevant for your policy question.**

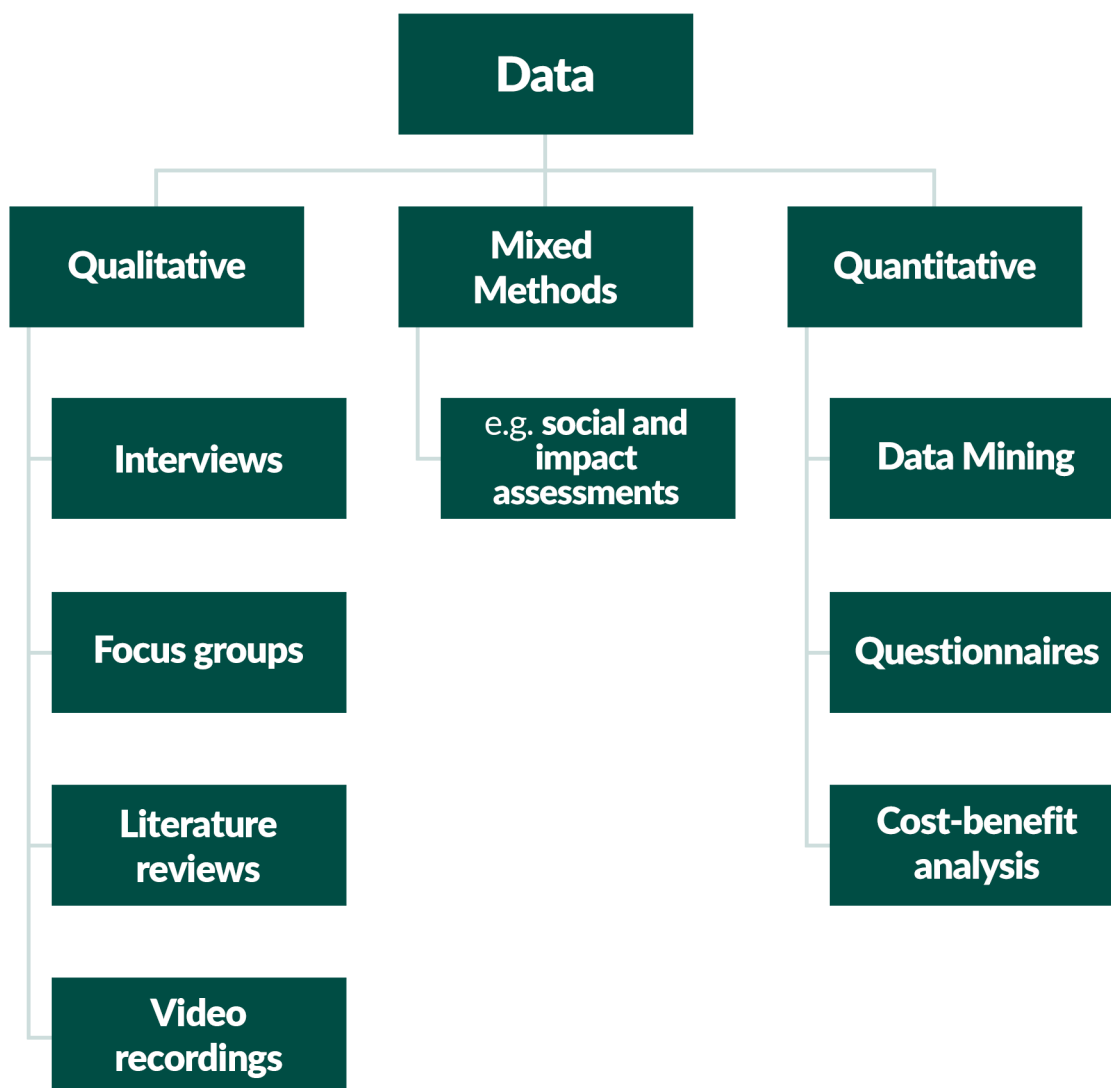
Research methods

In this short Guidance Note, it would be impossible to give a comprehensive overview of all research methods.^{8 9} However, the figure below illustrates some of the different methods that are available depending on your particular research question (also see Appendix 2 for a further breakdown).

⁸ See for example, Ordonez, A. (2016) 'Methodological choices to inform policy', <http://aditibulletin.blogspot.com/2016/05/article-andrea-ordonez.html> accessed 3rd February 2020.

⁹ See, for example, Walliman, N. (2011) *Research Methods: the basics*. Routledge: London; Sandelowski, M. and Barroso, J. (2003) 'Classifying the Findings in Qualitative Studies', *Qualitative Health Research* 13(7): pp. 905-923; Jost, S. (2016) 'An overview to qualitative and quantitative research methods in Design', Medium, <https://medium.com/digital-experience-design/an-overview-to-qualitative-and-quantitative-research-methods-in-design-de034a92f45c> accessed 11th June 2020; LeTourneau University, <https://libguides.letu.edu/quantresearch#:~:text=Quantitative%20Research%20Definition,statistical%20data%20using%20computational%20techniques> accessed 11th June 2020, USC Libraries, <https://libguides.usc.edu/writingguide/quantitative#:~:text=Quantitative%20methods%20emphasize%20objectiv e%20measurements,statistical%20data%20using%20computational%20techniques>, accessed 11th June 2020.

Examples of research methods



You may choose to use **'mixed methods'** which is two or more research methods – usually (but not always) a qualitative and a quantitative method. Mixed methods are a good way to 'triangulate' data. **Triangulation** of data sources, means testing whether different types of data tell the same or a different story about your policy issue. It can be useful to build this type of comparison into your research design.

Finally, careful consideration has to be given to how the data will be analysed. The choice of research method largely determines your analytical approach. With qualitative data there is a wide range of interpretive or analytical approaches

employed. Commonly used ones include: content analysis (looking for patterns so as to generate a general conclusion) or discourse analysis (looking for power relationships and context to what is being said). Often the same text can be analysed with multiple approaches. For instance, the Oireachtas debates can be used to see how often disability issues are discussed and what type of disability issues interest Oireachtas members. Or these debates can be used to see who discusses disability, how people with a disability are referenced, who was and was not listening to the disability discussions and so on.

There is less flexibility with quantitative data, and data collected by one approach often cannot be used to produce other types of results. Very broadly speaking, six 'archetypal' analytical approaches to quantitative data can be identified.¹⁰

1. **Descriptive:** Data is collected to describe something and in doing so we may note how certain information is *associated with other information* but without being able to say which causes which. Descriptive analysis may happen alongside exploratory analysis.¹¹
2. **Exploratory:** Data are analysed with the purpose of finding previously unknown relationships between the data. The purpose of this approach is to *correlate* data and find patterns in the data and to begin to understand these patterns.
3. **Inferential:** statistical modelling uses inferential analyses to probe data from a sample of respondents to 'infer' information about the broader population. The reliability and validity of any conclusions is heavily dependent on data quality and how well the sample respondents represent the wider population.
4. **Predictive:** data on current and past events are analysed to predict or simulate future conditions/scenarios. Data availability, high quality large datasets and a choice of variables (type of data and what information they provide) are crucial for the accuracy and estimated probability of these predictive future scenarios.

¹⁰ Adapted from Leek, J. (2013) 'Six Types of Analyses every data scientist should know', <https://datascientistinsights.com/2013/01/29/six-types-of-analyses-every-data-scientist-should-know/>. See also Bhat, A.(undated) 'Data analysis in research: Why data, types of data, data analysis in qualitative and quantitative research' <https://www.questionpro.com/blog/data-analysis-in-research/>, 'Types of Data Analysis' Video <https://study.com/academy/lesson/types-of-data-analysis.html>, accessed 1st July 2020.

¹¹ Laerd Statistics, 'Descriptive and Inferential Statistics', <https://statistics.laerd.com/statistical-guides/descriptive-inferential-statistics.php>, accessed 17th August 2020.

5. **Causal:** data are collected using experimental research design (such as a randomised control trial).^{12 13} Research design will involve a 'control' and a 'treatment' group, often randomly assigning individuals to each group and then introducing an intervention to the treatment group to see the effect of the intervention.
6. **Mechanistic:** Usually only used for analysing data collected from laboratory experiments where it is possible to determine and replicate initial conditions exactly.

Conclusion

This Guidance Note has set out considerations for building a policy-relevant research design. By articulating a research design you will know how, why and in what way you want to implement your research, and you will build a research 'plan' for generating useful evidence, knowledge and insights about your policy problem. Formulating clear research questions is important to stay focussed on the policy issue.

Outlining a research design is useful both for conducting in-house research and for commissioning research. Having a clear understanding of the importance of good research design enables a more informed assessment of research tenders and supports productive engagement with researchers in the implementation and delivery of research.

¹² A quasi-experimental design does not pre-select individuals at random but uses other statistical methods to construct a control and treatment group (e.g. by using administrative data and time/geographic differences in the introduction of a policy intervention).

¹³ The robustness or strength of a statistical model is important for the accuracy of results. Robust techniques can adjust for some data quality issues so that results are more accurate/less prone to error. See Taylor, C. (2019) 'Robustness in statistics' <https://www.thoughtco.com/what-is-robustness-in-statistics-3126323#:~:text=In%20statistics%2C%20the%20term%20robust,a%20study%20hopes%20to%20achieve.&text=In%20other%20words%2C%20a%20robust,to%20errors%20in%20the%20results> and Loke, J. (2015) 'Rigour and Robustness in research', <https://www.slideshare.net/DrJenniferLoke/rigour-robustness-in-research-16-april-2015>.

Appendices

Appendix 1: High level examples of two different research designs

	Example 1	Example 2
Research Topic/Theme	Activity of young people living in disadvantaged areas	Moving on from intimate partner violence
Review of literature	Discussion of activity levels in young people and how this is affected by geography.	Discussion of the complexity of violent relationships
Articulation of the specific research question(s) that needs answering	What promotes physical activity in youth people in resource poor areas?	Why do individuals leave a violent relationship? To understand if these are amenable to policy intervention.
Delineate research question	Clarity on what is and is not a disadvantaged area, what is enough physical activity	Excludes parent to child and child to parent violence. Excludes individuals still living with violence.
Description of the data requirements	Quantitative anonymised secondary data.	Qualitative interviews with individuals who have experienced intimate partner violence but left that relationship.
Sample size	Dictated by size of survey but ideally 1,000+	5-10
Research ethics	Generally not needed.	Essential
Data protection requirements (including GDPR)	Usually incorporated in process for accessing anonymised data.	Explicit description of protection for interviewee's identity and clear data storage information.
Project management Outlines:	<ul style="list-style-type: none"> • Accessing data • Cleaning and checking data • Analysing data • Steps to keep the project on track, writing updates • Production of final report 	<ul style="list-style-type: none"> • Applying for ethical approval • Which body will give ethical approval • Production of material to recruit the research subjects • Experience of interviewers • Whether and who will transcribe data • Analysis of data • Steps to keep the project on track, production of final report
Assessment of how the data will be acquired and any data limitations	Application to owners of the data for permission to use the data. Consider if the data represents 'all youths' or is limited in some dimension.	Consider how individuals are going to be contacted and where interviewed.
Description of how the data will be analysed	Software requirements. Statistics to include descriptive and inferential statistics.	Grounded theory involving inductive method of constructing codes and categories from data; using comparisons and defining relationships between categories. (Note other types of analysis would also be legitimate.)
Outline of how the findings will be communicated.	Develop dissemination plan	Dissemination plan and consider allowing interviewees to see and comment on an early version
Technical and policy expertise	Research design circulated to people working with the dataset and relevant policy analysts for feedback	Research has a steering group which includes voice of those who have experienced intimate partner violence.

Appendix 2: Research methods

Methods	Approach	Description
Cost-benefit analysis	Quantitative	Collates information on the likely benefits of a policy intervention (including where possible intangible benefits like social benefits) and compares them against the likely costs of the intervention
Data-mining	Quantitative	Uses 'big data' or large-scale data sets to see patterns and trends
Forecasting, simulation modelling	Quantitative	Uses past data to predict outcomes when policy efforts are introduced, with a particular focus on anticipating unintended consequences
Formal Evaluations	Quantitative	There are a number of different types of evaluation. Quantitative formal evaluation relies on robust data on the groups of interest, usually has an experimental or quasi-experimental design (e.g. a theory of change or logic model) and specifically seeks to examine a situation 'before' and 'after' a policy change. See Guidance Note #3 for a comprehensive overview.
Policy impact assessments	Quantitative	Using large scale datasets, the potential impacts of policies are tested by determine their likely economic and social effects on different groups
Statistical Modelling	Quantitative	Uses data to determine the relationship between one variable [an independent variable like age] and outcome variable [the dependent variable]. A finding that is 'statistically significant' means that it is probable that any observed changes in the dependent variable are due to the independent variable rather than occurring by chance.
Case studies	Qualitative	An in-depth investigation of a single individual, group or event. Can often be used to synthesise and compare similarities and differences in policy initiatives in different jurisdictions
Consultation	Qualitative	Open-ended discussion with individuals, often with a facilitator, in which participants generate views or thoughts on the topic of interest. Consultations tend to be less structured/directed than focus groups.
Ethnographic case studies	Qualitative	In-depth observations of groups of individuals to draw out lived experiences
Focus Groups	Qualitative	Moderated group discussions of participants
Innovative or creative methods	Qualitative	A very broad range of methods to collect 'data' in innovative forms and by innovative means. For example, asking children to draw pictures of their experiences, feelings and thoughts; and then talk about the picture.
Narrative studies	Qualitative	A structured approach to draw out in narrative form the lived experiences and perspectives of selected individuals
Semi-structured interviews	Qualitative	Discursive interview with individuals guided by research questions/objectives
Literature Reviews	Qualitative	Search strategy criteria for reviewing literature
Documentary Analyses	Mixed	Collating and synthesising information from a range of documents, often using thematic analyses to codify the information
Systematic Evidence Reviews	Mixed	Search strategy seeks evidenced examples of successful/unsuccessful policy efforts according to set inclusion criteria
Policy Reviews	Mixed	Collection of qualitative and quantitative data charting the development, objectives, evolution, implementation, outcomes and impacts over time of given policy efforts
Surveys	Mixed	Written questions are constructed to probe understanding, issues, concerns of policy problem; and/or existing policy efforts



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