



# Evaluation methods and data collection

**Dr HMP Herath**

**Senior lecturer**

**Ph.D. (USJ), RN(SLNC), B.Sc. (Nursing) Hons(UPSL), CTHE (KDU)**

**Department of Nursing & Midwifery**

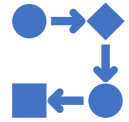
**FAHS, KDU**



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.





# Learning outcomes



- Understand the systematic and consistent nature of evaluation methods and their importance in the evaluation process.
- Recognize the significance of proportionate effort and resource allocation, data availability, and timing for decision points in evaluation.
- Explain the role of the Theory of Change in guiding the selection and application of evaluation methods.
- Recognize that different stakeholders may have diverse needs and priorities and understand the importance of aligning these priorities with the Theory of Change.
- Recognize the suitability of theory-based impact evaluation methods for assessing complex interventions or simple interventions in complex environments.
- Describe the core principles of experimental and quasi-experimental impact evaluation methods, including the presence of a 'counterfactual' and the comparison of intervention and control groups.
- Differentiate between experimental research, where participants are randomly assigned, and quasi-experimental research, which does not use randomization.



# Introduction

- Evaluation methods are usually made up of processes and protocols that ensure evaluations are done systematically and consistently.
- Along with evaluation questions, three other factors are important: **proportionate effort and resource, data availability, and timing for decision point.**
- As mentioned in the previous chapter, iteration will refine what is achievable and practicable.



# Selection of appropriate evaluation methods



- The process of choosing and applying analytical techniques for assessment should be guided by the theory of change.
- It is important to note that various stakeholders may have different needs and prioritize different outcomes.
- These outcomes should be reflected in the Theory of Change
- Stakeholders should be engaged in the selection of the evaluation methods in order to agree priorities, manage expectations and accept the implications.
- There should be alignment between the evaluation questions, the evaluation approach and the methods used.



# Selection of appropriate evaluation methods



- In practice, most evaluation designs involve mixed methods,
  - qualitative methods
  - quantitative methods

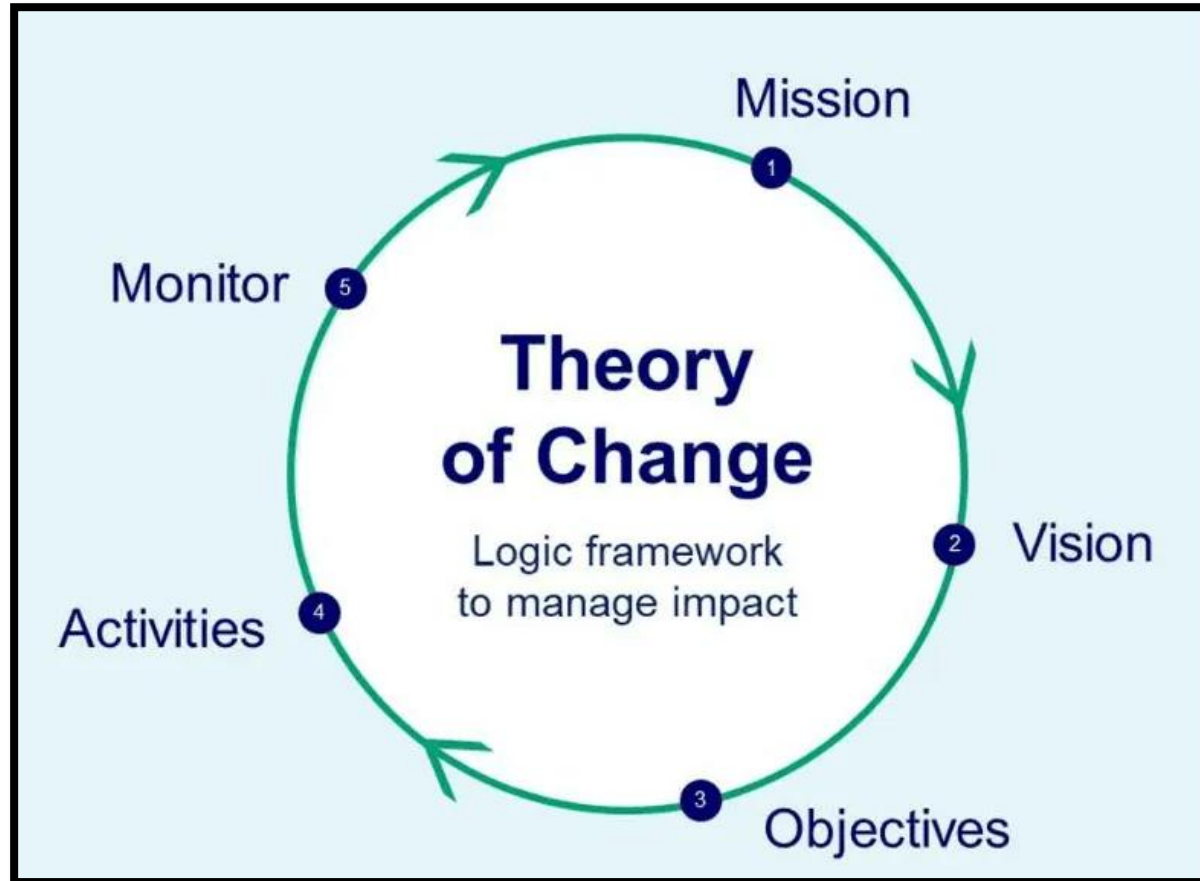
answer the impact, process and value-for-money questions.

- No individual method can provide answers to all evaluation questions. If time and resources are limited, questions and methods will have to be prioritized.





# Theory of change is a model



- A theory of change is a model that describes how a project or program is expected to function.
- In other words, it serves as a roadmap for where the project hopes to go.



# Selection of appropriate evaluation methods



- It is important to consider both the feasibility and appropriateness of a proposed method.
- The cost, timing, respondent burden, ethics, response rate, and the potential effect of the data collection should all be considered.
- The populations to be studied and the evaluation questions to be answered should be clear from the scoping stage.
  - Clear definitions should be developed around the individuals/groups, places, and time periods associated with the evaluation questions to ensure the most appropriate methods are identified.
  - Clear definitions can also help clarify the extent to which the findings can be generalized.





# Research methods used in both process and impact evaluations

- The research methods summarized in this section are commonly used in process and impact evaluations (and are widely used in non-evaluative research).
- When used in impact evaluation, consistent data must also be collected for any control/comparison group.





## Research methods commonly used for evaluation



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP

This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



# Research methods commonly used for evaluation

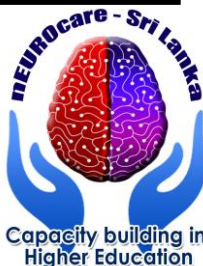
- Interviews and focus groups
- Case studies
- Surveys
- Output or performance monitoring
- Observational studies (including ethnography)



# 1. Interviews and focus groups



Description	Pros and Cons
<ul style="list-style-type: none"><li>• Interviews enable in-depth exploration of the intervention with participants.</li><li>• Focus groups are useful to elicit views from a group of people rather than an individual.</li></ul>	<ul style="list-style-type: none"><li>• Can be used to elicit views of individuals involved in an intervention.</li><li>• Can be used to collect in-depth insight about an intervention and shed light on patterns emerging in other pieces of evidence collected.</li><li>• Can be resource intensive; requires time to conduct and analyse; does not provide numerical estimates; there may be risk of bias in the views collected.</li></ul>



## 2. Case studies



Description	Pros and Cons
<ul style="list-style-type: none"><li>• In-depth investigation of a person, group or event within its real-world context.</li><li>• Subjects are often purposively selected.</li><li>• Often uses multiple sources of evidence and data collection methods.</li><li>• Can be descriptive, exploratory, or explanatory.</li></ul>	<ul style="list-style-type: none"><li>• Can capture real-life situations in depth and detail and help understand complex phenomena.</li><li>• Works well in combination with or supplementing other methods, such as surveys.</li><li>• Can be helpful for communicating to stakeholders what interventions have worked for particular organizations.</li><li>• It is difficult to generalize findings</li></ul>



## 3. Surveys



Description	Pros and Cons
<ul style="list-style-type: none"><li>• Commonly used to collect data from a number of individuals, such as beneficiaries, or a large organisation with numerous members of staff.</li><li>• They can be administered face-to-face, by post, online, by telephone or as a handout.</li></ul>	<ul style="list-style-type: none"><li>• An effective method of obtaining information from a large number of participants.</li><li>• Provides data suitable for statistical analysis that, if properly designed and conducted, can be generalised to the whole population of interest.</li><li>• Less useful for providing in-depth insight into an intervention. There can be response-rate issues that decrease the quality of its findings.</li></ul>





## 4. Output or performance monitoring

Description	Pros and Cons
<ul style="list-style-type: none"><li>• Continuous measurement and performance review of an intervention.</li><li>• Monitoring plans are developed based on the Theory of Change to allow the tracking of the inputs, outputs and outcomes.</li><li>• To minimise errors in the data collection and burden on staff it is advisable to design monitoring in collaboration with those who will collect data.</li></ul>	<ul style="list-style-type: none"><li>• Can provide a relatively low-cost and rapid method to identify if an intervention and create outputs as intended.</li><li>• Links well to benefits management.</li><li>• Can feel onerous for both participants and the staff (usually delivering an intervention) who collect</li></ul>



## 5.Observational studies (including ethnography)



### Description

- These involve observing and noting behavior of participants.
- Often supplemented with interviews of individuals
- Can support other methods by ensuring that other data collected are understood
- Theories relevant to this context

### Pros and Cons

- Can allow for a deeper understanding of individual experience of an intervention.
- Observation may help improve accuracy of other data by reducing bias arising from self-reporting by participants.
- However, participants may still act differently if they know they are being observed which can affect the accuracy of the data.
- Resource-intensive and may have ethical implications, practical barriers and issues with generalizability.



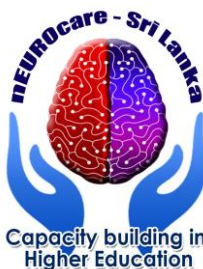


# Theory-based impact evaluation methods



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission  
cannot be held responsible for any use, which may be made of the information contained therein.





# Theory-based impact evaluation methods

- Theory-based methods can be used to investigate net impacts by exploring the causal chains thought to bring about change by an intervention.
  - However, they do not measure effect sizes precisely.
  - Theory-based evaluation explicitly considers change extent and cause.
  - While implementing the intervention, it often analyses context.



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



# Theory-based impact evaluation methods



- Theory-based methods tend to be particularly suited for the evaluation of complex interventions or simple interventions in complex environments.
  - Theory-based methods can confirm if an intervention had the desired effect in certain cases, where effect size is difficult to determine.
  - Many of these strategies do not try to prove that the intervention caused all measured changes.
  - Instead, they investigate whether the intervention caused the measured change. They can also explain why an intervention worked or failed and inform translation to other populations, regions, or periods.



# Common theory-based impact evaluation methods



---

**Realist evaluation**

---

**Contribution analysis**

---

**Process tracing**

---

**Bayesian updating**

---

**Contribution tracing**

---

**Qualitative Comparative Analysis**

---

**Outcome harvesting**

---

**Most significant change**

---

*(Please read: Table 3.2 Quick guide to common theory-based impact evaluation methods-HMT\_Magenta book)*



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained



# Experimental and quasi-experimental impact evaluation methods



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



# Experimental and quasi-experimental impact evaluation methods



- The core principle of these methods is that there is a ‘counterfactual’: observed outcomes from a ‘control’ group that did not receive the intervention, which can be compared to outcomes from the intervention group.
- The groups consist of participants, which might be individual people, or other units, such as schools, businesses, houses, or spatial areas. Mixing between groups should be minimal to limit bias from ‘contamination’.
- Quasi-experiments are studies that aim to evaluate interventions but that do not use randomization. Similar to randomized trials, quasi-experiments aim to demonstrate causality between an intervention and an outcome.





# Experimental and quasi-experimental impact evaluation methods

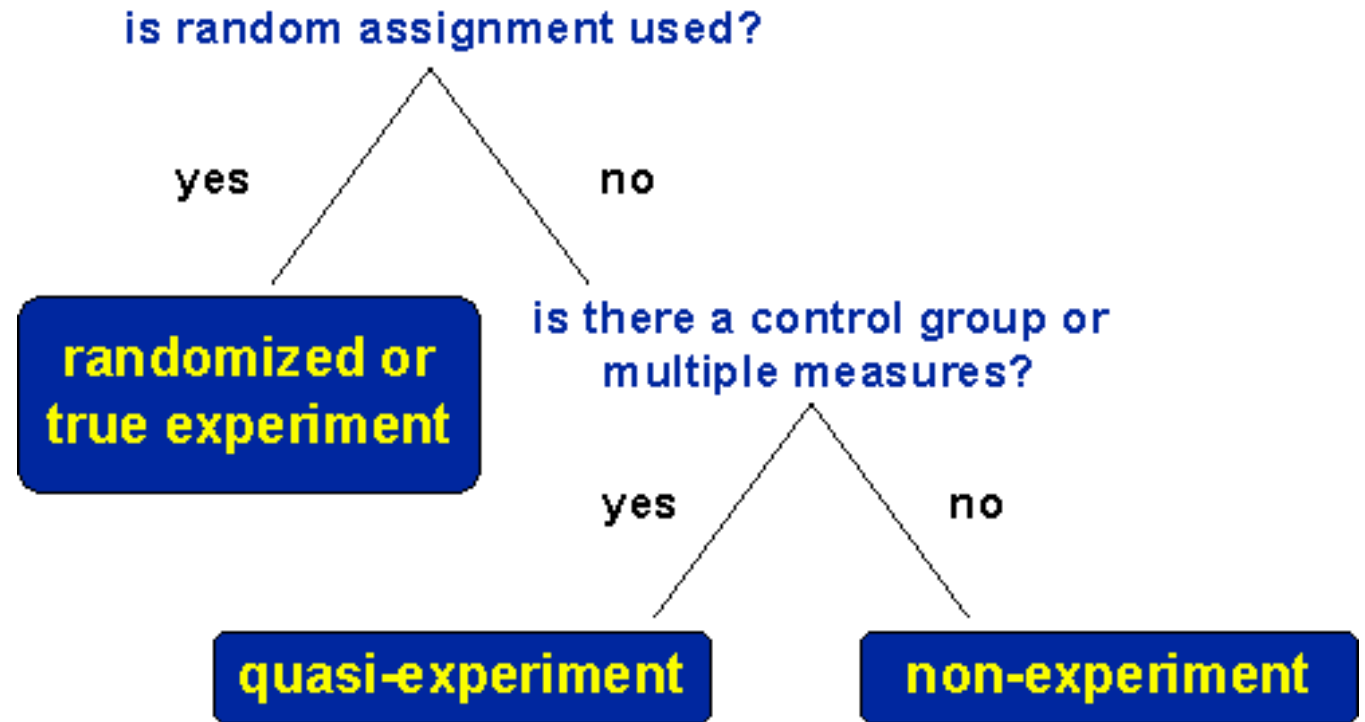
- Collecting and analyzing comparable data from the intervention and control enables evaluators to confidently attribute any measured change to the intervention (subject to assumptions specific to the method).
- These impact evaluation methods are favored when we need to know the average additional or net change caused by an intervention or how much of the observed outcome(s) could be attributed to the intervention.
- However, the precise method to be used depends on: whether participants in an intervention can be randomised; the expected effect size; the availability of data; and the availability of potential control groups.
- A simple, but effective, way to help plan or review experimental methods is the PICOT<sub>1</sub> framework, which considers the population, intervention, control group, outcome and time period.



# What is the difference between experimental and quasi-experimental research?



- With an experimental research study, the participants in both the treatment (product users) and control (product non-users) groups are randomly assigned.
- Quasi-experimental research designs do not randomly assign participants to treatment or control groups for comparison.





# Randomised Controlled Trials (RCTs)

- Randomised Controlled Trials (RCTs) prospectively and randomly allocate participants to either intervention or control groups.
- RCTs can robustly evaluate the impact of interventions because they account for both known and unknown factors because allocation to the treatment is random.
- Measured differences between groups can, therefore, be considered to be the result of the intervention alone. However, the need to ensure rigid implementation of an intervention (high fidelity with the protocol) can reduce its external validity.



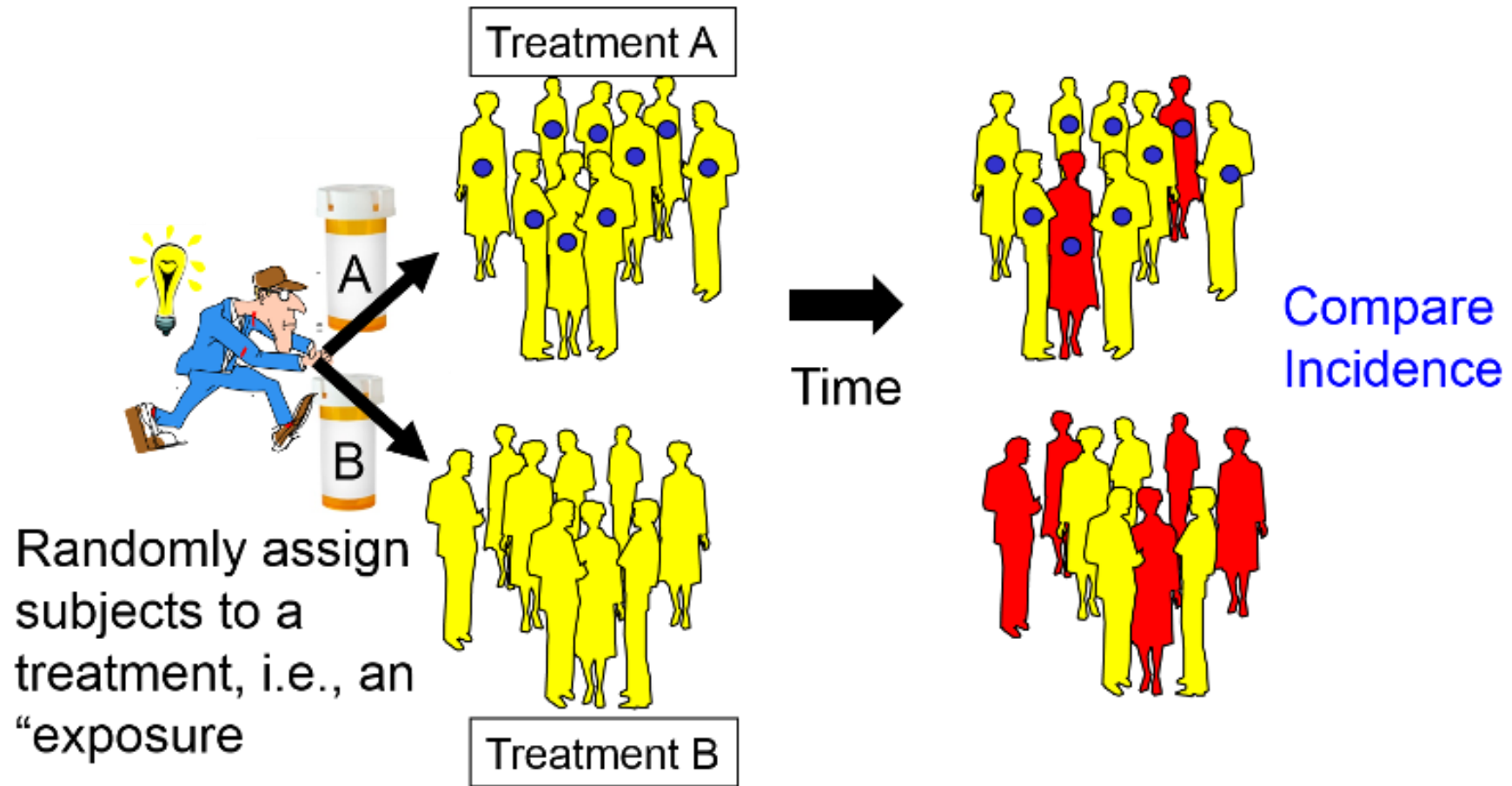


# Randomised Controlled Trials (RCTs)

- There are a number of variations of RCTs for various needs and situations:
  - *Factorial RCTs independently randomize participants to multiple interventions;*
  - *Cluster RCTs randomize groups of participants rather than individuals;*
  - *Stepped-wedge RCTs apply an intervention sequentially and at random to groups of participants.*
- Methods, such as Sequential Multiple Assignment Randomized Trial (SMART) and Multiphase Optimisation Strategy (MOST), have been developed for the optimization of interventions and may be particularly appropriate to develop more potent digital interventions.



# RCT



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



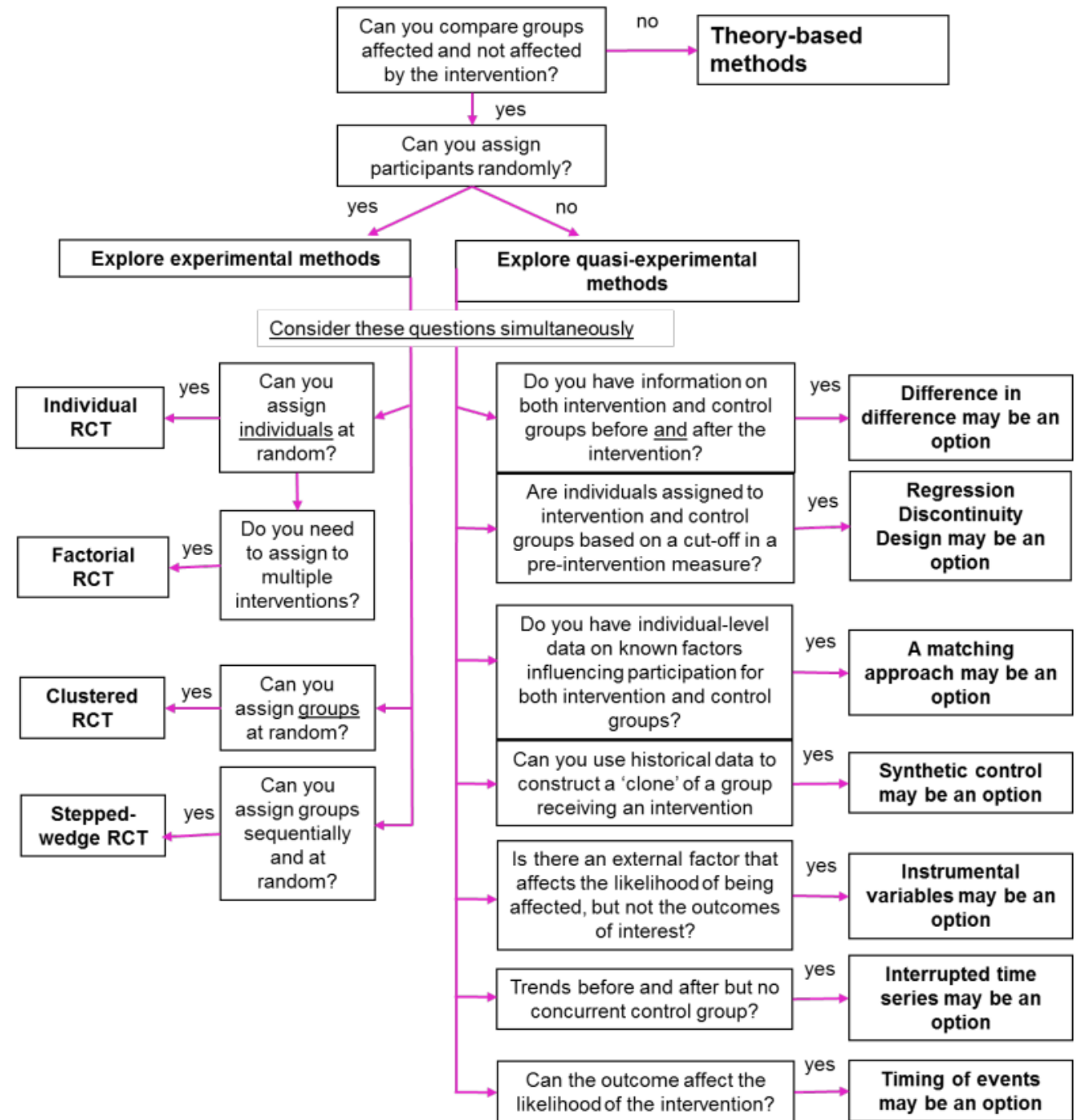


# Selection of a method

- Selection of a method usually depends on:
  - *the nature of the allocation into intervention and control groups (for example, it can be controlled by the evaluator or result from an external shock);*
  - *the nature of the control group (it can be concurrent or historic);*
  - *the format of the available data (such as discrete or trends);*
  - *the volume of the available data (see Figure).*



# Selection of a method



# Common experimental and quasi-experimental impact evaluation methods



- Randomised Controlled Trials (RCT)
- Interrupted time series analysis and difference-in-difference
- Regression Discontinuity Design
- Propensity Score Matching
- Synthetic control methods
- Instrumental variables or natural experiments



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP

This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.





# Value-for-Money evaluation methods



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP

This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



# Value-for-Money evaluation methods

- Value-for-money evaluation methods compare benefits to the costs of interventions, including adverse and unintended aspects.
- Two widely-used methods; both of which allow for comparison of two or more alternative options (interventions).
  - social cost-effectiveness analysis and
  - social cost-benefit analysis
- The primary differences between these two types of evaluations are:
  - social cost-effectiveness analysis compares the costs of alternative ways of producing the same or similar outputs.
  - social cost-benefit analysis goes further to assess the impact of different interventions on social welfare with all relevant costs and benefits valued in monetary terms (where proportionate and possible).



# Value-for-Money evaluation methods



Experimental, quasi-experimental, or synthetic procedures are used to quantify alternative intervention outputs or impacts.



Theory-based methods can estimate the net effect without a quantitative estimate to determine if it will break even.



The expenses of the potential interventions must be examined to determine which will yield the greatest return on investment.



If possible, these expenses should include social value and costs like employment, health, wellbeing, and productivity. Distribution analysis should weigh population group costs and benefits.



# Common value-for-money evaluation methods



Evaluation Method	Description	Pros and Cons
Social cost effectiveness analysis	Supports the selection of intervention options that have the same measure of outcome by comparing their costs and effect sizes.	Enables comparison where benefits cannot be converted into monetary units or the cost to do so is prohibitive. Systematically provides comparability of options. The lack of benefits in monetary metrics limits its value compared to cost-benefit analysis.
Social cost benefit analysis	Quantifying and monetising both the costs and benefits of interventions enables comparison between them, even when they have different outcome measures. Can be used to forecast using predicted costs and benefits or used post-intervention in an evaluation using outcome data.	Can capture short- and long-term impacts systematically. Quality of results relies heavily on available data and ability to monetize the impacts.





# Synthesis methods



Co-funded by the  
Erasmus+ Programme  
of the European Union

Reference number: 618596-EPP-1-2020-1-SE-EPPKA2-CBHE-JP  
This publication [communication] reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



# Synthesis methods



- Synthesis methods entail combining findings from a range of studies into a common understanding of the impact and/or delivery of a policy.
- Post-evaluation synthesis is used to bring together the outputs of the various methods used in the evaluation in a clear and systematic way to answer the original evaluation questions.
- The component methods can be quantitative or qualitative or mixed methods and focus on impact or process evaluation questions.
- Synthesis methods can also be used prior to initiating the development of an intervention to determine what is already known on a subject.





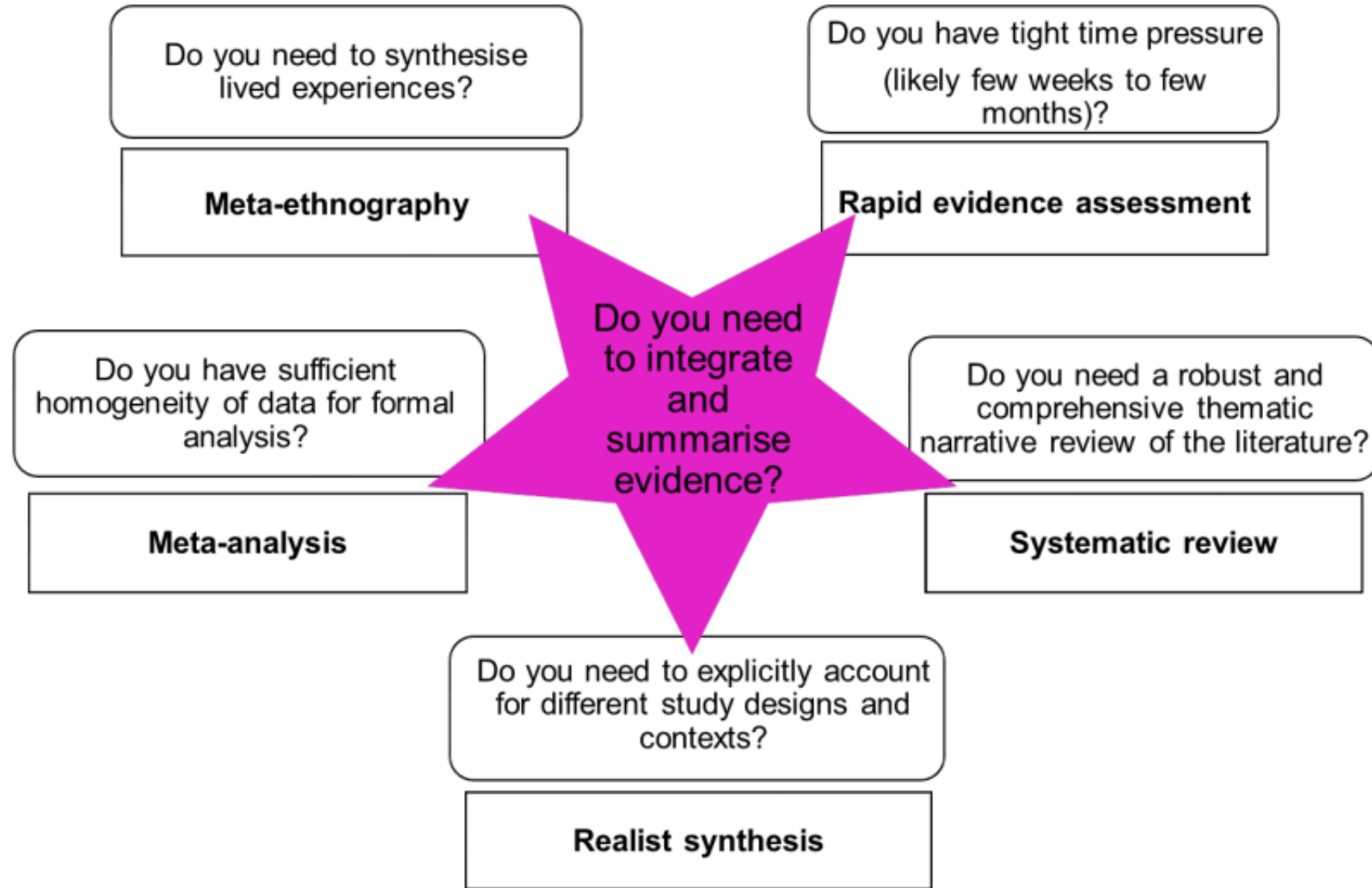
# Synthesis methods

## Meta-evaluation and synthesis



- Meta-evaluation and synthesis are formal synthesis methods designed to bring together findings from a number of different studies on the same subject.
- Methods of synthesis and meta-analysis bring together existing evaluation evidence in a structured way to produce a coherent narrative.
- These "secondary research" procedures start with specific goals and inclusion/exclusion criteria. They then assess source study quality, extract essential findings, and analyze the data to produce an integrated account of the source literature using explicit processes and pre-defined criteria.
- The main limitation of evaluation synthesis is its reliance on a sufficient body of previously acquired data.
- The quality of the evidence synthesis depends on the quality of the original studies, and validity depends on which original studies are included. Hence, the importance of inclusion criteria and quality assessment in the process.

# Evidence synthesis methods



# Rapid evidence assessment



Description	Pros and Cons
<p>Rapid Evidence Assessments are systematic but pragmatically relatively quick literature reviews.</p> <p>They may use interviews with experts to facilitate targeted searches of the literature. The focus tends to be relatively narrow.</p>	<p>Useful for relatively quick scoping out of existing evidence but require a number of good quality studies to draw from.</p> <p>They are less effective where research questions do not easily map on to the existing body of evidence.</p> <p>Transparency is key. They are subject to greater bias than a systematic review.</p>



# Systematic reviews



Description	Pros and Cons
<p>A systematic method of identifying, assessing, extracting and integrating evidence from multiple studies.</p> <p>The focus should provide a methodical approach to reviewing all data to answer a clearly defined research question.</p> <p>The aim is to reduce bias and provide a comprehensive overview of studies through use of five key steps.</p>	<p>Provides a comprehensive assessment of available evidence. Has a rigorous approach to assessing and referencing studies. Can be resource-intensive and take a long time (six months plus).</p> <p>They need a substantial body of evidence to review, so maybe less effective when used in fields with limited evidence.</p>



# Meta analysis



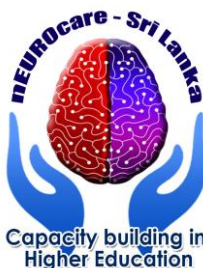
Description	Pros and Cons
<p>Rapid Evidence Assessments are systematic but pragmatically relatively quick literature reviews.</p> <p>They may use interviews with experts to facilitate targeted searches of the literature.</p> <p>The focus tends to be relatively narrow.</p>	<p>Useful for relatively quick scoping out of existing evidence but require a number of good quality studies to draw from.</p> <p>They are less effective where research questions do not easily map on to the existing body of evidence.</p> <p>Transparency is key. They are subject to greater bias than a systematic review.</p>





# Meta ethnography

Description	Pros and Cons
<p>Meta-ethnography brings together multiple individual lived experiences.</p> <p>Evaluators select, analyse and interpret narrative accounts within studies to identify new concepts and insights across studies.</p>	<p>Allow evaluators to either evolve overall concepts, explain conflicting differences in stories, or build a picture of the study subject from a number of different narrative accounts.</p> <p>Quality depends on quality of original studies and validity depends on inclusion criteria.</p>





# Realist synthesis

## Description

This integrates Systematic Review methods with Realist Evaluation theory to explain outcomes from an intervention through literature review.

It is often used to assess complex policies based in complex environments as it is a structured method to understand the underlying Context Mechanism-Outcome relationships in an intervention.

## Pros and Cons

Accounts for differences between study contexts and study designs.

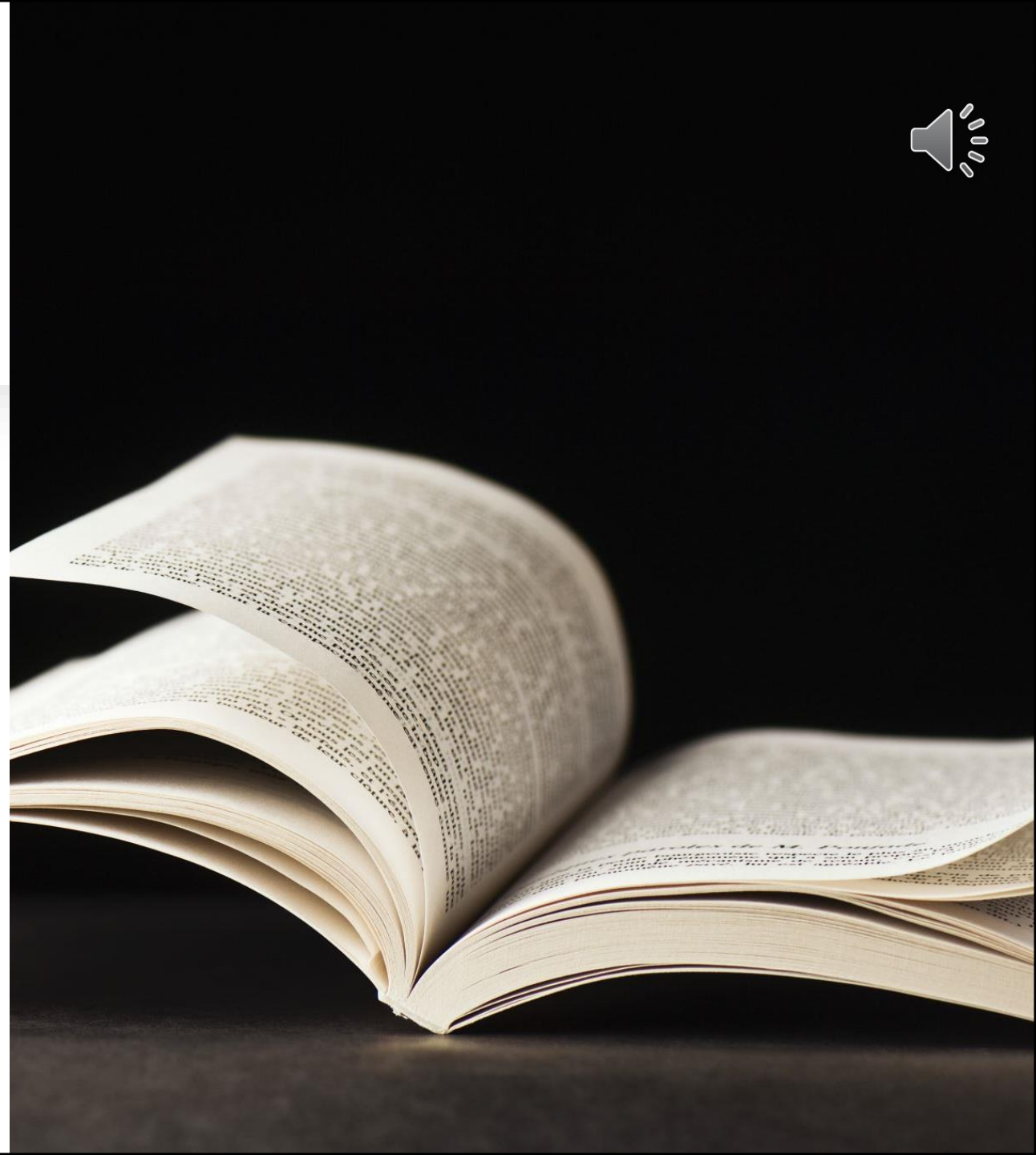
The broad concepts to the method are specific to the intervention and context and therefore cannot easily be reproduced or standardized.

Requires researcher knowledge of the intervention context and understanding of implementation.



# References

HMT Magenta Book: Prudential standards in the Financial Services Bill: Policy statement, 2020. . HM Treasury, United Kingdom.





Thank you

mission  
ned therein.

