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ISPOR
Special Interest Group

We are not all the same: The state of practice in accounting for preference heterogeneity

State-of practice and ISPOR Health Preference Research SIG working group

ISPOR Workshop

Presented by:
Deborah A Marshall, PhD, Sebastian Heidenreich, PhD, Marco Boeri, PhD

18 May 2020, 2:15 to 3:15 PM ET

Discussion Leaders

- Deborah A Marshall, PhD
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Outline of Workshop

1) Overview of stated preferences and preference heterogeneity and practical implications
2) Overview of available methods to measure preference heterogeneity and common pitfalls
3) Current state-of-practice to account for preference heterogeneity and activities of the ISPOR Health Preference Working Group
4) Audience interaction and polling

Overview of Stated Preference Methods

"Experimental survey methods that ask respondents to express the relative desirability or acceptability of features that differ amongst alternatives …which reflects their underlying utility for that alternative

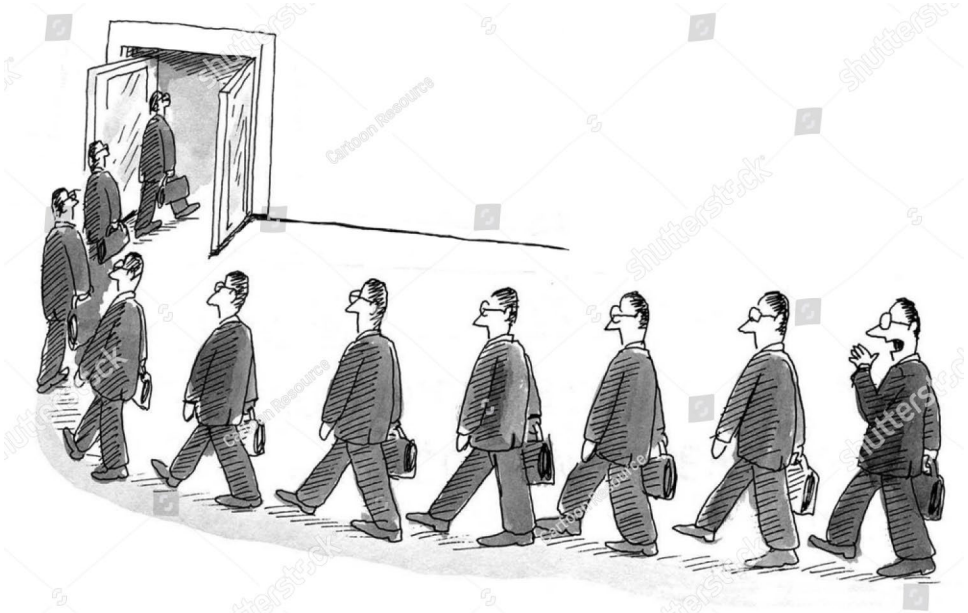
Medical Device Innovation Consortium (MDIC) Catalog of Methods

Group	Method
Structured-weighting	• Simple direct weighting • Ranking exercises • Swing weighting • Point allocation • Analytic hierarchy process • Outranking methods
Health-state utility	• Time tradeoff • Standard gamble
Stated-preference	• Direct-assessment questions • Threshold technique • Conjoint analysis and discrete-choice experiments • Best-worst scaling exercises
Revealed-preference	• Patient-preference trials • Direct questions in clinical trials

Medical Device Innovation Consortium (MDIC). 2015 http://mdic.org/wpcontent/uploads/2015/05/MDIC_PCBR_Framework_Web.pdf

What is Heterogeneity? (1)

"The quality or state of being diverse in character or content"



- Oxford Dictionary
- Shutterstock

What Does Heterogeneity Mean?

Heterogeneity is a word that signifies diversity. ...

The prefix hetero- means "other or different," while the prefix homo- means "the same." **Heterogeneity** is often used in contrast to **homogeneity**, which is when two or more people or things are alike.

Google

What does heterogeneity in a study mean?

Heterogeneity in statistics **means** that your populations, samples or results are different. It is the opposite of **homogeneity**, which **means** that the population/data/results are the same.

A **heterogeneous** population or sample is one where every member has a different value for the characteristic you're interested in.

What does preference heterogeneity in a stated preferences study mean?

Preference heterogeneity…

potential differences in relative preferences across respondents in the sample

In terms of the utility function…

$$u_{jn} = \alpha_j + \beta_1 x_{1jn} + \beta_2 x_{2jn} + \cdots + \beta_k x_{kjn} + \varepsilon_{jn}$$

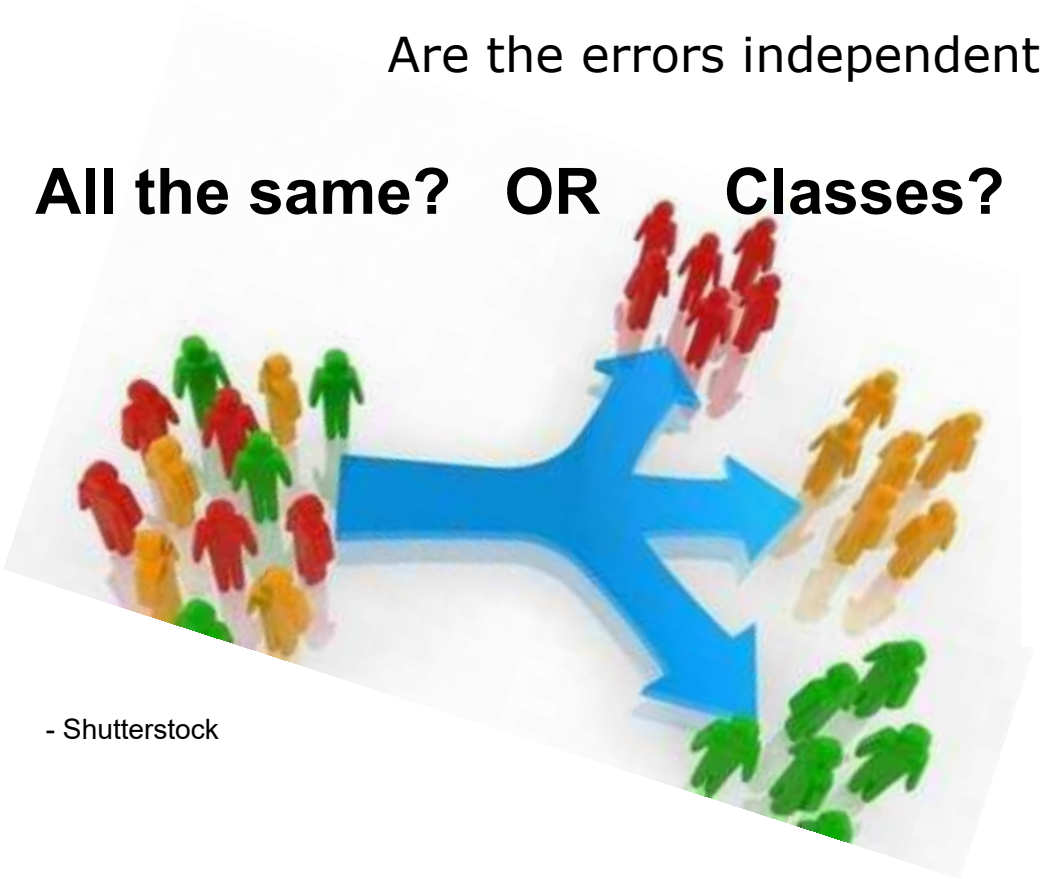
Individual (n) specific utility of alternative j.

Is $\beta_{nk} = \beta_k$ for all (n) ?

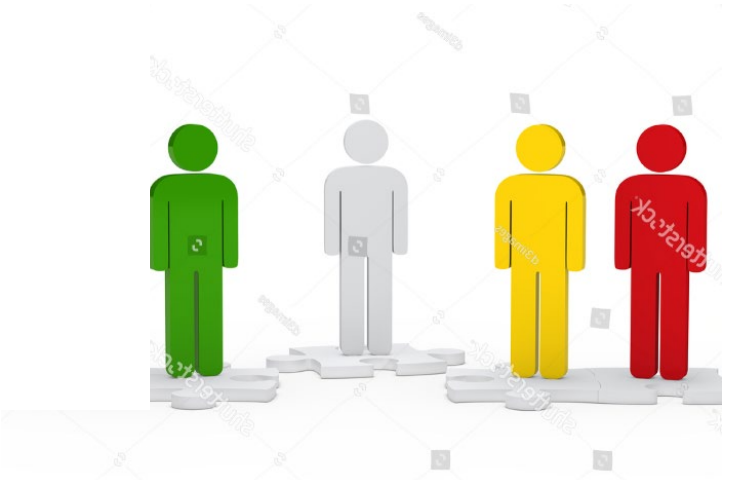
Are there patterns of preferences (classes)?

Are the errors independent and identical?

All the same? OR Classes? OR Individuals?



- Shutterstock



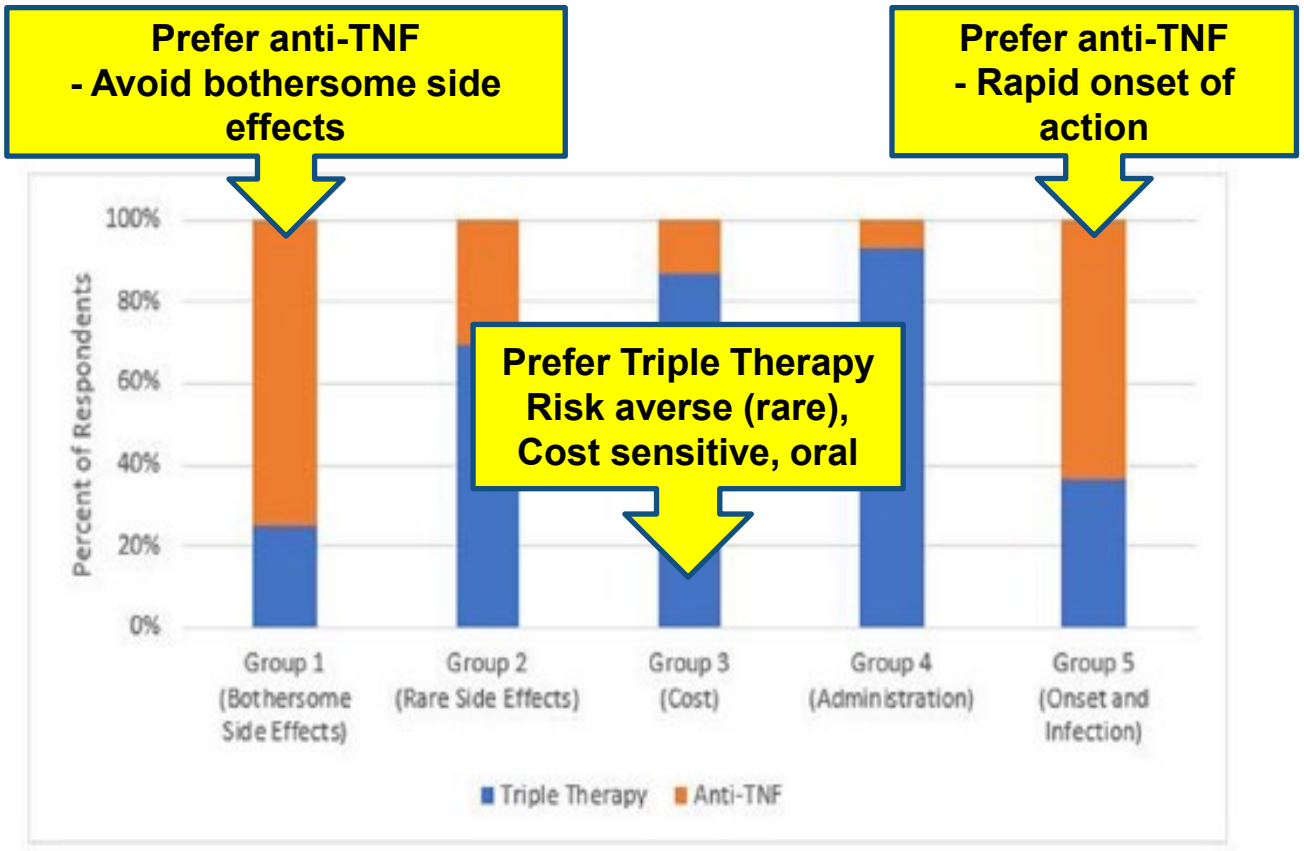
Why heterogeneity in preferences?

1) Support Patient Centered Care and Clinical Practice

2) Inform Clinical Practice Guidelines

3) Inform Policy Decisions about Treatment

1) Identify preference classes of patients with rheumatoid arthritis to select treatment based on benefit-risk profiles



Recognising heterogeneity in patient preferences is important for choosing treatment to achieve best outcomes for that individual patient.

- Fraenkel L et al. Ann Rheum Dis, 2017.

2) Using patient preferences to inform clinical practice guidelines

COMMENTARY

The Next Step in Guideline Development
Incorporating Patient Preferences

Murray Krahn, MD, MSc, FRCPC
Gary Naglie, MD, FRCPC

CLINICAL PRACTICE GUIDELINES (CPGs) ARE SYSTEMatically developed statements to assist both patient and practitioner decisions. A fixture of modern medical care, guidelines link the practice of medicine more closely to the body of underlying evidence, shift the burden of evidence review from the individual practitioner to experts, and aim to improve the quality of care.[1]

But do guidelines take into account what patients want and value? Consider the following examples. A patient with mild to moderate hypertension has shown some lowering of blood pressure but has not achieved her guideline-recommended target with salt reduction, exercise, and weight reduction. After considering the potential risks and benefits, she prefers to avoid drugs and continue with her behavioral interventions. Another patient with atrial fibrillation prefers to begin taking warfarin rather than aspirin, even though he is at low risk of stroke. He is a surgeon, and a stroke would be a career-ending event. Both of these patients have made what appear to be rational choices, but choices that are at odds with what guidelines[2,3] recommend.

One potential reason for this discordance is that guidelines do not sufficiently take patient preferences into account. They may not include published evidence about preferences, include patient perspectives in the process of guideline formulation, acknowledge that an optimal decision in some circumstances is determined by preference, and actively encourage patients and practitioners to make decisions on the basis of preferences.

The term *preferences*, in its broadest sense, represents the desirability of a health-related outcome, process, or treatment choice. For example, in considering options for atrial fibrillation, a patient may have strong feelings about preventing stroke (an outcome), taking warfarin and having her international normalized ratio monitored (the process), or warfarin as a treatment strategy, which includes the prospect of all potential outcomes (a treatment choice). Concepts of greatest relevance would include health values in the bioethics literature; concerns, desires, and expectations in the psychology literature; and utility in the decision analysis and economics literature.

In the context of practice guidelines, the idea of tailoring treatment to preference is distinct from the notion of clinical tailoring. Tailoring treatment to age, sex, disease severity, overall risk profile, and combinations of comorbidity[4] is an important part of the modern evolution of CPGs. This, however, is different than taking an individual's values and priorities into account.

Evidence on the Role of Preferences in Guidelines

The few studies that are available on this topic support the idea that guidelines do not consistently take preferences into account. Primary care clinicians may not always implement guidelines in part because they perceive a direct conflict between considering patient preferences and applying CPG recommendations. Protheroe et al[5] demonstrated that for management of atrial fibrillation, marked disagreements were found between the best choice for an individual (as determined by incorporating personal preferences into a clinical decision analysis) and the treatment suggested by CPGs. Chong et al[6] reviewed 51 evidence-based CPGs and found that only 5% of the word count and 6% of references in the guidelines related to patients' preferences. Relative to evidence about effectiveness, evidence about preference was less often searched for and was considered less completely when formulating recommendations.

Preferences and Evidence-Based Medicine

Why are preferences, which clearly seem to be important in this era of patient-centered practice, not given their due in CPGs? The main reason may be that the guidelines movement has its intellectual roots in evidence-based medicine (EBM), which has historically had a relatively limited role for patient preferences. Evidence-based medicine traces its origins to 18th-century British medicine and has flourished in distinct US, UK, and Canadian schools since the end of the last century.[7] Arguably the dominant scientific paradigm of modern clinical medicine, EBM is characterized by specific beliefs, values, techniques, and views about

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VIEWPOINT

The Optimal Practice of Evidence-Based Medicine
Incorporating Patient Preferences in Practice Guidelines

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Author Reading at jama.com

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Research evidence is necessary but insufficient for making patient care decisions. An effective but toxic chemotherapeutic regimen is the treatment one patient with cancer can and will take, another patient can take but will not, and yet another patient could not take even if wanted. Careful attention to the biopsychosocial context of patients and to their informed preferences when crafting treatments requires expertise and practical wisdom. This represents the optimal practice of evidence-based medicine.

Patient preferences refer to patient perspectives, beliefs, expectations, and goals for health and life, and to the processes that individuals use in considering the potential benefits, harms, costs, and inconveniences of the management options in relation to one another.[1] Patients may have preferences when it comes to defining the problem, identifying the range of management options, selecting the outcomes used to compare these options, and ranking these outcomes by importance.

Informed patients may choose not to follow a guideline that does not incorporate their preferences. The ATP III guideline (Adult Treatment Panel III), for example, recommended statins for all patients with diabetes. Patients with diabetes at low cardiovascular risk were 70% less likely to opt for a statin after receiving information about the small absolute reduction in coronary risk statins could afford them than patients receiving guideline-directed care.[2] Where the use of statins in patients with diabetes is linked to quality measures or performance incentives, clinicians face the conflict of following either the guideline or the informed patient.

> Getting the evidence right—the right options, outcomes, and outcome data—is an obligatory prerequisite for considering informed patient preferences.

Challenges in the Incorporation of Preferences in Guidelines

Access to patients' preferences is complex. Individuals form their preferences when they have to make a decision, in a context replete with emotional and social influences.[3] This context is often absent when volunteers, not facing a decision, report preferences. Hindsight bias, cognitive dissonance, and regret can reduce the validity of surveys of preferences in patients who are living with the consequences of a prior decision. Indeed, a systematic review of patient preference literature for the antithrombotic guidelines of the American College of Chest Physicians found only heterogeneous and low-confidence evidence.[4] Direct patient consultation requires decisions about who should be invited (eg, general public, those with the disease or their caregivers, or those facing or who have recently faced the decision of interest), how they would provide input (eg, members of the panel, deliberative democracy), and how to balance their perspectives with those of other panelists. Lack of time, resources, and expertise may hinder incorporation of patient preferences or only produce tokenistic patient involvement, false inclusion, and devalued input.[5]

These challenges could be considered opportunities to develop new and better methods. This optimism is somewhat tempered by the stubbornly poor quality of contemporary guidelines. Getting the evidence right—the right options, outcomes, and outcome data—is an obligatory prerequisite for considering informed patient preferences. For instance, in a survey of more than 2000 patients with diabetes living in Minnesota, 1 in 4 respondents considered hemoglobin A_{1c}, a measure of glycemic control, to be as important as death or major morbidity.[6] For decades, experts, diabetes organizations, and industry have indoctrinated patients and physicians to believe that hemoglobin A_{1c} captures the beneficial effects of diabetes care, a view not supported by large randomized trials. If panels were to consider the preferences from these patients, in this context of inaccurate information, guidelines would probably look just like the ones produced by similarly misguided diabetes experts.

This example illustrates a key insight: the challenges intrinsic to incorporating patient preferences are the same as those involved in incorporating expert views into guidelines. These include advocacy and activism of a particular position; lack of appreciation for evidence-based medicine and its methods for the selection, appraisal, summary, and presentation of the evidence; complicated power, language, goal,[7] and experience differences across panelists; and lack of respect for the rigorous methods of guideline formulation.

Grading of Recommendations Assessment Development and Evaluation (GRADE)

Considerations in formulating guideline recommendations (in addition to the quality of the evidence):

- √ – Tradeoffs between benefits and harms
- √ – Uncertainty in the estimates of effects
- √ – Values and preferences of benefits and harms from those affected
- – Translation of evidence into specific setting
- – Resource implications

- GRADE working group. BMJ 2004.

ISPOR Task Forces on Good Research Practices (GRPs)

https://www.ispor.org/workpaper/ConjointAnalysisGRP.asp

SCIENTIFIC REPORT

Conjoint Analysis Applications in Health—a Checklist: A Report of the

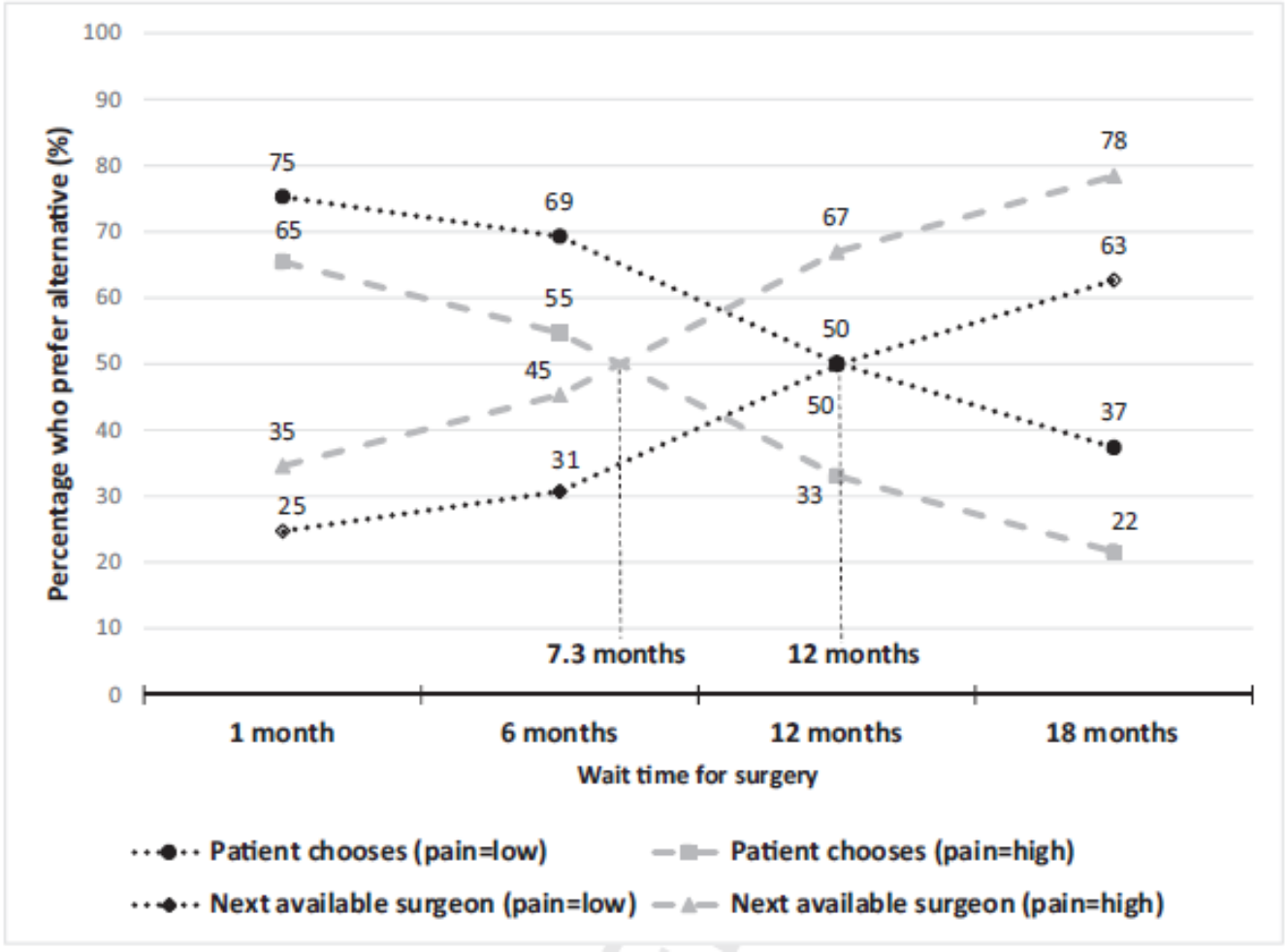
"Aligning health care policy with patient preferences could improve the effectiveness of health care interventions by improving adoption of, satisfaction with, and adherence to clinical treatments."

Dean A. Regier, PhD[6], Brian W. Bresnahan, PhD[7], Barbara Kanninen, PhD[8], John F.P. Bridges, PhD[9]

Statistical Methods for the Analysis of Discrete Choice Experiments: A Report of the ISPOR Conjoint Analysis Good Research Practices Task Force

A. Brett Hauber, PhD[1,*], Juan Marcos González, PhD[1], Catharina G.M. Groothuis-Oudshoorn, PhD[2], Thomas Prior, BA[3], Deborah A. Marshall, PhD[4], Charles Cunningham, PhD[5], Maarten J. IJzerman, PhD[2], John F.P. Bridges, PhD[6]

Willingness to wait to select surgeon verses assignment to next available surgeon

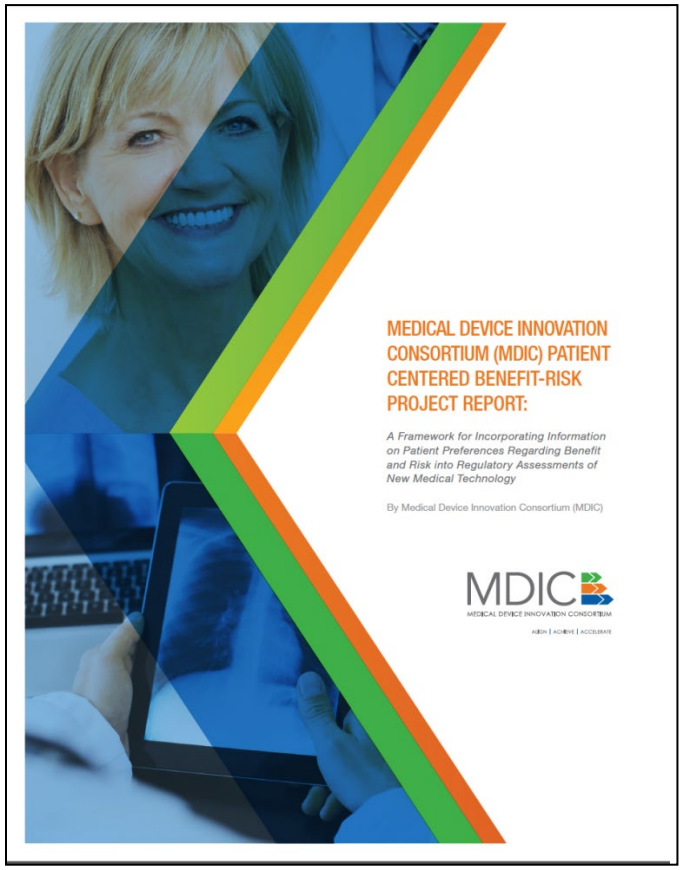


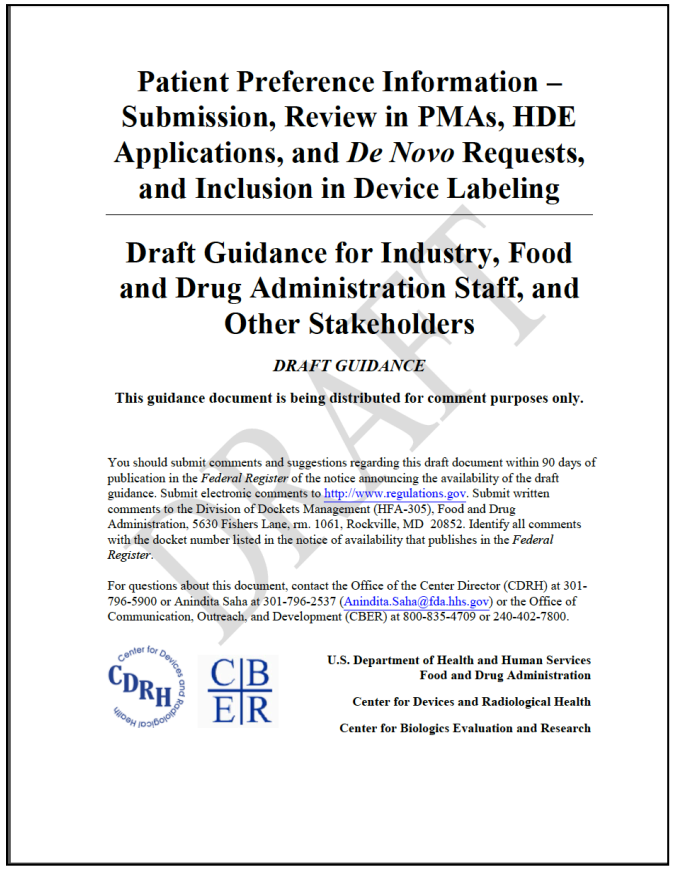
- Patients with the worst pain are willing to wait ~7 months
- Patients with the least pain are willing to wait ~12 months

…to select the surgeon themselves (vs being assigned the next available surgeon from a list)

- Marshall DA et al. Osteoarthritis and Cartilage, 2018

3) Patient centered care and perspectives in policy decisions





Patient Preference Information – Submission, Review in PMAs, HDE Applications, and *De Novo* Requests, and Inclusion in Device Labeling

Draft Guidance for Industry, Food and Drug Administration Staff, and Other Stakeholders

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only.

You should submit comments and suggestions regarding this draft document within 90 days of publication in the *Federal Register* of the notice announcing the availability of the draft guidance. Submit electronic comments to http://www.regulations.gov. Submit written comments to the Division of Dockets Management (HFA-305), Food and Drug Administration, 5630 Fishers Lane, rm. 1061, Rockville, MD 20852. Identify all comments with the docket number listed in the notice of availability that publishes in the *Federal Register*.

For questions about this document, contact the Office of the Center Director (CDRH) at 301-796-5900 or Anindita Saha at 301-796-2537 (Anindita.Saha@fda.hhs.gov) or the Office of Communication, Outreach, and Development (CBER) at 800-835-4709 or 240-402-7800.

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Devices and Radiological Health
Center for Biologics Evaluation and Research

DRAFT

Patient-centered movement

Quantitative benefit-risk

Patient-Focused Benefit-Risk Analysis to Inform Regulatory Decisions **Value in Health Themed Issue, October, 2016**

FDA working with Patients to explore Benefit/Risk: Opportunities & Challenges

Health Canada

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

- *Guest Editor Shelby Reed, Themed Issue, Value in Health, Oct 2016*

Discussion Leaders

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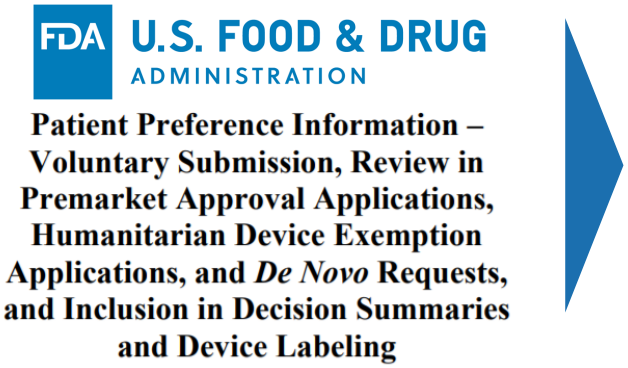
Senior Research Economist, RTI Health Solutions, Belfast, UK

Accounting for heterogeneity is recommended…

Example



IV. Recommended Qualities of Patient Preference Studies

c) ***Capturing Heterogeneity of Patients' Preferences***: Patients' benefit-risk tradeoff preferences may be heterogeneous even among those with the same disease or condition. Individual circumstances of patients vary. Besides sex, gender, age, race, ethnicity, socioeconomic, cultural background, and other life circumstances, a patient's own experience of his/her disease may influence the patient's personal tolerance for risk. As mentioned in the Benefit-Risk Guidance, patient views may be […]

…but is it clear how to go about it?

Disclaimer:
- This presentation focusses on discrete choice experiments (DCEs)
- We assume preference heterogeneity is defined as differences in individuals' treatment choice to changes in treatment attributes

What do guidelines say about how to do it?

ISPOR
Improving healthcare decisions

SCIENTIFIC REPORT

Conjoint Analysis Applications in Health—a Checklist: A Report of the ISPOR Good Research Practices for Conjoint Analysis Task Force

John F. P. Bridges, PhD[1,*], A. Brett Hauber, PhD[2], Deborah Marshall, PhD[3], Andrew Lloyd, DPhil[4], Lisa A. Prosser, PhD[5], Dean A. Regier, PhD[6], F. Reed Johnson, PhD[2], Josephine Mauskopf, PhD[7]

[1]Department of Health Policy & Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; [2]Health Preference Assessment Group, RTI Health Solutions, Research Triangle Park, NC, USA; [3]Department of Community Health Sciences Faculty of Medicine, University of Calgary, Calgary, Alberta, Canada; [4]Patient Reported Outcomes Group, Oxford Outcomes, Oxford, UK; [5]Child Health Evaluation and Research Unit, Department of Pediatrics, University of Michigan, Ann Arbor, MI, USA; [6]Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA, USA; [7]Health Economics Group, RTI Health Solutions, Research Triangle Park, NC, USA

No advice on how to account for preference heterogeneity

Statistical Methods for the Analysis of Discrete Choice Experiments: A Report of the ISPOR Conjoint Analysis Good Research Practices Task Force

A. Brett Hauber, PhD[1,*], Juan Marcos González, PhD[1], Catharina G.M. Groothuis-Oudshoorn, PhD[2], Thomas Prior, BA[3], Deborah A. Marshall, PhD[4], Charles Cunningham, PhD[5], Maarten J. IJzerman, PhD[2], John F.P. Bridges, PhD[6]

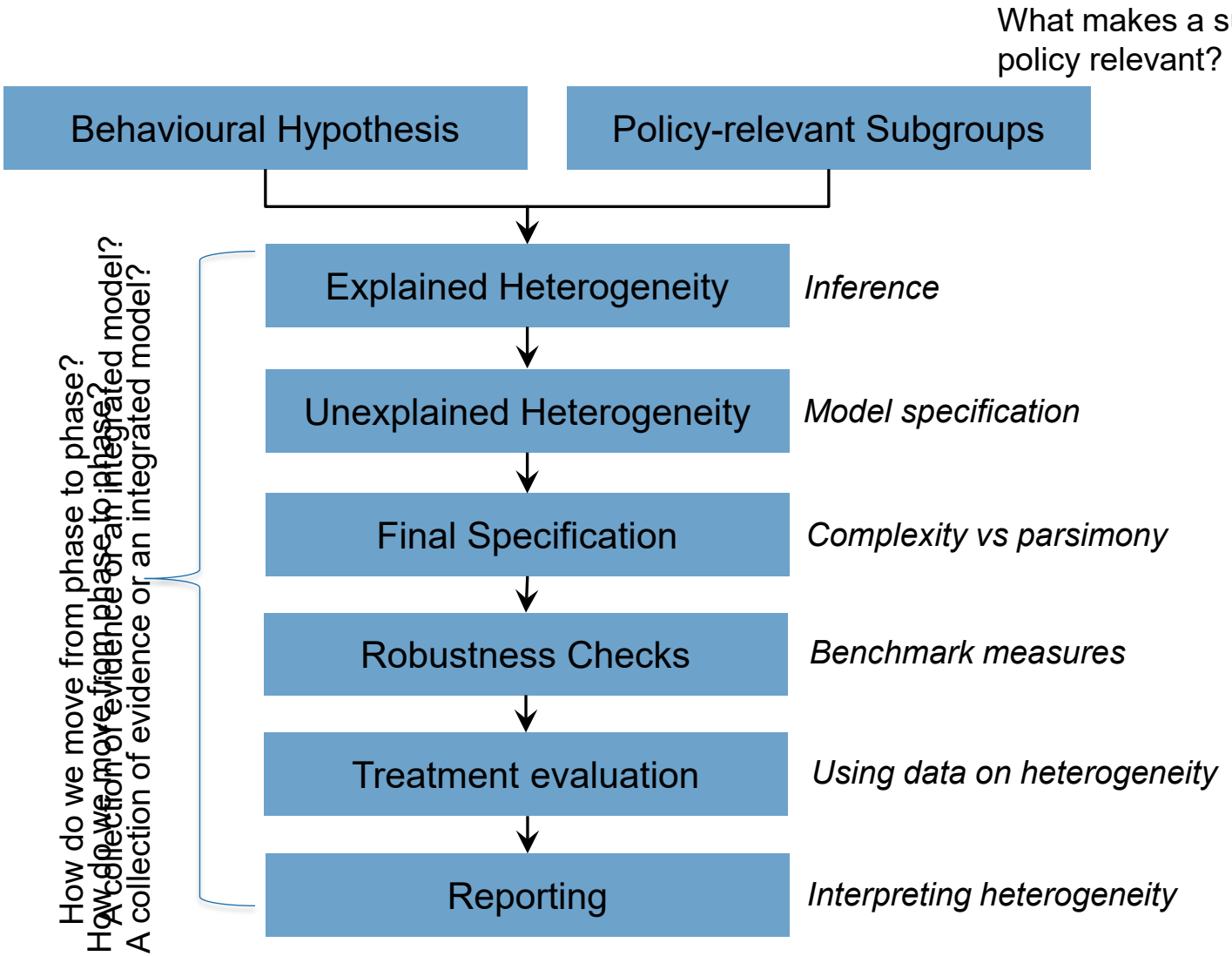
[1]RTI Health Solutions, Research Triangle Park, NC, USA; [2]Department of Health Technology and Services Research, University of Twente, Enschede, The Netherlands; [3]Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; [4]Department of Community Health Sciences, Faculty of Medicine, University of Calgary and O'Brien Institute for Public Health, Calgary, Alberta, Canada; [5]Department of Psychiatry and Behavioural Neuroscience, Michael G. DeGroote School of Medicine, McMaster University, Hamilton, Ontario, Canada; [6]Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

ences that will yield a single set of preference weights. The conditional logit model does not account for systematic variations in preferences across respondents. Failing to account for heterogeneity in preferences can lead to biased estimates of the preference weights.

Introduction to three models:
(1) Mixed logit; (2) latent class;
(3) Hierarchical Bayes

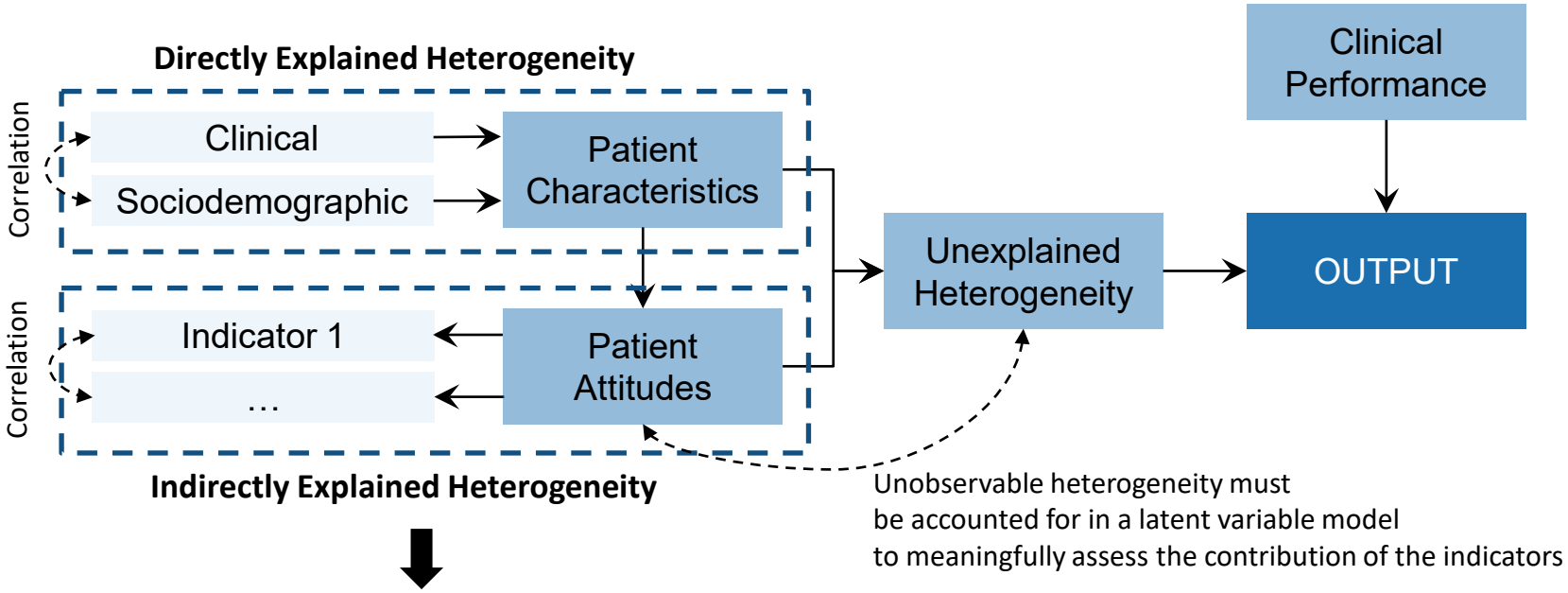
No discussion of explained heterogeneity
No advice on model selection
Limited guidance on challenges

Little guidance on the analytical process



Lack of conceptual frameworks

How complex is complex enough?



Policy relevance:

- Are the indicators actionable and/or help provide relevant insights?
- Are identified latent variables clinically meaningful?

Little guidance on methodological challenges

The alphabet soup of models

Multinomial logit

Mixed logit

Hierarchical Bayes

Generalized multinomial logit

Scale-adjusted finite mixture models

Finite mixture models

Hybrid choice model

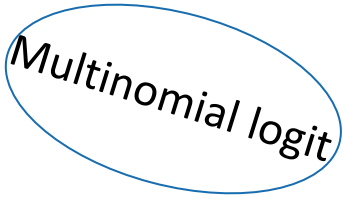
Random parameter finite mixture models

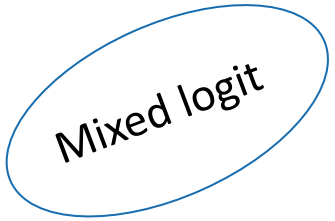
Scale-adjusted random parameter finite mixture models

Logit-Mixed-Logit

Little guidance on methodological challenges

The alphabet soup of models





Generalized multinomial logit

Finite mixture models

Hybrid choice model

Scale-adjusted random parameter finite mixture models

Logit-Mixed-Logit

Observable Heterogeneity

Differences in preferences that <u>can be explained</u> by data about patients characteristics (e.g. sex, age, disease severity).

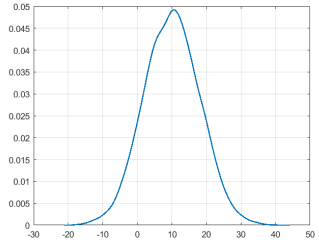
Unobservable Heterogeneity

Differences in preferences that <u>cannot be explained</u> by collected data about patients' characteristics (often: different expectations, experiences, tastes, lifestyles, attitudes).

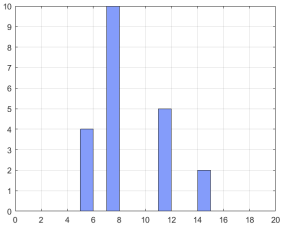
Little guidance on methodological challenges

The alphabet soup of models

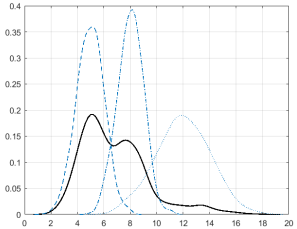
Distributional Assumptions



Requires assumptions about the distribution



Requires assumptions about the number of groups



Requires assumptions about the distributions and number of groups

Mixed logit

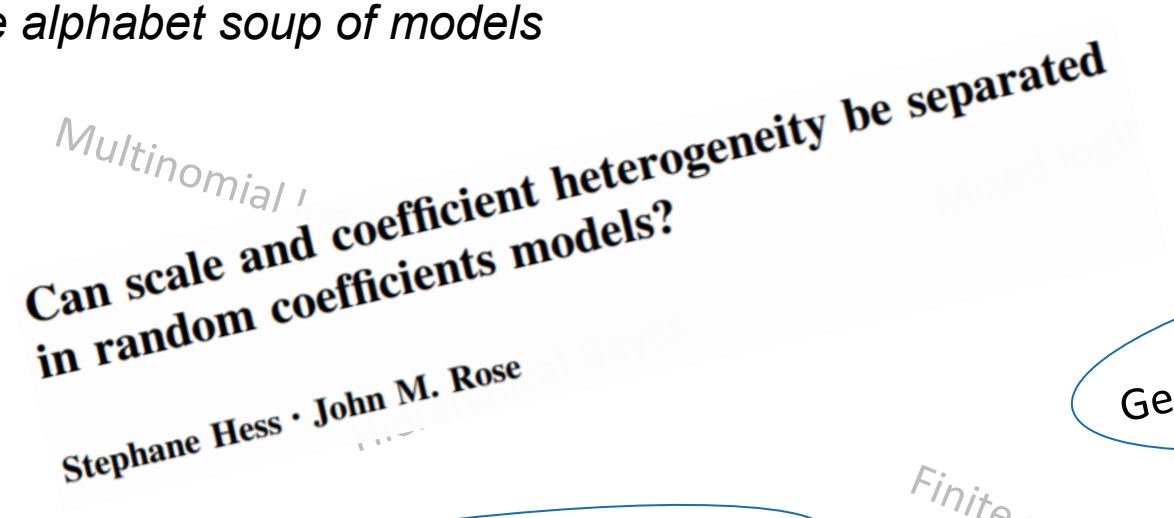
Finite mixture models

Random parameter finite mixture models

Logit-Mixed-Logit

Little guidance on methodological challenges

The alphabet soup of models



Generalized multinomial logit

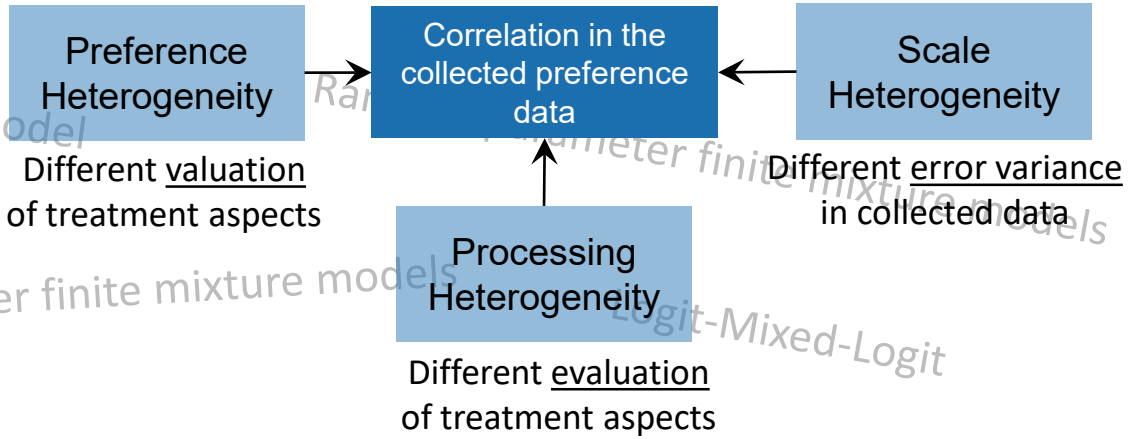
Scale-adjusted finite mixture models

Finite mixture models

Hybrid choice model

Scale-adjusted random parameter finite mixture models

Logit-Mixed-Logit



Little guidance on methodological challenges

The alphabet soup of models

Multinomial logit

Mixed logit

Hierarchical Bayes

Generalized multinomial logit

Scale-adjusted finite mixture models

Finite mixture models

Hybrid choice model

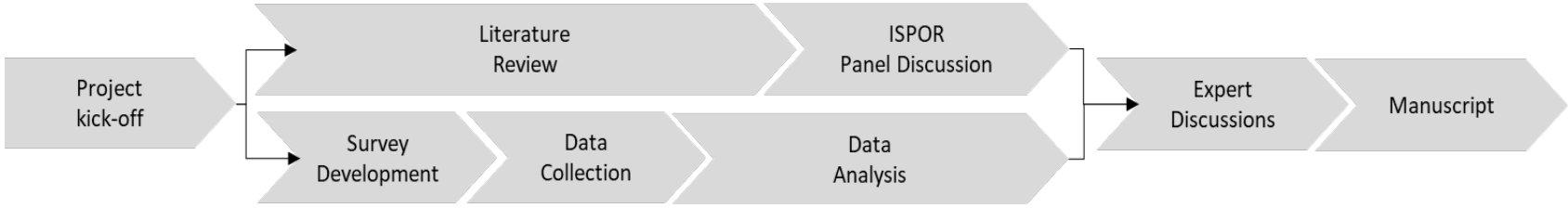
Random parameter finite mixture models

Quo Vadis?

Scale-adjusted random parameter finite mixture models

Logit-Mixed-Logit

Study Overview



- Overall Objectives
  - To determine the state-of-practice in accounting for preference heterogeneity in the analysis of DCE data
  - To outline gaps in current guidelines with respect to accounting for preference heterogeneity in the analysis of DCE data

- A 4,000 word manuscript will be developed to disseminate the findings of the project.

Discussion Leaders

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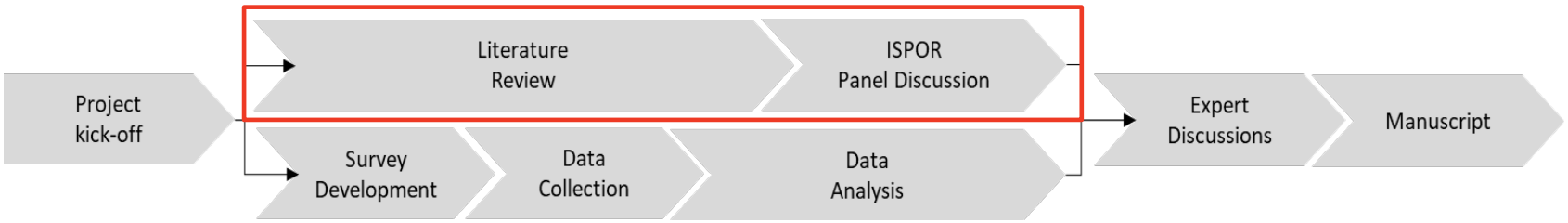
Workstream 1: Literature review



- A literature review focussed on DCE in health/healthcare will be conducted.
  - The literature review will assess how previously published studies in health/healthcare accounted for preference heterogeneity (explained/unexplained) in DCE and how preference heterogeneity is covered in established guidelines for conducting DCEs in healthcare.
- We are in the process of registering the review on PROSPERO
- Systematic search and review process is started:
  - We have executed the title and abstract review
  - We are in the process of executing the full text review

Inclusion/Exclusion Criteria

Inclusion	Exclusion

• Peer-reviewed papers, written in English
• Published 01Jan 2000 – 15MAR2020.
• Literature that falls under the Random Utility Model (RUM)
• Discrete choice experiments on health and healthcare, such as health valuation studies, treatment studies, and structure/policy studies (e.g., examine job preferences of health workers - physicians, medical students, and nurses).
• Includes analyses of preference heterogeneity (including explained and unexplained heterogeneity).
  • The unexplained heterogeneity will cover all finite and continuous mixture models with and without covariates effects. Hybrid choice model studies will also be included.
  • Explained heterogeneity will include all interaction studies, i.e., data are pooled.
	• Studies that analyze preference of food (e.g., high sugar), transportation (road safety), and environment (air quality control) that may or may not be related to health, unless addressing health and healthcare audience (health, health economics, or methodological journal).
	• Studies that focus on choice heterogeneity only to evaluate heuristic (e.g., attribute non-attendance), information processing (i.e., differences in utility function), and data mining perspectives.
	• Studies that stratify the data with separate analyses, i.e., data are not pooled (e.g., multiple countries or studies comparing patients and physicians).

Search terms:

- Health or Healthcare

And

- discrete choice experiments or discrete choice experiment or discrete choice modeling or discrete choice modelling or discrete choice conjoint experiment or stated choice or part-worth utilities or functional measurement or paired comparisons or pairwise choices or conjoint analysis or conjoint measurement or conjoint studies or conjoint choice experiment

And

- preference heterogeneity or Random Parameter Logit or Latent Class or Subgroup or heterogeneity in preferences

Methods

- Potential articles will be reviewed in three tiers:
  - First: reviewing the articles identified by existing systematic reviews;
    - Soekhai V, de Bekker-Grob EW, Ellis AR, Vass CM. Discrete choice experiments in health economics: past, present and future. Pharmacoeconomics. 2019;37(2):201–26.
    - Zhou M, Thayer MW, Bridges JFP. Using latent class analysis to model preference heterogeneity in health: a systematic review. Pharmacoeconomics. 2018;36(2):175–87.
  - Second: conduct complementary, and citation searches for articles that clearly indicate preference heterogeneity and health.
    - If reviewers find controversial article (do we include it?) the arbitrator has decided (could solicit feedback from experts).
    - After the title/abstract review, the articles will be curated and undergo a full-text review (confirmatory) prior to extraction.
  - Third: solicit input (relevant articles) from experts
- Extraction template currently under development

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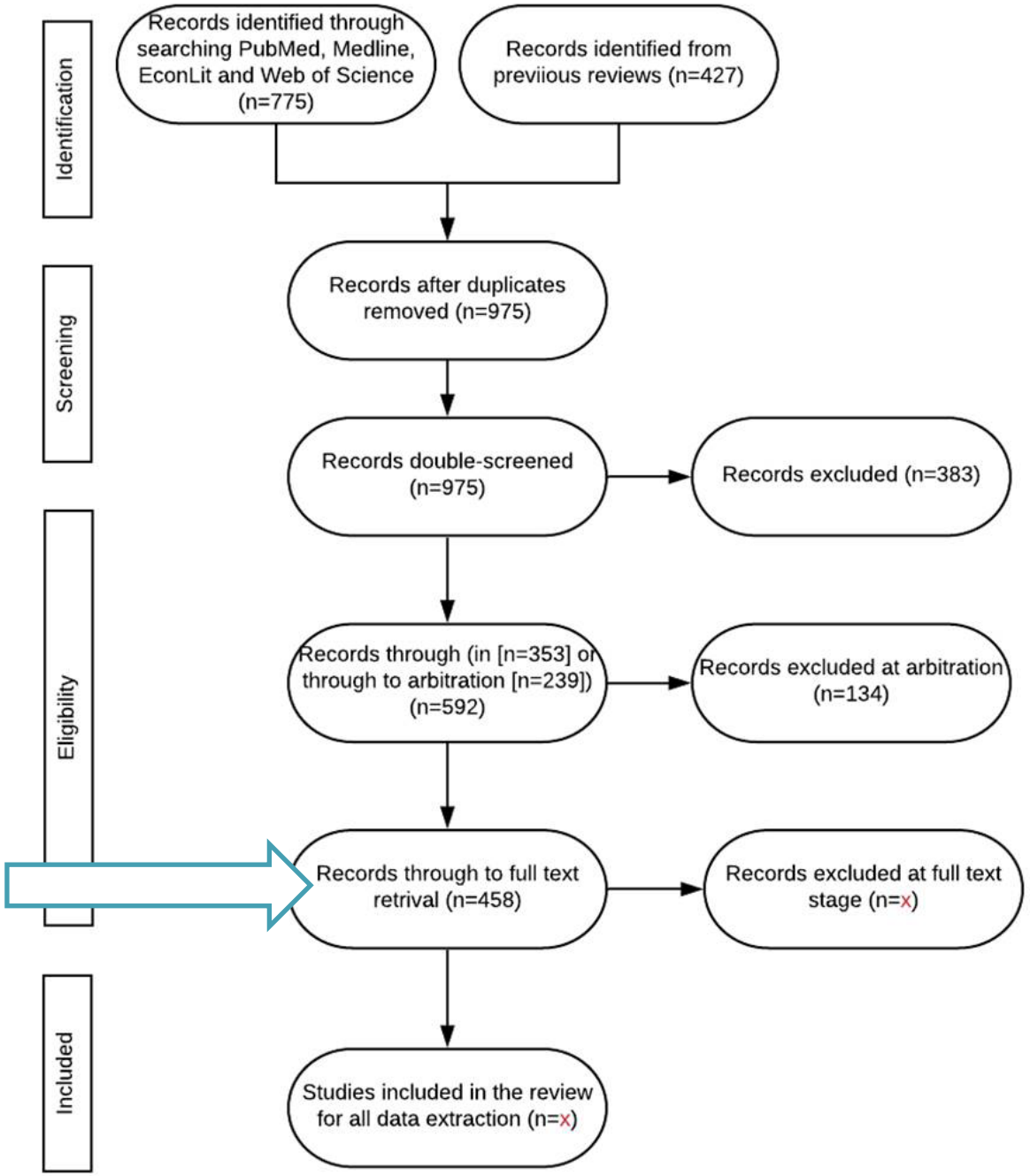
- Extraction template currently under development

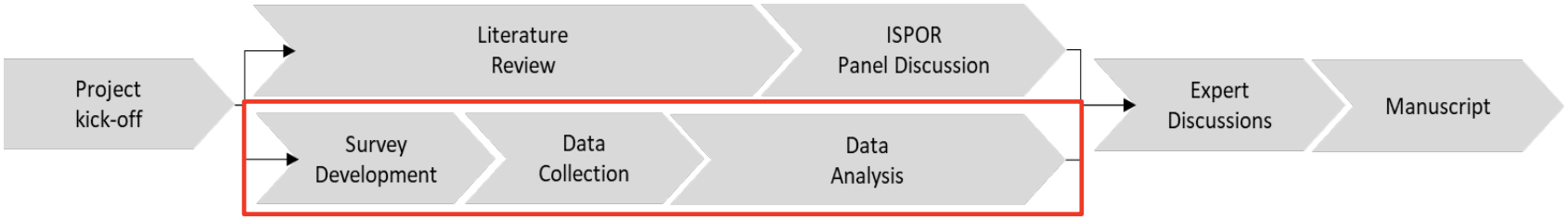
Competed

Search Results:

- 4 duplicates and 13 as abstracts only.
- 441 is the final number of retrieved articles.



Workstream 2: Survey



- Key objectives of the survey per proposal
  - To elicit views, experiences and perceptions around preference heterogeneity that help us interpret the current state of practice
    - To identify definitions of preference heterogeneity
    - To identify current approaches used to account for preference heterogeneity
      - Which ones exists? How are they selected?
    - To identify relevant methodological challenges
      - Statistical challenges, but also fundamental challenges (i.e. behavioural pluralism)
    - To identify challenges in the reporting/interpretation of preference heterogeneity
      - Do conventions exist? What ambiguities do exist (e.g. 30% of patients consider the benefits are worth the risks vs. 30% probability that the benefits are worth the risks)
  - To identify needs for further guidance and/or standards

Topics and Rough Outline (1/7)

- The 15-25 min survey will be split into five parts:
  - **Part 1:** About You
  - **Part 2:** Understanding Preference Heterogeneity
  - **Part 3:** Accounting for Preference Heterogeneity
  - **Part 4:** Selected Methodological Challenges
  - **Part 5:** Assessing the Need for Guidance

Topics and Rough Outline (2/7)

- The 10-20 min survey will be split into five parts:
  - **Part 1:** About You
    - Sociodemographic characteristics and affiliations
    - Experience with DCEs
    - Assess knowledge and experience with heterogeneity
  - **Part 2:** Understanding Preference Heterogeneity
  - **Part 3:** Accounting for Preference Heterogeneity
  - **Part 4:** Selected Methodological Challenges (skip if little experience)
  - **Part 5:** Assessing the Need for Guidance

Topics and Rough Outline (3/7)

- The 10-20 min survey will be split into five parts:
  - **Part 1:** About You
  - **Part 2:** Understanding Preference Heterogeneity
    - Definition, Terminology & Relevance
    - Importance for publishing
    - Attitudinal questions
  - **Part 3:** Accounting for Preference Heterogeneity
  - **Part 4:** Selected Methodological Challenges
  - **Part 5:** Assessing the Need for Guidance
    - Provide information at the end of survey and tell you will provide that during the introduction

Topics and Rough Outline (4/7)

- The 10-20 min survey will be split into five parts:
  - **Part 1:** About You
  - **Part 2:** Understanding Preference Heterogeneity
  - **Part 3:** Accounting for Preference Heterogeneity
    - Ex-ante considerations
      - Overall study design (e.g. mixed methods component)
      - Recruitment (e.g. mode admin) / sampling approach (e.g. stratification)
      - DCE design
      - Questionnaire design (capturing drivers of preference heterogeneity)
        - » Respondents' characteristics
        - » Attitudes
        - » Experiences
    - Ex-post considerations
  - **Part 4:** Selected Methodological Challenges
  - **Part 5:** Assessing the Need for Guidance

Topics and Rough Outline (5/7)

- The 10-20 min survey will be split into five parts:
  - **Part 1:** About You
  - **Part 2:** Understanding Preference Heterogeneity
  - **Part 3:** Accounting for Preference Heterogeneity
    - Ex-ante considerations
    - Ex-post considerations
      - Explained Heterogeneity
        - » Challenges with split sample approaches
      - Unexplained Heterogeneity
        - » Experience with different models
        - » Preference vs valuation space
        - » **Drivers of model choice and specification**
          - Practical constraints
      - Combining Explained and Unexplained
      - Complementary Data Collection
  - **Part 4:** Selected Methodological Challenges
  - **Part 5:** Assessing the Need for Guidance

Models

- MNL/CL no interaction of sample split
- MNL/CL with interactions
- HB
- MXL-EC
- MXL-EC with interactions
- MXL-RP
- MXL-RP with interactions
- MXL-EC-RP
- MXL-EC-RP with interactions
- LC/FM
- LC/FM with covariates
- S-LC/S-FM
- S-LC/S-FM with covariates
- GMNL
- RP-LC/RP-FM
- RP-LC/RP-FM with covariates
- S-RP-LC/S-RP-FM
- S-RP-LC/S-RP-FM with covariates
- Hybrid-MNL (latent
- Hybrid-MXL
- LML
- Others _____

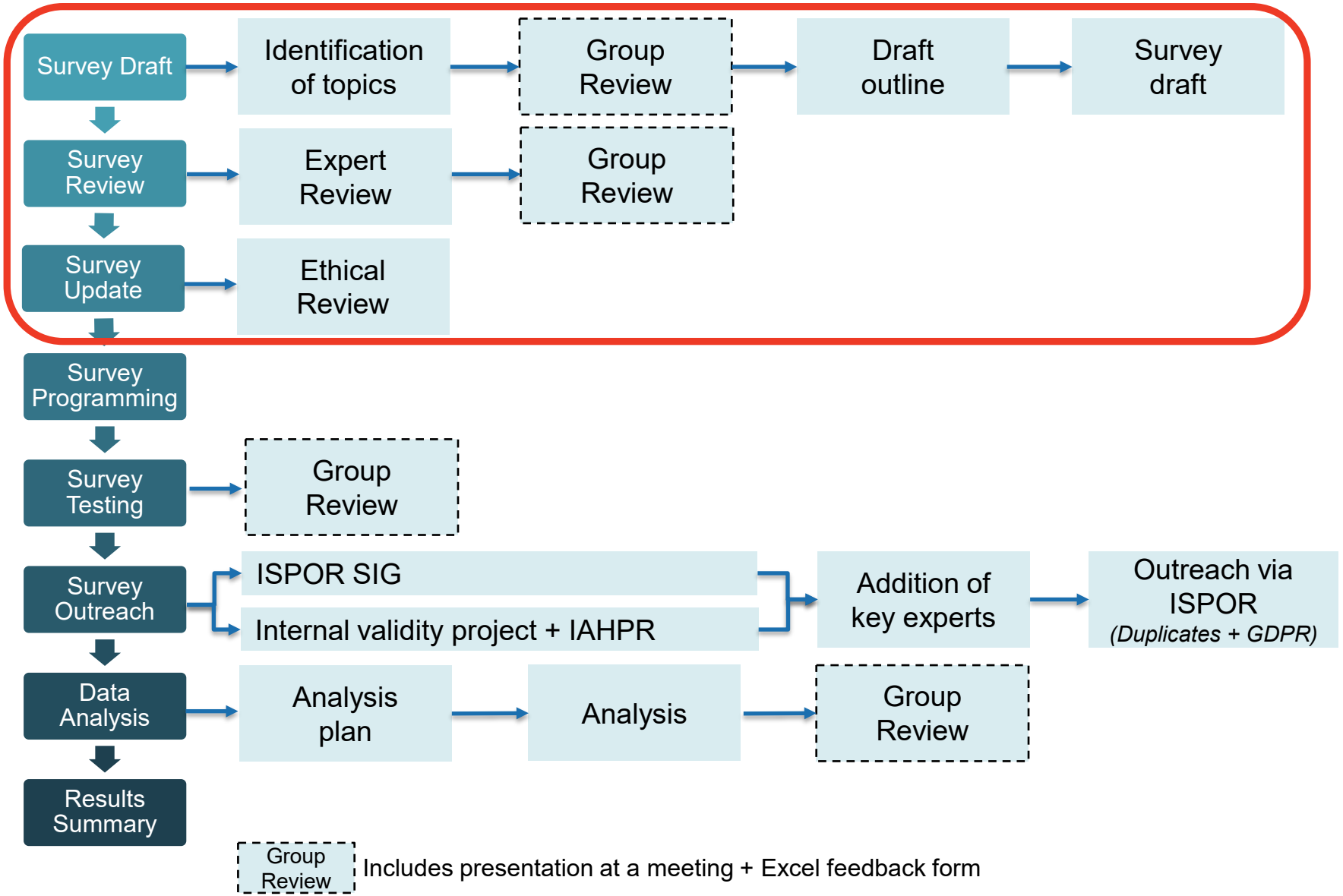
Topics and Rough Outline (6/7)

- The 10-20 min survey will be split into five parts:
  - **Part 1:** About You
  - **Part 2:** Understanding Preference Heterogeneity
  - **Part 3:** Accounting for Preference Heterogeneity
    - Ex-ante considerations
    - Ex-post considerations
      - Explained Heterogeneity
      - Unexplained Heterogeneity
      - Combining Explained and Unexplained
      - Complementary Data Collection
        - » Relevance & Possibilities
        - » Quantitative
        - » Qualitative
  - **Part 4:** Selected Methodological Challenges
  - **Part 5:** Assessing the Need for Guidance

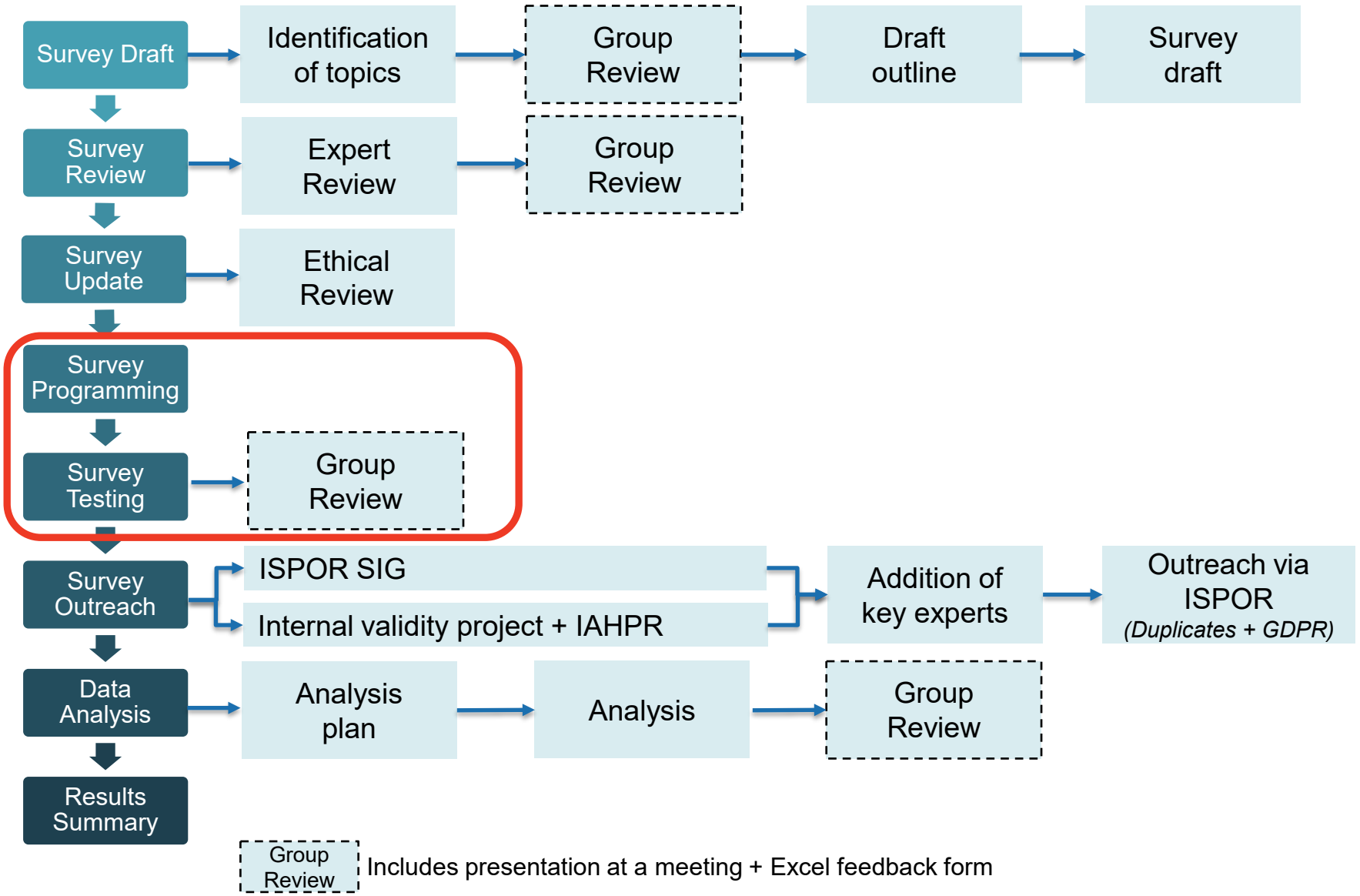
Topics and Rough Outline (7/7)

- The 10-20 min survey will be split into five parts:
  - **Part 1:** About You
  - **Part 2:** Understanding Preference Heterogeneity
  - **Part 3:** Accounting for Preference Heterogeneity
  - **Part 4:** Selected Methodological Challenges
    - Confounders
      - Scale Heterogeneity
      - Information Processing
      - Learning and Fatigue
      - Literacy and Numeracy
    - Model Specification and Estimation
    - Interpretation & Reporting
  - **Part 5:** Assessing the Need for Guidance and/or Standards

Completed (or Currently Active)



Next Steps


Survey Draft
Identification of topics
Group Review
Draft outline
Survey draft
Survey Review
Expert Review
Group Review
Survey Update
Ethical Review
Survey Programming
Survey Testing
Group Review
Survey Outreach
ISPOR SIG
Internal validity project + IAHPR
Addition of key experts
Outreach via ISPOR
(Duplicates + GDPR)
Data Analysis
Analysis plan
Analysis
Group Review
Results Summary
Group Review
Includes presentation at a meeting + Excel feedback form

Discussion Leaders

- Deborah A Marshall, PhD
  Professor, University of Calgary, Canada

Sebastian Heidenreich, PhD
Associate Director, Evidera Inc., London, UK

Marco Boeri, PhD
Senior Research Economist, RTI Health Solutions, Belfast, UK

Audience Polling Questions

- Accounting for preference heterogeneity is important and provides a richer understanding of the data.
  Please denote your level of agreement

1) Strongly agree
2) Agree
3) Disagree
4) Strongly disagree
5) Don’t know/unsure

Audience Polling Questions

- Do you account for preference heterogeneity in the analysis of your DCE studies?
  Please select one response

1) I always do
2) I sometimes do
3) I never do
4) Don’t know

Audience Polling Questions

- The increased interest in preference heterogeneity has resulted in the adoption of sophisticated models that potentially provide more insights, but also create challenges to both practitioners and decision makers.
  Please denote your level of agreement

1) Strongly agree
2) Agree
3) Disagree
4) Strongly disagree
5) Don’t know/unsure

Audience Polling Questions

- Given the complexity of the topic, further guidance on how to account for preference heterogeneity is needed.
  Please denote your level of agreement

1) Strongly agree
2) Agree
3) Disagree
4) Strongly disagree
5) Don’t know/unsure

Thank you!