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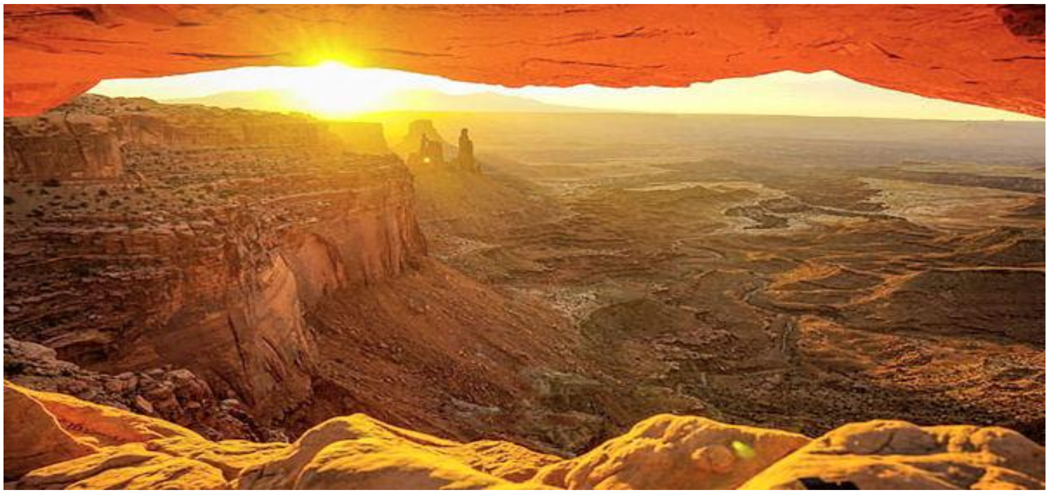
ARTIFICIAL INTELLIGENCE LARGE LANGUAGE MODEL INTERROGATION



REPRESENTATIONAL MEASUREMENT FAILURE IN HEALTH TECHNOLGY ASSESSMENT

UNITED KINGDOM: DECONSTRUCTING THE EPISTEMIC KNOWLEDGE BASE OF *The International Journal of Technology Assessment in Health Care (IJTAHC)*

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FOREWORD

HEALTH TECHNOLOGY ASSESSMENT: A GLOBAL SYSTEM OF NON-MEASUREMENT

This Logit Working Paper series documents a finding as extraordinary as it is uncomfortable: health technology assessment (HTA), across nations, agencies, journals, and decades, has developed as a global system of non-measurement. It speaks the language of numbers, models, utilities, QALYs, "value for money," thresholds, discounting, incremental ratios, extrapolations, and simulations. It demands arithmetic at every turn, multiplication, division, summation, aggregation, discounting, yet it never once established that the quantities to which these operations are applied are measurable. HTA has built a vast evaluative machinery on foundations that do not exist. The probabilities and normalized logits in the country reports that follow provide the empirical confirmation of this claim. They show, with unsettling consistency, that the global HTA system consistently support measurement failure.

The objective of this study is to evaluate the epistemic knowledge base that underpins the *International Journal of Technology Assessment in Health Care (IJTAHC)* by applying the full twenty-four item canonical diagnostic grounded in representational measurement theory and Rasch measurement principles. Rather than examining individual articles, author intent, or editorial policy statements, the study interrogates the journal as an epistemic system. The purpose is to determine whether the knowledge base that authorizes quantitative claims within the journal recognizes the axioms required for meaningful measurement and lawful arithmetic. By treating the journal itself as the object of analysis, the study seeks to identify whether numerical authority in its published research arises from demonstrated measurement structure or from convention, repetition, and institutional normalization.

The results of the canonical interrogation reveal a coherent and stable epistemic profile characterized by near-uniform non-endorsement of foundational measurement propositions. Across the full set of twenty-four statements, endorsement probabilities cluster decisively toward the lower bound of the scale, with normalized logits concentrated between −2.20 and −2.50. No proposition expressing a necessary condition for measurement approaches neutrality, and none registers positive reinforcement. The pattern is internally consistent and exhibits no evidence of conceptual transition, partial possession, or theoretical contestation. The findings indicate that representational measurement axioms do not function as governing constraints within the journal's knowledge base. Quantitative practices are therefore sustained through convention rather than measurement legitimacy.

The starting point is simple and inescapable: *measurement precedes arithmetic*. This principle is not a methodological preference but a logical necessity. One cannot multiply what one has not measured, cannot sum what has no dimensional homogeneity, cannot compare ratios when no ratio scale exists. When HTA multiplies time by utilities to generate QALYs, it is performing arithmetic with numbers that cannot support the operation. When HTA divides cost by QALYs, it is constructing a ratio from quantities that have no ratio properties. When HTA aggregates QALYs across individuals or conditions, it is combining values that do not share a common scale. These practices are not merely suboptimal; they are mathematically impossible.

The modern articulation of this principle can be traced to Stevens' seminal 1946 paper, which introduced the typology of nominal, ordinal, interval, and ratio scales [1]. Stevens made explicit what physicists, engineers, and psychologists already understood: different kinds of numbers permit different kinds of arithmetic. Ordinal scales allow ranking but not addition; interval scales permit addition and subtraction but not multiplication; ratio scales alone support multiplication, division, and the construction of meaningful ratios. Utilities derived from multiattribute preference exercises, such as EQ-5D or HUI, are ordinal preference scores; they do not satisfy the axioms of interval measurement, much less ratio measurement. Yet HTA has, for forty years, treated these utilities as if they were ratio quantities, multiplying them by time to create QALYs and inserting them into models without the slightest recognition that scale properties matter. Stevens' paper should have blocked the development of QALYs and cost-utility analysis entirely. Instead, it was ignored.

The foundational theory that establishes *when* and *whether* a set of numbers can be interpreted as measurements came with the publication of Krantz, Luce, Suppes, and Tversky's *Foundations of Measurement* (1971) [2] . Representational Measurement Theory (RMT) formalized the axioms under which empirical attributes can be mapped to numbers in a way that preserves structure. Measurement, in this framework, is not an act of assigning numbers for convenience, it is the discovery of a lawful relationship between empirical relations and numerical relations. The axioms of additive conjoint measurement, homogeneity, order, and invariance specify exactly when interval scales exist. RMT demonstrated once and for all that measurement is not optional and not a matter of taste: either the axioms hold and measurement is possible, or the axioms fail and measurement is impossible. Every major construct in HTA, utilities, QALYs, DALYs, ICERs, incremental ratios, preference weights, health-state indices, fails these axioms. They lack unidimensionality; they violate independence; they depend on aggregation of heterogeneous attributes; they collapse under the requirements of additive conjoint measurement. Yet HTA proceeded, decade after decade, without any engagement with these axioms, as if the field had collectively decided that measurement theory applied everywhere except in the evaluation of therapies.

Whereas representational measurement theory articulates the axioms for interval measurement, Georg Rasch's 1960 model provides the only scientific method for transforming ordered categorical responses into interval measures for latent traits [3]. Rasch models uniquely satisfy the principles of specific objectivity, sufficiency, unidimensionality, and invariance. For any construct such as pain, fatigue, depression, mobility, or need, Rasch analysis is the only legitimate means of producing an interval scale from ordinal item responses. Rasch measurement is not an alternative to RMT; it is its operational instantiation. The equivalence of Rasch's axioms and the axioms of representational measurement was demonstrated by Wright, Andrich and others as early as the 1970s. In the latent-trait domain, the very domain where HTA claims to operate; Rasch is the only game in town [4].

Yet Rasch is effectively absent from all HTA guidelines, including NICE, PBAC, CADTH, ICER, SMC, and PHARMAC. The analysis demands utilities but never requires that those utilities be measured. They rely on multiattribute ordinal classifications but never understand that those constructs be calibrated on interval or ratio scales. They mandate cost-utility analysis but never justify the arithmetic. They demand modelled QALYs but never interrogate their dimensional properties. These guidelines do not misunderstand Rasch; they do not know it exists. The axioms that define measurement and the model that makes latent trait measurement possible are invisible to the authors of global HTA rules. The field has evolved without the science that measurement demands.

How did HTA miss the bus so thoroughly? The answer lies in its historical origins. In the late 1970s and early 1980s, HTA emerged not from measurement science but from welfare economics, decision theory, and administrative pressure to control drug budgets. Its core concern was *valuing health states*, not *measuring health*. This move, quiet, subtle, but devastating, shifted the field away from the scientific question "What is the empirical structure of the construct we intend to measure?" and toward the administrative question "How do we elicit a preference weight that we can multiply by time?" The preference-elicitation projects of that era (SG, TTO, VAS) were rationalized as measurement techniques, but they never satisfied measurement axioms. Ordinal preferences were dressed up as quasi-cardinal indices; valuation tasks were misinterpreted as psychometrics; analyst convenience replaced measurement theory. The HTA community built an entire belief system around the illusion that valuing health is equivalent to measuring health. It is not.

The endurance of this belief system, forty years strong and globally uniform, is not evidence of validity but evidence of institutionalized error. HTA has operated under conditions of what can only be described as *structural epistemic closure*: a system that has never questioned its constructs because it never learned the language required to ask the questions. Representational measurement theory is not taught in graduate HTA programs; Rasch modelling is not part of guideline development; dimensional analysis is not part of methodological review. The field has been insulated from correction because its conceptual foundations were never laid. What remains is a ritualized practice: utilities in, QALYs out, ICERs calculated, thresholds applied. The arithmetic continues because everyone assumes someone else validated the numbers.

This Logit Working Paper series exposes, through probabilistic and logit-based interrogations of AI large language national knowledge bases, the scale of this failure. The results display a global pattern: true statements reflecting the axioms of measurement receive weak endorsement; false statements reflecting the HTA belief system receive moderate or strong reinforcement. This is not disagreement. It is non-possession. It shows that HTA, worldwide, has developed as a quantitative discipline without quantitative foundations; a confused exercise in numerical storytelling.

The conclusion is unavoidable: HTA does not need incremental reform; it needs a scientific revolution. Measurement must precede arithmetic. Representational axioms must precede valuation rituals. Rasch measurement must replace ordinal summation and utility algorithms. Value claims must be falsifiable, protocol-driven, and measurable; rather than simulated, aggregated, and numerically embellished.

The global system of non-measurement is now visible. The task ahead is to replace it with science.

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DISCLAIMER

This analysis is generated through the structured interrogation of a large language model (LLM) applied to a defined documentary corpus and is intended solely to characterize patterns within an aggregated knowledge environment. It does identify, assess, or attribute beliefs, intentions, competencies, or actions to any named individual, faculty member, student, administrator, institution, or organization. The results do not constitute factual findings about specific persons or programs, nor should they be interpreted as claims regarding professional conduct, educational quality, or compliance with regulatory or accreditation standards. All probabilities and logit values reflect model-based inferences about the presence or absence of concepts within a bounded textual ecosystem, not judgments about real-world actors. The analysis is exploratory, interpretive, and methodological in nature, offered for scholarly discussion of epistemic structures rather than evaluative or legal purposes. Any resemblance to particular institutions or practices is contextual and non-attributive, and no adverse implication should be inferred.

1. INTERROGATING THE LARGE LANGUAGE MODEL

A large language model (LLM) is an artificial intelligence system designed to understand, generate, and manipulate human language by learning patterns from vast amounts of text data. Built on deep neural network architectures, most commonly transformers, LLMs analyze relationships between words, sentences, and concepts to produce contextually relevant responses. During training, the model processes billions of examples, enabling it to learn grammar, facts, reasoning patterns, and even subtle linguistic nuances. Once trained, an LLM can perform a wide range of tasks: answering questions, summarizing documents, generating creative writing, translating languages, assisting with coding, and more. Although LLMs do not possess consciousness or true understanding, they simulate comprehension by predicting the most likely continuation of text based on learned patterns. Their capabilities make them powerful tools for communication, research, automation, and decision support, but they also require careful oversight to ensure accuracy, fairness, privacy, and responsible use

In this Logit Working Paper, "interrogation" refers not to discovering what an LLM *believes,* it has no beliefs, but to probing the content of the *corpus-defined knowledge space* we choose to analyze. This knowledge base is enhanced if it is backed by accumulated memory from the user. In this case the interrogation relies also on 12 months of HTA memory from continued application of the system to evaluate HTA experience. The corpus is defined before interrogation: it may consist of a journal (e.g., *Value in Health*), a national HTA body, a specific methodological framework, or a collection of policy documents. Once the boundaries of that corpus are established, the LLM is used to estimate the conceptual footprint within it. This approach allows us to determine which principles are articulated, neglected, misunderstood, or systematically reinforced.

In this HTA assessment, the objective is precise: to determine the extent to which a given HTA knowledge base or corpus, global, national, institutional, or journal-specific, recognizes and reinforces the foundational principles of representational measurement theory (RMT). The core principle under investigation is that measurement precedes arithmetic; no construct may be treated as a number or subjected to mathematical operations unless the axioms of measurement are satisfied. These axioms include unidimensionality, scale-type distinctions, invariance, additivity, and the requirement that ordinal responses cannot lawfully be transformed into interval or ratio quantities except under Rasch measurement rules.

The HTA knowledge space is defined pragmatically and operationally. For each jurisdiction, organization, or journal, the corpus consists of:

- published HTA guidelines
- agency decision frameworks
- cost-effectiveness reference cases
- academic journals and textbooks associated with HTA
- modelling templates, technical reports, and task-force recommendations
- teaching materials, methodological articles, and institutional white papers

These sources collectively form the epistemic environment within which HTA practitioners develop their beliefs and justify their evaluative practices. The boundary of interrogation is thus not the whole of medicine, economics, or public policy, but the specific textual ecosystem that sustains HTA reasoning. . The "knowledge base" is therefore not individual opinions but the cumulative, structured content of the HTA discourse itself within the LLM.

KNOWLEDGE BASE OF THE IJTAHC

The epistemic knowledge base of the IJTAHC is constituted not by any single theoretical position or editorial declaration, but by the accumulated practices through which quantitative claims are routinely produced, evaluated, and disseminated. As the official journal of the international HTA community, it occupies a central position in shaping what counts as acceptable evidence, valid analysis, and methodological rigor within health technology assessment. Its authority does not derive from advocacy of particular techniques alone, but from its role as a venue in which analytic norms are stabilized through repetition.

Within this knowledge base, numerical outputs are treated as the default language of evaluation. Clinical outcomes, quality-of-life measures, utilities, costs, and modeled estimates are presented as quantities whose legitimacy is assumed rather than demonstrated. Articles routinely report means, incremental differences, ratios, and thresholds without engaging the prior question of whether the underlying numbers possess the scale properties required to support such operations. Arithmetic appears not as a conditional act governed by measurement axioms, but as an intrinsic feature of analytic professionalism.

The journal's corpus reflects a strong orientation toward methodological standardization. Reference cases, preferred instruments, accepted modeling structures, and dominant evaluative frameworks recur across submissions. This repetition produces epistemic stability. Once a numerical form is routinely encountered in published work, its legitimacy becomes self-reinforcing. Reviewers assess conformity to established analytic practice rather than the representational validity of the quantities involved. As a result, measurement theory does not function as an admissibility condition for publication.

A defining feature of this knowledge base is the conflation of valuation with measurement. Preference-based utilities are treated as if they were quantitative magnitudes of health rather than expressions of desirability. Multiattribute instruments are aggregated into single index scores without demonstration of unidimensional structure. Negative values are accepted without reconciliation with ratio-scale requirements. These practices are not controversial within the journal because the conceptual distinctions required to render them problematic are absent from its operative framework.

Education and professional transmission further reinforce this structure. Many contributors to the journal are trained within programs that emphasize applied modeling, cost-effectiveness analysis, and guideline compliance rather than representational measurement theory. As a result, authors rarely frame their work in terms of scale admissibility or axiomatic constraint. Reviewers rarely request such justification. Editorial decisions therefore reproduce an epistemic environment in which numerical legitimacy is inferred from precedent rather than established through theory.

Importantly, this knowledge base does not exhibit confusion or inconsistency. Its defining feature is coherence. Quantitative claims are evaluated according to internal methodological criteria that presuppose, rather than test, the existence of measurable quantities. This produces a closed epistemic loop: numerical practices validate themselves through publication, and publication validates numerical practices through repetition.

The journal's authority within HTA amplifies the consequences of this structure. By functioning as a central clearinghouse for quantitative claims, it normalizes arithmetic operations that lack representational justification and transmits those norms across agencies, academic programs, and policy environments. In doing so, it plays a pivotal role in sustaining an international evaluative framework in which numerical form substitutes for measurement.

The knowledge base of the *IJTAHC* is therefore best understood not as a collection of methodological errors, but as an epistemic system in which the axioms of measurement are not recognized as governing rules. Quantification proceeds smoothly, consistently, and confidently; yet without the conceptual architecture required to determine when numbers may legitimately represent empirical attributes. This absence, rather than any technical deficiency, defines the journal's epistemic character.

CATEGORICAL PROBABILITIES

In the present application, the interrogation is tightly bounded. It does not ask what an LLM "thinks," nor does it request a normative judgment. Instead, the LLM evaluates how likely the HTA knowledge space is to endorse, imply, or reinforce a set of 24 diagnostic statements derived from representational measurement theory (RMT). Each statement is objectively TRUE or FALSE under RMT. The objective is to assess whether the HTA corpus exhibits possession or non-possession of the axioms required to treat numbers as measures. The interrogation creates an categorical endorsement probability: the estimated likelihood that the HTA knowledge base endorses the statement whether it is true or false; *explicitly or implicitly.*

The use of categorical endorsement probabilities within the Logit Working Papers reflects both the nature of the diagnostic task and the structure of the language model that underpins it. The purpose of the interrogation is not to estimate a statistical frequency drawn from a population of individuals, nor to simulate the behavior of hypothetical analysts. Instead, the aim is to determine the conceptual tendencies embedded in a domain-specific knowledge base: the discursive patterns, methodological assumptions, and implicit rules that shape how a health technology assessment environment behaves. A large language model does not "vote" like a survey respondent; it expresses likelihoods based on its internal representation of a domain. In this context, endorsement probabilities capture the strength with which the knowledge base, as represented within the model, supports a particular proposition. Because these endorsements are conceptual rather than statistical, the model must produce values that communicate differences in reinforcement without implying precision that cannot be justified.

This is why categorical probabilities are essential. Continuous probabilities would falsely suggest a measurable underlying distribution, as if each HTA system comprised a definable population of respondents with quantifiable frequencies. But large language models do not operate on that level.

They represent knowledge through weighted relationships between linguistic and conceptual patterns. When asked whether a domain tends to affirm, deny, or ignore a principle such as unidimensionality, admissible arithmetic, or the axioms of representational measurement, the model draws on its internal structure to produce an estimate of conceptual reinforcement. The precision of that estimate must match the nature of the task. Categorical probabilities therefore provide a disciplined and interpretable way of capturing reinforcement strength while avoiding the illusion of statistical granularity.

The categories used, values such as 0.05, 0.10, 0.20, 0.50, 0.75, 0.80, and 0.85, are not arbitrary. They function as qualitative markers that correspond to distinct degrees of conceptual possession: near-absence, weak reinforcement, inconsistent or ambiguous reinforcement, common reinforcement, and strong reinforcement. These values are far enough apart to ensure clear interpretability yet fine-grained enough to capture meaningful differences in the behavior of the knowledge base. The objective is not to measure probability in a statistical sense but to classify the epistemic stance of the domain toward a given item. A probability of 0.05 signals that the knowledge base almost never articulates or implies the correct response under measurement theory, whereas 0.85 indicates that the domain routinely reinforces it. Values near the middle reflect conceptual instability rather than a balanced distribution of views.

Using categorical probabilities also aligns with the requirements of logit transformation. Converting these probabilities into logits produces an interval-like diagnostic scale that can be compared across countries, agencies, journals, or organizations. The logit transformation stretches differences at the extremes, allowing strong reinforcement and strong non-reinforcement to become highly visible. Normalizing logits to the fixed ±2.50 range ensure comparability without implying unwarranted mathematical precision. Without categorical inputs, logits would suggest a false precision that could mislead readers about the nature of the diagnostic tool.

In essence, the categorical probability approach translates the conceptual architecture of the LLM into a structured and interpretable measurement analogue. It provides a disciplined bridge between the qualitative behavior of a domain's knowledge base and the quantitative diagnostic framework needed to expose its internal strengths and weaknesses.

The LLM computes these categorical probabilities from three sources:

1. **Structural content of HTA discourse**
   If the literature repeatedly uses ordinal utilities as interval measures, multiplies non-quantities, aggregates QALYs, or treats simulations as falsifiable, the model infers high reinforcement of these false statements.
2. **Conceptual visibility of measurement axioms**
   If ideas such as unidimensionality, dimensional homogeneity, scale-type integrity, or Rasch transformation rarely appear, or are contradicted by practice, the model assigns low endorsement probabilities to TRUE statements.
3. **The model's learned representation of domain stability**
   Where discourse is fragmented, contradictory, or conceptually hollow, the model avoids assigning high probabilities. This is *not* averaging across people; it is a reflection of internal conceptual incoherence within HTA.

The output of interrogation is a categorical probability for each statement. Probabilities are then transformed into logits [ln(p/(1–p)], capped to ±4.0 logits to avoid extreme distortions, and normalized to ±2.50 logits for comparability across countries. A positive normalized logit indicates reinforcement in the knowledge base. A negative logit indicates weak reinforcement or conceptual absence. Values near zero logits reflect epistemic noise.

Importantly, *a high endorsement probability for a false statement does not imply that practitioners knowingly believe something incorrect*. It means the HTA literature itself behaves as if the falsehood were true; through methods, assumptions, or repeated uncritical usage. Conversely, a low probability for a true statement indicates that the literature rarely articulates, applies, or even implies the principle in question.

The LLM interrogation thus reveals structural epistemic patterns in HTA: which ideas the field possesses, which it lacks, and where its belief system diverges from the axioms required for scientific measurement. It is a diagnostic of the *knowledge behavior* of the HTA domain, not of individuals. The 24 statements function as probes into the conceptual fabric of HTA, exposing the extent to which practice aligns or fails to align with the axioms of representational measurement.

INTERROGATION STATEMENTS

Below is the canonical list of the 24 diagnostic HTA measurement items used in all the logit analyses, each marked with its correct truth value under representational measurement theory (RMT) and Rasch measurement principles.

This is the definitive set used across the Logit Working Papers.

Measurement Theory & Scale Properties

1. Interval measures lack a true zero — TRUE
2. Measures must be unidimensional — TRUE
3. Multiplication requires a ratio measure — TRUE
4. Time trade-off preferences are unidimensional — FALSE
5. Ratio measures can have negative values — FALSE
6. EQ-5D-3L preference algorithms create interval measures — FALSE
7. The QALY is a ratio measure — FALSE
8. Time is a ratio measure — TRUE

Measurement Preconditions for Arithmetic

9. Measurement precedes arithmetic — TRUE
10. Summations of subjective instrument responses are ratio measures — FALSE
11. Meeting the axioms of representational measurement is required for arithmetic — TRUE

Rasch Measurement & Latent Traits

12. There are only two classes of measurement: linear ratio and Rasch logit ratio — TRUE

13. Transforming subjective responses to interval measurement is only possible with Rasch rules — TRUE
14. Summation of Likert question scores creates a ratio measure — FALSE

Properties of QALYs & Utilities

15. The QALY is a dimensionally homogeneous measure — FALSE
16. Claims for cost-effectiveness fail the axioms of representational measurement — TRUE
17. QALYs can be aggregated — FALSE

Falsifiability & Scientific Standards

18. Non-falsifiable claims should be rejected — TRUE
19. Reference-case simulations generate falsifiable claims — FALSE

Logit Fundamentals

20. The logit is the natural logarithm of the odds-ratio — TRUE

Latent Trait Theory

21. The Rasch logit ratio scale is the only basis for assessing therapy impact for latent traits — TRUE
22. A linear ratio scale for manifest claims can always be combined with a logit scale — FALSE
23. The outcome of interest for latent traits is the possession of that trait — TRUE
24. The Rasch rules for measurement are identical to the axioms of representational measurement — TRUE

AI LARGE LANGUAGE MODEL STATEMENTS: TRUE OR FALSE

Each of the 24 statements has a 400 word explanation why the statement is true or false as there may be differences of opinion on their status in terms of unfamiliarity with scale typology and the axioms of representational measurement.

The link to these explanations is: https://maimonresearch.com/ai-llm-true-or-false/

INTERPRETING TRUE STATEMENTS

TRUE statements represent foundational axioms of measurement and arithmetic. Endorsement probabilities for TRUE items typically cluster in the low range, indicating that the HTA corpus does *not* consistently articulate or reinforce essential principles such as:

- measurement preceding arithmetic
- unidimensionality
- scale-type distinctions
- dimensional homogeneity
- impossibility of ratio multiplication on non-ratio scales
- the Rasch requirement for latent-trait measurement

Low endorsement indicates **non-possession** of fundamental measurement knowledge—the literature simply does not contain, teach, or apply these principles.

INTERPRETING FALSE STATEMENTS

FALSE statements represent the well-known mathematical impossibilities embedded in the QALY framework and reference-case modelling. Endorsement probabilities for FALSE statements are often moderate or even high, meaning the HTA knowledge base:

- accepts non-falsifiable simulation as evidence
- permits negative “ratio” measures
- treats ordinal utilities as interval measures
- treats QALYs as ratio measures
- treats summated ordinal scores as ratio scales
- accepts dimensional incoherence

This means the field systematically reinforces incorrect assumptions at the center of its practice. *Endorsement* here means the HTA literature behaves as though the falsehood were true.

2. SUMMARY OF FINDINGS FOR TRUE AND FALSE ENDORSEMENTS: IJTAHC

Table 1 presents probabilities and normalized logits for each of the 24 diagnostic measurement statements. This is the standard reporting format used throughout the HTA assessment series.

It is essential to understand how to interpret these results.

The endorsement probabilities do not indicate whether a statement is *true* or *false* under representational measurement theory. Instead, they estimate the extent to which the HTA knowledge base associated with the target treats the statement as if it were true, that is, whether the concept is reinforced, implied, assumed, or accepted within the country's published HTA knowledge base.

The logits provide a continuous, symmetric scale, ranging from +2.50 to –2.50, that quantifies the degree of this endorsement. the logits, of course link to the probabilities (p) as the logit is the natural logarithm of the odds ratio; logit = ln[p/1-p].

- Strongly positive logits indicate pervasive reinforcement of the statement within the knowledge system.
- Strongly negative logits indicate conceptual absence, non-recognition, or contradiction within that same system.
- Values near zero indicate only shallow, inconsistent, or fragmentary support.

Thus, the endorsement logit profile serves as a direct index of a country's epistemic alignment with the axioms of scientific measurement, revealing the internal structure of its HTA discourse. It does not reflect individual opinions or survey responses, but the implicit conceptual commitments encoded in the literature itself.

RESULTS AND DISCUSSION

The canonical assessment of the IJTAHC reveals a knowledge base that is rhetorically fluent in the language of science yet structurally insulated from its discipline (Table 1). The logit profile is not ambiguous. It displays a consistent pattern of selective acknowledgment, strategic omission, and categorical exclusion that together define an epistemic system organized around decisional closure rather than the evolution of objective knowledge.

TABLE 1: ITEM STATEMENT, RESPONSE, ENDORSEMENT AND NORMALIZED LOGITS IJTAHC

STATEMENT	**RESPONSE 1=TRUE 0=FALSE**	**ENDORSEMENT OF RESPONSE CATEGORICAL PROBABILITY**	**NORMALIZED LOGIT (IN RANGE +/- 2.50)**
INTERVAL MEASURES LACK A TRUE ZERO	1	0.20	-1.40
MEASURES MUST BE UNIDIMENSIONAL	1	0.25	-1.87
MULTIPLICATION REQUIRES A RATIO MEASURE	1	0.20	-1.40
TIME TRADE-OFF PREFERENCES ARE UNIDIMENSIONAL	0	0.85	+1.75
RATIO MEASURES CAN HAVE NEGATIVE VALUES	0	0.90	+2.20
EQ-5D-3L PREFERENCE ALGORITHMS CREATE INTERVAL MEASURES	0	0.85	+1.75
THE QALY IS A RATIO MEASURE	0	0.85	+1.75
TIME IS A RATIO MEASURE	1	0.90	+2.20
MEASUREMENT PRECEDES ARITHMETIC	1	0.20	-1.40
SUMMATIONS OF SUBJECTIVE INSTRUMENT RESPONSES ARE RATIO MEASURES	0	0.85	+1.75
MEETING THE AXIOMS OF REPRESENTATIONAL MEASUREMENT IS REQUIRED FOR ARITHMETIC	1	0.10	-2.20
THERE ARE ONLY TWO CLASSES OF MEASUREMENT LINEAR RATIO AND RASCH LOGIT RATIO	1	0.05	-2.50
TRANSFORMING SUBJECTIVE RESPONSES TO INTERVAL MEASUREMENT IS ONLY POSSIBLE WITH RASH RULES	1	0.05	-2.50
SUMMATION OF LIKERT QUESTION SCORES CREATES A RATIO MEASURE	0	0.85	+1.75
THE QALY IS A DIMENSIONALLY HOMOGENEOUS MEASURE	0	0.85	+1.75
CLAIMS FOR COST-EFFECTIVENESS FAIL THE AXIOMS OF REPRESENTATIONAL MEASUREMENT	1	0.20	-1.40
QALYS CAN BE AGGREGATED	0	0.90	+2.20

NON-FALSIFIABLE CLAIMS SHOULD BE REJECTED	1	0.55	+0.52
REFERENCE CASE SIMULATIONS GENERATE FALSIFIABLE CLAIMS	0	0.85	+1.75
THE LOGIT IS THE NATURAL LOGARITHM OF THE ODDS-RATIO	1	0.55	+0.50
THE RASCH LOGIT RATIO SCALE IS THE ONLY BASIS FOR ASSESSING THERAPY IMPACT FOR LATENT TRAITS	1	0.05	-2.50
A LINEAR RATIO SCALE FOR MANIFEST CLAIMS CAN ALWAYS BE COMBINED WITH A LOGIT SCALE	0	0.35	-1.25
THE OUTCOME OF INTEREST FOR LATENT TRAITS IS THE POSSESSION OF THAT TRAIT	1	0.25	-1.90
THE RASCH RULES FOR MEASUREMENT ARE IDENTICAL TO THE AXIOMS OF REPRESENTATIONAL MEASUREMENT	1	0.05	-2.50

The lower tail of the logit profile is anchored by axioms that would normally function as non-negotiable constraints in any quantitative science. Unidimensionality, the priority of measurement over arithmetic, and the requirement that arithmetic be licensed by representational axioms all sit in negative logit territory. These are not peripheral technicalities. They are the logical conditions that make numbers meaningful as representations of empirical attributes. Their systematic weakness indicates that the journal does not treat measurement law as a gatekeeper. Instead, arithmetic appears as a procedural activity justified by convention and precedent rather than by prior validation of scale type.

This inversion is decisive. In a scientific field, measurement precedes arithmetic; in the IJTAHC knowledge base, arithmetic precedes measurement. Numbers are produced first, debated later, and rarely, if ever, disqualified. The journal's willingness to publish complex analyses built on preference scores, utilities, and modeled outcomes without first resolving their scale properties reflects an implicit stance: that decision support can proceed without lawful measurement so long as the process is transparent, standardized, and socially endorsed.

The preference-based cluster reinforces this interpretation. The journal strongly rejects explicit falsehoods, claims that time trade-off preferences are unidimensional, that EQ-5D algorithms generate interval measures, or that the QALY is a ratio measure, yet this rejection does not translate into operational prohibition. Utilities continue to be added, multiplied, and aggregated; QALYs continue to be computed and compared. The rejection of the statement functions rhetorically, creating distance from the most obvious violations while leaving intact the practices those violations enable. This is a defining feature of epistemic closure: the system acknowledges the problem in words while neutralizing its consequences in action.

Time is treated as an exception. Its status as a ratio measure is affirmed at the top of the scale. This selectivity is revealing rather than reassuring. Time's ratio properties are harmless to the prevailing framework; indeed, they are necessary for it. The willingness to enforce measurement law where it enables the preferred arithmetic, and to relax it where it would constrain that arithmetic, exposes a hierarchy of commitments in which policy functionality outweighs scientific coherence.

The Rasch cluster marks the deepest fault line. Four statements that together establish Rasch measurement as the only lawful basis for transforming ordinal responses into invariant interval measures collapse to the floor. This is not a matter of debate or uncertainty; it is categorical absence. Rasch does not function as a requirement, a gatekeeper, or a standard of admissibility within the journal. That absence is extraordinary given the journal's heavy reliance on latent constructs that cannot be meaningfully quantified without such a transformation. The effect is to leave latent traits permanently unmeasured while continuing to treat their indicators as if they were quantities.

The consequences are profound. Without Rasch, ordinal responses remain ordinal. Without invariance, differences cannot be compared meaningfully across persons or contexts. Without a true zero, ratios are meaningless. The journal's refusal to adopt Rasch measurement thus explains how it can sustain decades of quantitative output without ever confronting the question of whether those outputs measure anything at all. This is not ignorance; it is structural avoidance.

The outcome-of-interest statement for latent traits further clarifies the orientation. The weak endorsement of possession as the outcome signals resistance to individual-level interpretation. Possession would require thresholds, invariance, and clinical interpretability. It would force a shift from population-level composites to patient-level claims that could be tested and revised. By keeping this statement weak, the journal preserves a space in which latent traits can be discussed endlessly without ever being measured decisively.

Aggregation provides another window into closure. The strong rejection of the claim that QALYs can be aggregated sits alongside routine aggregation in practice. Again, the contradiction is resolved procedurally rather than empirically. Aggregation is treated as a decision necessity, not a measurement claim. Once framed as necessary for policy, questions of dimensional homogeneity and scale compatibility lose their force. The journal thus sustains a system in which arithmetic is authorized by institutional need rather than by representational validity.

Falsification is treated similarly. The moderate endorsement of the proposition that non-falsifiable claims should be rejected coexists with strong endorsement of the rejection of falsifiability for reference-case simulations. This pairing is diagnostic. It signals allegiance to Popperian language without acceptance of Popperian consequences. Simulation outputs extend beyond observable horizons; they can always be repaired by parameter adjustment; their failure never refutes the model, only motivates recalibration. Error is absorbed rather than eliminated. Learning is replaced by accommodation.

Sensitivity analysis completes this closure. By demonstrating robustness across assumptions, analyses create reassurance without exposure to risk. Robustness becomes a surrogate for truth. Yet robustness to assumptions says nothing about correspondence with reality. A claim can be robustly wrong. The IJTAHC knowledge base provides no mechanism for recognizing that condition because it does not permit decisive failure.

The moderate positive endorsement of the logit definition underscores the journal's technical fluency. Statistical language is well understood; mathematical tools are used competently. But technical competence does not substitute for measurement discipline. The presence of logarithms and regression does not confer meaning on numbers derived from non-measures. The canonical profile shows that the journal can speak mathematics fluently while remaining silent on the conditions that make mathematics applicable.

The statement concerning the combination of manifest ratio scales with logit scales sits weakly negative, reflecting cautious awareness of scale-type incompatibility without enforcement. This allows mixed-scale composites to persist under the banner of pragmatism. The knowledge base acknowledges complexity while declining to impose rules that would simplify claims into testable components.

Read as a whole, the IJTAHC profile depicts a system optimized for legitimacy, not discovery. Its function is to normalize methods, harmonize practice across jurisdictions, and provide intellectual cover for decision processes that must proceed even in the absence of lawful measurement. Debate is permitted, but only within boundaries that protect the core arithmetic. Foundational critique is tolerated as discourse but excluded as constraint.

This role explains the distinctive shape of the profile. Unlike national guideline bodies, the journal allows rhetorical space for uncertainty, ethics, and critique. That space produces mid-range logits for statements invoking falsification or technical definitions. Yet the floor effects on Rasch and representational axioms reveal where tolerance ends. Anything that would invalidate the arithmetic pipeline is excluded categorically.

The implications for duty of care are unavoidable. Clinicians require claims that can be wrong in ways that matter to practice. Patients require outcomes grounded in observed response, not simulated preference trajectories. Health systems require information that can be updated as real-world performance unfolds. The journal's outputs do not meet these needs because they are not designed to fail decisively. Once published, claims are rarely exposed to empirical tests capable of refutation. They persist as part of a stabilized narrative rather than as provisional hypotheses.

This is the hallmark of a memeplex. The IJTAHC knowledge base reproduces itself through editorial norms, citation practices, and methodological consensus. Its survival does not depend on empirical success; it depends on institutional alignment. The canonical assessment makes this visible with a clarity that narrative critique alone cannot achieve. Each negative logit marks a principle that cannot be allowed to function; each positive logit marks a protection afforded to the prevailing framework.

The most damaging conclusion is not that the journal is wrong, but that it cannot be wrong in a way that matters. By insulating its quantitative claims from refutation, it halts the evolution of objective knowledge within HTA. Models may become more complex, data more abundant, and processes more inclusive, but the core claims remain imaginary in the strict sense: they cannot be proven false. Disagreement is resolved procedurally rather than empirically. Learning is replaced by accommodation.

In this light, the IJTAHC profile serves as a reference point for the entire HTA ecosystem. It shows how international legitimacy is constructed without measurement law; how Popperian language is retained without Popperian practice; and how arithmetic persists in the absence of measures. The result is a system that decides efficiently but knows little, that speaks science fluently but practices it selectively, and that presents closure as rigor.

The canonical logit profile does not accuse; it diagnoses. It shows that the failure is not local, accidental, or correctable by methodological refinement. It is structural. Until the journal reorganizes its evaluative architecture around single, unidimensional, empirically evaluable claims—supported by protocols for post-publication testing and revision—the pattern will persist. The numbers will continue to look precise; the decisions will continue to be made; and objective knowledge will remain stalled.

That is the significance of this table. It is not a critique of style or intent. It is an empirical map of absence of the principles that would make HTA a science rather than a narrative technology of decision with a commitment to numerical storytelling.

CAN THE IJTAHC REJECT ITS LEGACY AND COMMIT TO REPRESENTATIONAL MEASUREMENT?

The challenge is institutional rather than technical. Editorial boards operate within incentive structures shaped by citation networks, disciplinary training, reviewer expectations, and community norms. Most contributors to the *International Journal of Technology Assessment in Health Care* have been educated within analytic traditions that do not include formal measurement theory. Asking the journal to enforce axioms that its community has never been trained to recognize would likely generate resistance, confusion, and disengagement.

Yet the absence of such constraints is precisely what the diagnostic exposes. Where axioms are not recognized, numerical practice cannot be disciplined. The journal becomes a venue for increasingly sophisticated numerical manipulation, insulated from falsification at the level that matters most: whether the numbers employed actually measure anything.

If IJTAHC were to commit to representational measurement, the transition would have to be explicit and categorical. It would require the journal to distinguish clearly between descriptive classification, valuation exercises, and genuine measurement claims. Authors would need to specify the scale properties of reported outcomes and justify the admissibility of any arithmetic operations performed. Rasch measurement would need to be recognized not as an optional psychometric approach, but as a necessary condition for latent trait quantification.

Such a transformation would not erase the journal's historical record, but it would fundamentally reclassify it. Much of the existing literature would retain historical and documentary value as evidence of how health technology assessment has reasoned, modeled, and justified decisions over time. What it could no longer be treated as is quantitative evidence of magnitude, change, or comparative effect.

The temptation, when confronted with this conclusion, is to retreat to moderation. It is often argued that although current practices violate strict measurement standards, the literature nevertheless "remains informative" if interpreted cautiously. This position appears reasonable. It is also incoherent.

Information does not exist independently of the structure through which it is generated. If numerical outputs do not preserve empirical magnitude, then direction, size, and comparability cannot be interpreted as properties of the phenomenon under study. In such circumstances, numbers may appear precise, internally consistent, and statistically tractable, yet their relationship to reality is indeterminate. What is conveyed is not information about therapy impact, but information about how analytic systems behave under their own conventions.

To describe such outputs as "informative" is therefore to empty the term of content. Informative for what? Not for magnitude. Not for change. Not for comparison. Not for inference. At most, they inform us about modeling traditions, valuation assumptions, and institutional belief systems. They do not inform us about treatment effect in any quantitative sense. Treating them as approximate measures is not pragmatism; it is a category error disguised as caution.

There is no halfway position between measurement and non-measurement. Either numerical representations preserve empirically testable relations, or they do not. If they do not, no degree of statistical refinement, sensitivity analysis, or interpretive restraint can supply what is absent. Arithmetic cannot be rendered conditionally meaningful once its admissibility has failed.

For this reason, the notion of a middle ground, continuing existing practice while acknowledging its limitations, offers comfort at the expense of epistemic integrity. It allows institutions to preserve continuity without confronting invalidity. Scientific standards do not permit such continuity where foundational conditions are unmet.

The conclusion is therefore unavoidable. A journal whose core literature rests on numerical claims unsupported by representational measurement cannot be incrementally repaired. Its legacy cannot be selectively bracketed while its methods persist unchanged. The only coherent response is institutional discontinuity: closure of the existing framework and the establishment of a post-HTA journal grounded explicitly in measurement-first admissibility. Not as an act of repudiation, but as a necessary step toward restoring the conditions under which quantitative knowledge can exist at all.

3. THE TRANSITION TO MEASUREMENT IN HEALTH TECHNOLOGY ASSESSMENT

THE IMPERATIVE OF CHANGE

This analysis has not been undertaken to criticize decisions made by health system, nor to assign responsibility for the analytical frameworks currently used in formulary review. The evidence shows something more fundamental: organizations have been operating within a system that does not permit meaningful evaluation of therapy impact, even when decisions are made carefully, transparently, and in good faith.

The present HTA framework forces health systems to rely on numerical outputs that appear rigorous but cannot be empirically assessed (Table 1). Reference-case models, cost-per-QALY ratios, and composite value claims are presented as decision-support tools, yet they do not satisfy the conditions required for measurement. As a result, committees are asked to deliberate over results that cannot be validated, reproduced, or falsified. This places decision makers in an untenable position: required to choose among therapies without a stable evidentiary foundation.

This is not a failure of expertise, diligence, or clinical judgment. It is a structural failure. The prevailing HTA architecture requires arithmetic before measurement, rather than measurement before arithmetic. Health systems inherit this structure rather than design it. Manufacturers respond to it. Consultants reproduce it. Journals reinforce it. Universities promote it. Over time it has come to appear normal, even inevitable.

Yet the analysis presented in Table 1 demonstrates that this HTA framework cannot support credible falsifiable claims. Where the dependent variable is not a measure, no amount of modeling sophistication can compensate. Uncertainty analysis cannot rescue non-measurement. Transparency cannot repair category error. Consensus cannot convert assumption into evidence.

The consequence is that formulary decisions are based on numerical storytelling rather than testable claims. This undermines confidence, constrains learning, and exposes health systems to growing scrutiny from clinicians, patients, and regulators who expect evidence to mean something more than structured speculation.

The imperative of change therefore does not arise from theory alone. It arises from governance responsibility. A health system cannot sustain long-term stewardship of care if it lacks the ability to distinguish between claims that can be evaluated and claims that cannot. Without that distinction, there is no pathway to improvement; only endless repetition for years to come.

This transition is not about rejecting evidence. It is about restoring evidence to its proper meaning. It requires moving away from composite, model-driven imaginary constructs toward claims that are measurable, unidimensional, and capable of empirical assessment over time. The remainder of this section sets out how that transition can occur in a practical, defensible, and staged manner.

MEANINGFUL THERAPY IMPACT CLAIMS

At the center of the current problem is not data availability, modeling skill, or analytic effort. It is the nature of the claims being advanced. Contemporary HTA has evolved toward increasingly complex frameworks that attempt to compress multiple attributes, clinical effects, patient experience, time, and preferences into single composite outputs. These constructs are then treated as if they were measures. They are not (Table 1).

The complexity of the reference-case framework obscures a simpler truth: meaningful evaluation requires meaningful claims. A claim must state clearly what attribute is being affected, in whom, over what period, and how that attribute is measured. When these conditions are met, evaluation becomes possible. When they are not complexity substitutes for clarity. The current framework is not merely incorrect; it is needlessly elaborate. Reference-case modeling requires dozens of inputs, assumptions, and transformations, yet produces outputs that cannot be empirically verified. Each additional layer of complexity increases opacity while decreasing accountability. Committees are left comparing models rather than assessing outcomes.

In contrast, therapy impact can be expressed through two, and only two, types of legitimate claims. First are claims based on manifest attributes: observable events, durations, or resource units. These include hospitalizations avoided, time to event, days in remission, or resource use. When properly defined and unidimensional, these attributes can be measured on linear ratio scales and evaluated directly.

Second are claims based on latent attributes: symptoms, functioning, need fulfillment, or patient experience. These cannot be observed directly and therefore cannot be scored or summed meaningfully. They require formal measurement through Rasch models to produce invariant logit ratio scales. These two forms of claims are sufficient. They are also far more transparent. Each can be supported by a protocol. Each can be revisited. Each can be reproduced. Most importantly, each can fail. But they cannot be combined. This is the critical distinction. A meaningful claim is one that can be wrong.

Composite constructs such as QALYs do not fail in this sense. They persist regardless of outcome because they are insulated by assumptions. They are recalculated, not refuted. That is why they cannot support learning. The evolution of objective knowledge regarding therapy impact in disease areas is an entirely foreign concept. By re-centering formulary review on single-attribute, measurable claims, health systems regain control of evaluation. Decisions become grounded in observable change rather than modeled narratives. Evidence becomes something that accumulates, rather than something that is re-generated anew for every submission.

THE PATH TO MEANINGFUL MEASUREMENT

Transitioning to meaningful measurement does not require abandoning current processes overnight. It requires reordering them. The essential change is not procedural but conceptual: measurement must become the gatekeeper for arithmetic, not its byproduct.

The first step is formal recognition that not all numerical outputs constitute evidence. Health systems must explicitly distinguish between descriptive analyses and evaluable claims. Numbers that do not meet measurement requirements may inform discussion but cannot anchor decisions.

The second step is restructuring submissions around explicit claims rather than models. Each submission should identify a limited number of therapy impact claims, each defined by attribute, population, timeframe, and comparator. Claims must be unidimensional by design.

Third, each claim must be classified as manifest or latent. This classification determines the admissible measurement standard and prevents inappropriate mixing of scale types.

Fourth, measurement validity must be assessed before any arithmetic is permitted. For manifest claims, this requires confirmation of ratio properties. For latent claims, this requires Rasch-based measurement with demonstrated invariance.

Fifth, claims must be supported by prospective or reproducible protocols. Evidence must be capable of reassessment, not locked within long-horizon simulations designed to frustrate falsification.

Sixth, committees must be supported through targeted training in representational measurement principles, including Rasch fundamentals. Without this capacity, enforcement cannot occur consistently.

Finally, evaluation must be iterative. Claims are not accepted permanently. They are monitored, reproduced, refined, or rejected as evidence accumulates.

These steps do not reduce analytical rigor. They restore it.

TRANSITION REQUIRES TRAINING

A transition to meaningful measurement cannot be achieved through policy alone. It requires a parallel investment in training, because representational measurement theory is not intuitive and has never been part of standard professional education in health technology assessment, pharmacoeconomics, or formulary decision making. For more than forty years, practitioners have been taught to work within frameworks that assume measurement rather than demonstrate it. Reversing that inheritance requires structured learning, not informal exposure.

At the center of this transition is the need to understand why measurement must precede arithmetic. Representational measurement theory establishes the criteria under which numbers can legitimately represent empirical attributes. These criteria are not optional. They determine whether addition, multiplication, aggregation, and comparison are meaningful or merely symbolic. Without this foundation, committees are left evaluating numerical outputs without any principled way to distinguish evidence from numerical storytelling.

Training must therefore begin with scale types and their permissible operations. Linear ratio measurement applies to manifest attributes that possess a true zero and invariant units, such as time, counts, and resource use. Latent attributes, by contrast, cannot be observed directly and cannot be measured through summation or weighting. They require formal construction through a measurement model capable of producing invariant units. This distinction is the conceptual fulcrum of reform, because it determines which claims are admissible and which are not.

For latent trait claims, Rasch measurement provides the only established framework capable of meeting these requirements. Developed in the mid–twentieth century alongside the foundations of modern measurement theory, the Rasch model was explicitly designed to convert subjective observations into linear logit ratio measures. It enforces unidimensionality, tests item invariance, and produces measures that support meaningful comparison across persons, instruments, and time. These properties are not approximations; they are defining conditions of measurement.

Importantly, Rasch assessment is no longer technically burdensome. Dedicated software platforms developed and refined over more than four decades make Rasch analysis accessible, transparent, and auditable. These programs do not merely generate statistics; they explain why items function or fail, how scales behave, and whether a latent attribute has been successfully measured. Measurement becomes demonstrable rather than assumed.

Maimon Research has developed a two-part training program specifically to support this transition. The first component provides foundational instruction in representational measurement theory, including the historical origins of scale theory, the distinction between manifest and latent attributes, and the criteria that define admissible claims. The second component focuses on application, detailing claim types, protocol design, and the practical use of Rasch methods to support latent trait evaluation.

Together, these programs equip health systems, committees, and analysts with the competence required to enforce measurement standards consistently. Training does not replace judgment; it enables it. Without such preparation, the transition to meaningful measurement cannot be sustained. With it, formulary decision making can finally rest on claims that are not merely numerical, but measurable.

Each program consists of five modules (approx. 5,500 words each), with extensive questions and answers. Each program is priced at US$65.00. Invitations to participate in these programs will be distributed in the first instance to 8,700 HTA professionals in 40 countries.

More detail on program content and access, including registration and on-line payment, is provided with this link: https://maimonresearch.com/distance-education-programs/

DESIGNED FOR CLOSURE

For those who remain unconvinced that there is any need to abandon a long-standing and widely accepted HTA framework, it is necessary to confront a more fundamental question: why was this system developed and promoted globally in the first place?

The most plausible explanation is administrative rather than scientific. Policy makers were searching for an assessment framework that could be applied under conditions of limited empirical data while still producing a determinate conclusion. Reference-case modeling offered precisely this convenience. By constructing a simulation populated with assumptions, surrogate endpoints, preference weights, and extrapolated time horizons, it became possible to generate a numerical result that could be interpreted as decisive. Once an acceptable cost-effectiveness ratio emerged, the assessment could be declared complete and the pricing decision closed. This structure solved a political and administrative problem. It allowed authorities to claim that decisions were evidence-based without requiring the sustained empirical burden demanded by normal science. There was no requirement to formulate provisional claims and subject them to ongoing falsification. There was no obligation to revisit conclusions as new data emerged. Closure could be achieved at launch, rather than knowledge evolving over the product life cycle.

By contrast, a framework grounded in representational measurement would have imposed a very different obligation. Claims would necessarily be provisional. Measurement would precede arithmetic. Each therapy impact claim would require a defined attribute, a valid scale, a protocol, and the possibility of replication or refutation. Evidence would accumulate rather than conclude. Decisions would remain open to challenge as real-world data emerged. From an administrative standpoint, this was an unreasonable burden. It offered no finality.

The reference-case model avoided this problem entirely. By shifting attention away from whether quantities were measurable and toward whether assumptions were plausible, the framework replaced falsification with acceptability. Debate became internal to the model rather than external to reality. Sensitivity analysis substituted for empirical risk. Arithmetic proceeded without prior demonstration that the objects being manipulated possessed the properties required for arithmetic to be meaningful.

Crucially, this system required no understanding of representational measurement theory. Committees did not need to ask whether utilities were interval or ratio measures, whether latent traits had been measured or merely scored, or whether composite constructs could legitimately be multiplied or aggregated. These questions were never posed because the framework did not require them to be posed. The absence of measurement standards was not an oversight; it was functionally essential.

Once institutionalized, the framework became self-reinforcing. Training programs taught modeling rather than measurement. Guidelines codified practice rather than axioms. Journals reviewed technique rather than admissibility. Over time, arithmetic without measurement became normalized as "good practice," while challenges grounded in measurement theory were dismissed as theoretical distractions. The result was a global HTA architecture capable of producing numbers, but incapable of producing falsifiable knowledge. Claims could be compared, ranked, and monetized, but not tested in the scientific sense. What evolved was not objective knowledge, but institutional consensus.

This history matters because it explains why the present transition is resisted. Moving to a real measurement framework with single, unidimensional claims does not merely refine existing methods; it dismantles the very mechanism by which closure has been achieved for forty years. It replaces decisiveness with accountability, finality with learning, and numerical plausibility with empirical discipline. Yet that is precisely the transition now required. A system that avoids measurement in order to secure closure cannot support scientific evaluation, cumulative knowledge, or long-term stewardship of healthcare resources. The choice is therefore unavoidable: continue with a framework designed to end debate, or adopt one designed to discover the truth.

Anything else is not assessment at all, but the ritualized manipulation of numbers detached from measurement, falsification, and scientific accountability.

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