



# **Defining and Overcoming Barriers to R in Health Economic Assessments: Insights and Pathways Forward**

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R for Health Technology Assessment (HTA) workshop

10<sup>th</sup> June 2025 - Virtual

# Issue

R offers significant advantages for complex modelling, with enhanced capabilities including:

- Traceability
- Testing
- Version control
- Documentation

*Despite these benefits, R adoption in HTA remains limited*



# Objective

*Key obstacles—such as inconsistent guidance and implementation challenges—must be addressed to facilitate broader use.*

This panel brings together consultancy and industry perspectives to define these barriers, propose actionable solutions, and stimulate discussion



# Who we are



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# Use of R models for HTA submission

**Objective:** *Address lack of clarity on current acceptance and create a centralised 'Living document' on individual country guidance from one or both of the following:*

1. Available guidance from agency website
2. Guidance from correspondence

**Result:** [https://dark-peak-analytics.github.io/HTA\\_acceptance\\_living\\_document/](https://dark-peak-analytics.github.io/HTA_acceptance_living_document/)

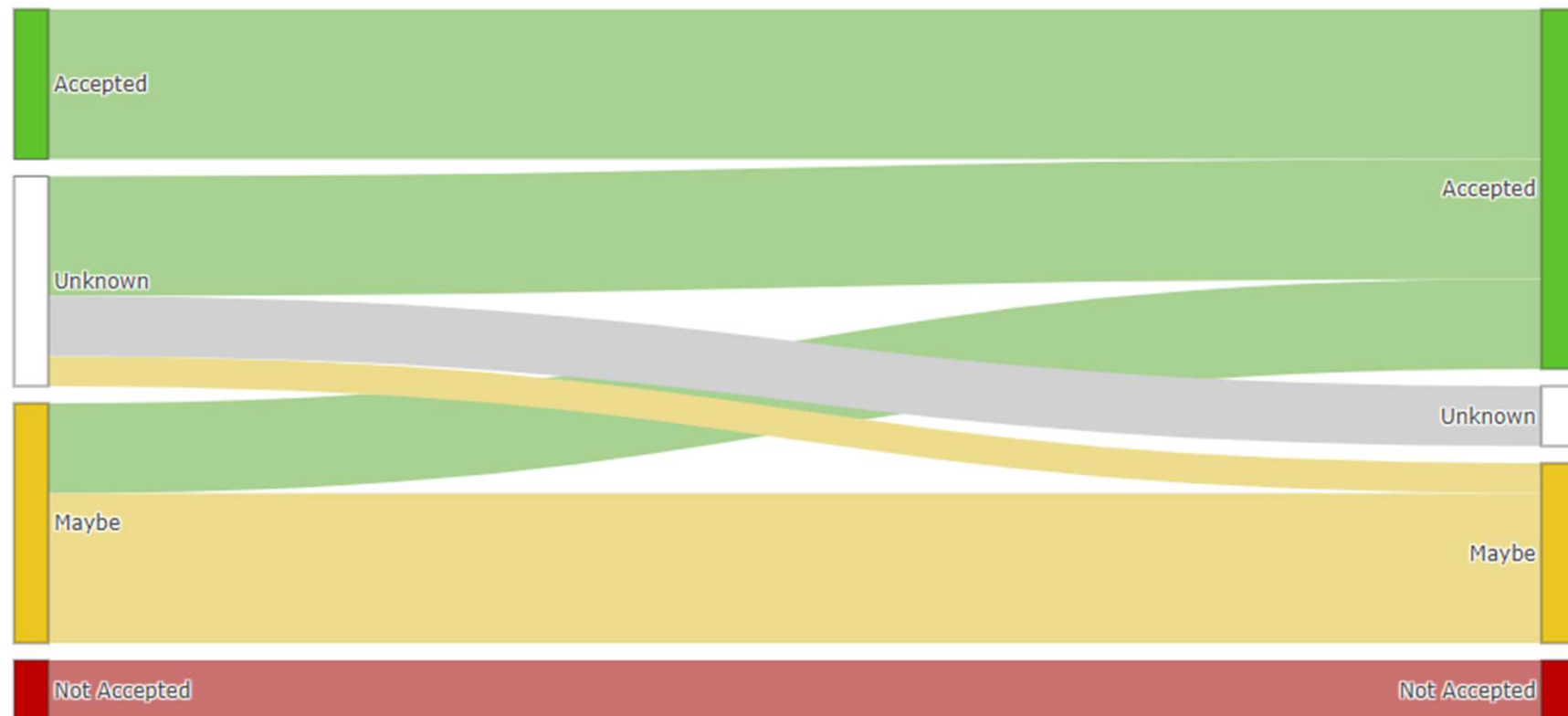
*This document is to be referenced as: Hart R, Use of R models for HTA submission, 2025, <https://doi.org/10.5281/zenodo.15056439>*

- ●: R models can be accepted. Please see individual cells for specifics surrounding acceptance
- ●: R models cannot be accepted at this time.
- ●: R models may be accepted, but guidance either does not specify R outright as an acceptable option or states that discussion will be needed on the rationale for using R before deciding whether it is appropriate

**Disclaimer:** *This document is a guide only; the author holds no responsibility for where information here differs from individual experiences.*

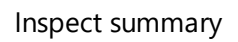
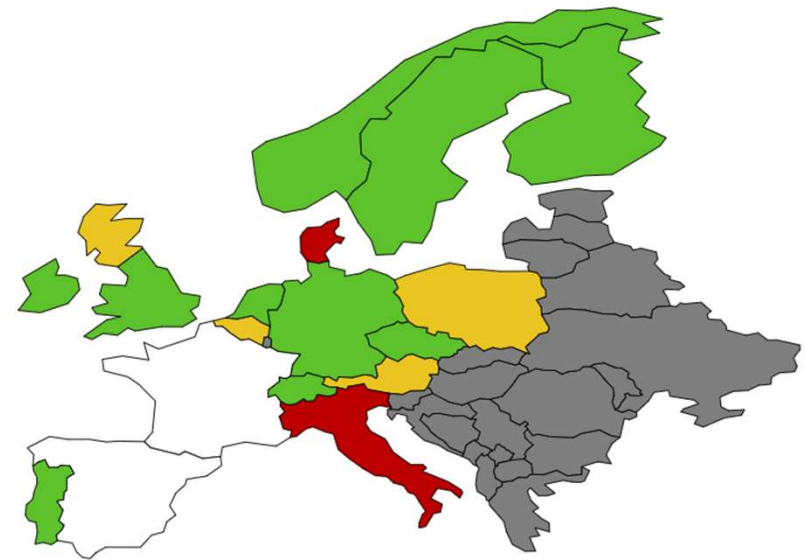
# Use of R models for HTA submission

Available guidance from agency website -> Guidance + Correspondance



Inspect graph

## Publicly available guidance VS. Publicly available guidance + correspondence





# Key findings

**Only two countries outrightly stated that they would not review R models as part of HTA submissions**

*Italy and Denmark would not review R models*

*Originally, Belgian guidance stated that R models would not be reviewed, but this was updated in May 2025*

**Correspondence with countries generally gathered more positive response to R than the public guidance**

*Many countries with vague or non-existent public guidance stated that they consider an R model as part of submission evidence in their correspondence*

**The main concern of HTAs was that they would not have the capability to sufficiently review an R model**

*They did not want to overstate their resources, nor 'encourage' R models. Many are waiting for the first R model to provide the learning and upskilling experience*



# Key findings

**Where specific guidance was provided on preferences for how an R model was to be developed for submission, there was inconsistency.**

*This is an issue that would need to be addressed for global R models developed for the purpose of local adaptation and widespread HTA submission to become a reality*

## Canada: Additional guidance from correspondence

- Not yet received submission fully in R, but have received submissions where specific functionality is programmed in R (uncommon: around 5 instances in last 5 years)
  - Would accept R, but would expect there to be strong justification
  - Any submitted code must be clearly annotated and with minimal use of packages that need to be installed from CRAN
  - Would need to adhere to all specified guidelines (e.g. requires inclusion of Markov trace, ability to vary individual parameters and have locally executable model)
- (March 2025)

## The Netherlands: Available guidance from agency website

ZIN has provided a guideline specifically for the building of models in R

Details of R model submission:

- CE-models in R are required to include at least all functionalities that would otherwise be included in Excel (including the potential for end-to-end functionality with necessary data)
- A recommended folder structure and code structure is provided
- The code needs to be able to function stand-alone
- Coding conventions and commenting guidance is described
- ZIN requires the model to only use CRAN packages that are listed in the guidance
- Unit testing is required

# Summary

- *We have created a central living document for individual country guidance on the use of R models as evidence in HTA submissions*
- *More countries were willing to accept R than initially anticipated*
- *R submissions are few and far between – but many HTAs are anticipating receiving an R model in the next couple of years*
- *Future endeavours should be made to ensure cohesion of HTA guidance for submitting R models, to allow global R models to be developed*



# Thank you for listening

**Dr Rose Hart**



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# Discussion

**How many countries accepting R for HTA submissions is considered 'enough' to consider developing a global model in R?**

*Is anything less than 100% acceptable for R use to become significant in the industry?*

**What can be done to better align industry guidelines for developing models for HTA?**

*Validation hub for HTA, with joint pharma and HTA input?*

**What ideas are there for 'bridging the gap' between Excel and R reviewing to increase R model uptake for HTA review?**

*E.g. Double programming? Unit tests?*

**What has been your experience with stakeholder engagement (HTA bodies, regulators, collaborators) when using R-based models?**

*Has R facilitated or complicated communication?*

**What are the main barriers your organization faces in adopting R for HTA modelling?**

*Are they technical, organizational, or regulatory?*