Sustainable Integration of R in HTA Processes

June 10th, 2025

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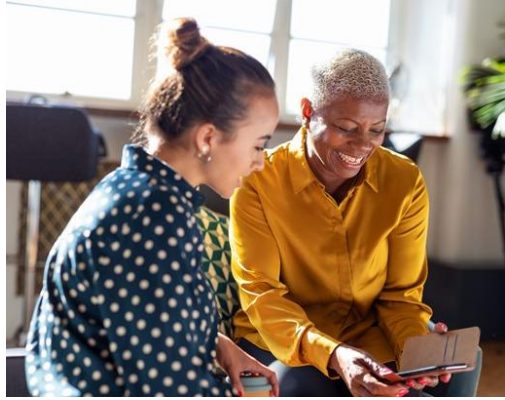




Challenges for sustainable integration

- Technical requirements
- External packages
- Validation
- Guideline discrepancies
- Capacity
- Broad acceptance

Technical requirements

Experience

- R not available at all stakeholders
- Version mismatches

Challenge

- Security risks
  - Execution of R code
  - External packages
- Version control

Sustainable solution

- Sandboxing
- Need for regular security screening
- Structured approach to version management control
  - R
  - Packages
  - Custom code

External packages

Experience

dampack package removed from CRAN

Challenge

- Distribution of packages
- Maintenance
- Accountability

Sustainable solution

- Need for consensus, e.g. CRAN vs appending all packages
- Independent 3rd party?
- Need for clarification on accountability for packages that are on HTA whitelist

Validation

Experience

Initially, differences between outcomes of Excel and R models

Challenge

No gold-standard for validation

Sustainable solution

- Unit testing
- Integration testing
- System testing

Guideline discrepancies

Experience

Conflicting guidelines:

- “Minimal use of packages that need to be installed from CRAN”
- “Packages published on CRAN are recommended”
- “Model to only use CRAN packages that are listed in the guidance”

https://dark-peak-analytics.github.io/HTA_acceptance_living_document/

Challenge

Directly opposing requirements

Sustainable solution

Harmonize guidelines on key points

- Use of packages
- Model structure
- Validation and reporting

Capacity

Experience

- Restricted number of vendors (though this is improving)
- Few internal experts

Challenge

Dependence on small number of key people, creating continuity risks

Sustainable solution

- Capacity building
- Incorporation in curriculum

Broad acceptance

Experience

Acceptance of models in R is not ubiquitous

Challenge

- Co-development in R and Excel is not sustainable
- Equity risk when fully switching to R

Sustainable solution

- **Utopic view:** Global acceptance of R models
- Porting from R to Excel?
- Offering tangible benefits for R-based submissions

Thank you