Fast and Frugal Heuristics: An Experimenter's Guide Christopher Irwin – March 2025 – Contact information below

Introduction

Fast and Frugal Heuristics (FFH) is an approach to decision-making that uses simple, efficient strategies to produce accurate judgments, especially when time and information are limited.

Understanding Fast and Frugal Heuristics

FFH recognizes that in real-world situations, decisions are typically made through intuitive shortcuts—rules of thumb—rather than exhaustive analysis. These heuristics:

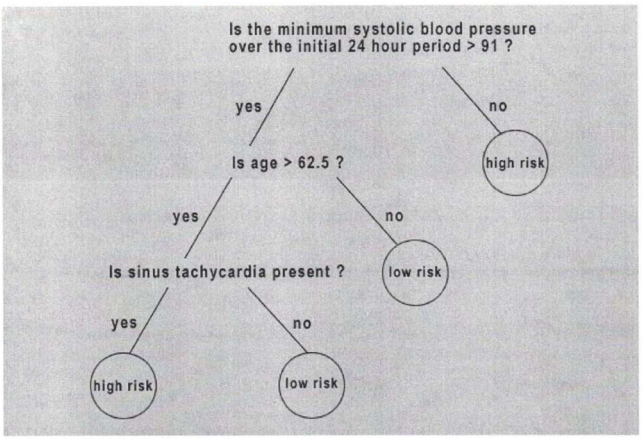
- **Fast**: Require minimal cognitive effort and time.
- **Frugal**: Depend on just a few critical pieces of information.

Research shows that in certain contexts, FFH can outperform complex analytical methods. Its effectiveness hinges on identifying essential data and setting clear boundaries for when additional information stops adding value. **Crucially, knowing when to stop gathering data is often more important than gathering more data itself.**

Evidence from Medical Practice

- **Emergency Triage**: A simple FFH using only three questions—age >65, blood pressure <100, heart rate >100—correctly identified 95% of high-risk patients, surpassing more complex protocols (Gigerenzer et al., 1999).
- **Heart Attack Diagnosis**: A heuristic based on a limited set of critical symptoms performed as effectively as decision models using up to 50 factors (Green & Mehr, 1997).

Here is a screenshot of the actual FFH:



Real-Life Example: Miracle on the Hudson

During the emergency landing on the Hudson River, Captain Chesley "Sully" Sullenberger relied on a simple yet powerful heuristic: **If your intended landing spot is rising in your windshield, you won't make it; if it's lowering, you will.**

After losing both engines, the cockpit crew quickly noticed the tower at La Guardia rising in their view, signaling they wouldn't reach the airport. Crucially, this observation triggered an immediate decision to **stop pursuing the impossible landing** and instead focus entirely on a water landing. Within moments, the crew had shifted gears, avoiding time-consuming engine-loss procedures, and executed the water landing in less than three minutes—demonstrating how decisive stopping can save lives.

Why Stopping is Key

The essence of FFH lies in its emphasis on knowing precisely when to stop collecting data. Unlike traditional triage—which systematically ranks cases according to priority based on a predefined protocol—FFH explicitly focuses on stopping rules that halt further analysis as soon as sufficient information has been collected to make an effective decision. This immediate cessation distinguishes FFH from conventional triage approaches by preventing analysis paralysis and enabling quicker, equally accurate outcomes.

Applying FFH to Complaint Triage

Steps for Implementation:

1. **Identify Critical Factors**: Review historical complaints to isolate the most predictive indicators of urgency and complexity.
2. **Develop a Simple Decision Tree**: Create clear yes/no questions based on these key indicators to quickly categorize complaints.
3. **Set Explicit Stopping Rules**: Clearly define points at which additional information no longer contributes meaningfully to decision accuracy.
4. **Train Staff**: Ensure team familiarity and consistent application.
5. **Monitor and Refine**: Regularly assess and refine the approach using real-world feedback.

Example: Creating a Heuristic for Sorting Library Books

Problem Definition:

Quickly and accurately sorting returned library books into two categories—books needing repair and books ready to reshelve—to improve workflow efficiency.

Steps to Build the Heuristic:

Step 1: Define Goal Minimize sorting time while accurately identifying damaged books.

Step 2: Identify Potential Cues

- Visible cover/spine damage
- Loose or missing pages
- Water damage/stains
- Borrowing frequency (later found irrelevant)
- Age of book (later found irrelevant)

Step 3: Collect and Evaluate Data Assess 100 randomly returned books, tracking damage indicators.

Step 4: Analyze to Identify Key Cues

- Visible damage to cover/spine: 90% accuracy
- Loose/missing pages: 80% accuracy
- Water damage: 60% accuracy

Step 5: Develop Decision Tree

1. Visible damage to cover/spine?
    - Yes → Repair
    - No → Go to question 2
2. Loose or missing pages?
    - Yes → Repair
    - No → Reshelve

Step 6: Define Stopping Rules If the book passes these two checks, immediately reshelve.

Step 7: Test Heuristic Apply the heuristic to another 100-book sample, measuring accuracy and efficiency against the current method.

Step 8: Refine and Implement Based on results, refine if necessary. Train staff and implement fully.

Step 9: Ongoing Review Regularly evaluate heuristic performance, adjusting for any new developments or changing conditions.

Conclusion

Using Fast and Frugal Heuristics improves efficiency by emphasizing essential information and, crucially, knowing when to stop gathering additional data. This clear, stopping-oriented approach significantly enhances decision-making speed and accuracy.

References:

- Gigerenzer, G., Todd, P. M., & ABC Research Group (1999). *Simple Heuristics That Make Us Smart*. Oxford University Press.
- Green, L., & Mehr, D. R. (1997). What alters physicians' decisions to admit to the coronary care unit? *Journal of Family Practice*, 45(3), 219-226.

Want to discuss further? Please don't hesitate to get in touch with me:

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