# Analysis of Competing Hypotheses — Structured Analytical Technique

Analysis of Competing Hypotheses (ACH) is a structured technique for evaluating multiple competing explanations against available evidence. Instead of arguing for a preferred conclusion, ACH forces analysts to identify evidence that is inconsistent with each hypothesis — because the best-supported hypothesis is the one with the least inconsistent evidence, not the most consistent evidence.

## How ACH Works — 8 Steps

| Step | Action | Guidance |
|---|---|---|
| 1 | **Identify hypotheses** | List all plausible hypotheses. Include alternatives you consider unlikely. Involve multiple analysts. |
| 2 | **List evidence & arguments** | List all significant evidence, source reports, and logical arguments relevant to the hypotheses. |
| 3 | **Prepare the matrix** | Create a matrix with hypotheses across the top and evidence down the side. |
| 4 | **Analyse consistency** | Work through each cell: is this piece of evidence consistent (C), inconsistent (I), or neutral/NA? |
| 5 | **Refine the matrix** | Remove evidence that has no diagnostic value (consistent with all or no hypotheses). Add overlooked evidence. |
| 6 | **Draw tentative conclusions** | The hypothesis with the least inconsistent evidence is tentatively the most likely. |
| 7 | **Analyse sensitivity** | Identify evidence that is critical to your conclusion. How solid is it? What if it is wrong? |
| 8 | **Report conclusions** | State your conclusion with confidence level. List key assumptions and identify what could change the assessment. |

## Scoring Legend

| Score | Code | Label | Meaning |
|---|---|---|---|
| C | C | **Consistent** | This evidence is consistent with the hypothesis. It does not help discriminate between hypotheses. |
| CC | CC | **Strongly Consistent** | This evidence strongly supports the hypothesis and would be difficult to explain if the hypothesis were false. |
| N/A | N/A | **Not Applicable** | This evidence has no bearing on this hypothesis. |
| I | I | **Inconsistent** | This evidence is inconsistent with the hypothesis. The hypothesis would need to be modified to account for it. |
| II | II | **Strongly Inconsistent** | This evidence strongly contradicts the hypothesis. It would be very difficult to reconcile with this hypothesis being true. |

| Score | Code | Label | Meaning |
|---|---|---|---|
| ? | ? | **Unknown** | Insufficient information to determine whether evidence is consistent or inconsistent. |

## Template A — 4-Hypothesis ACH Matrix (blank)

Instructions: Write your hypotheses in the header row. List evidence items down the left column. Score each cell using the legend above. The hypothesis with the fewest 'I' and 'II' scores is tentatively the most likely.

**Analyst:** _____ **Date:** _____ **Subject:** _____

| Evidence / Argument (Source \| Description) | H1: _____ | H2: _____ | H3: _____ | H4: _____ | Notes / Diagnostic? |
|---|---|---|---|---|---|
| E1: | | | | | |
| E2: | | | | | |
| E3: | | | | | |
| E4: | | | | | |
| E5: | | | | | |
| E6: | | | | | |
| E7: | | | | | |
| E8: | | | | | |
| E9: | | | | | |
| E10: | | | | | |
| **INCONSISTENCY COUNT (total I + II per hypothesis)** | | | | | *Lower = more likely* |

## Template B — Worked Example

**Scenario:** An intelligence analyst is assessing why a known criminal network has gone quiet. Four hypotheses are under consideration.

| Evidence | H1 Disrupted | H2 Reorganise | H3 Planning Op | H4 Relocated | Diagnostic? |
|---|---|---|---|---|---|
| E1: Three senior members arrested last month | CC | C | I | I | *Diagnostic — supports H1* |
| E2: No new criminal activity reported | C | C | C | C | *Not diagnostic* |
| E3: New communication patterns detected | I | CC | CC | C | *Diagnostic — against H1* |
| E4: Known safehouse under new management | I | C | C | CC | *Diagnostic — supports H4* |
| E5: Recruitment of new couriers observed | I | CC | C | I | *Diagnostic — supports H2* |
| E6: Financial flows to offshore accounts | I | I | CC | C | *Diagnostic — supports H3* |
| E7: Key operative travel to third country | I | I | C | CC | *Diagnostic — supports H4* |
| **INCONSISTENCY COUNT** | **5 ✗** | **3 ✗** | **2 ✗** | **2 ✗** | **H3 & H4 tentatively most likely** |

***Conclusion from the worked example:*** *H1 (disrupted by law enforcement) has the most inconsistent evidence (5) and is the least likely. H3 (planning an operation) and H4 (relocation) are tied with 2 inconsistencies each and are tentatively the most likely. The analyst should now seek additional collection to discriminate between H3 and H4.*

## Template C — Sensitivity Analysis

For each piece of evidence that is diagnostic (i.e., changes which hypothesis is most likely), assess what would happen to your conclusion if that evidence were wrong.

| Evidence Item | Current Impact | If This Evidence Were Wrong... | Confidence in Evidence | Action |
|---|---|---|---|---|
| E1: | *Supports H___* | | ■ High ■ Mod ■ Low | ■ Accept ■ Verify ■ Caveat |
| E2: | *Supports H___* | | ■ High ■ Mod ■ Low | ■ Accept ■ Verify ■ Caveat |
| E3: | *Supports H___* | | ■ High ■ Mod ■ Low | ■ Accept ■ Verify ■ Caveat |

| Evidence Item | Current Impact | If This Evidence Were Wrong... | Confidence in Evidence | Action |
|---|---|---|---|---|
| E4: | *Supports H___* | | ■ High ■ Mod ■ Low | ■ Accept ■ Verify ■ Caveat |
| E5: | *Supports H___* | | ■ High ■ Mod ■ Low | ■ Accept ■ Verify ■ Caveat |
| E6: | *Supports H___* | | ■ High ■ Mod ■ Low | ■ Accept ■ Verify ■ Caveat |

**Need Excel or Word Versions?**

- Auto-scoring Excel ACH matrix with dropdown menus and automatic inconsistency counting available on request.
- Email: info@theintelanalystacademy.com.au — Subject: 'ACH Matrix — Format Request'