Measurement & Analysis Plan

Data & Variables (input to analysis)

Core variables
- condition ∈ {A,B,C,D}
- donation_decision ∈ {0,1} (DV)
- transparency_level T ∈ {0,1}
- control_level C ∈ {0,1}
- attention_check_correct ∈ {0,1}

Manipulation checks (Likert, 1–7)
- MC-T (Perceived Transparency): 2 items
- MC-C (Perceived Control): 2 items

Other outcomes (Likert, 1–7)
- OUT-RISK: 2 items
- OUT-TRUST: 1 item

Demographics
- age group, gender, language, education, voting eligibility

Dashboard (C1 only: Conditions C & D)
- dashboard_scope, dashboard_purpose, dashboard_storage, dashboard_retention

Open text
- Q14: "What mattered most for your data donation decision?"

Phase 1: Descriptive Statistics

What will be described	How it will be computed (concise but precise)	How it will be reported
Sample flow & exclusions	Exclude attention_check_correct=0. Exclude rows missing condition or donation_decision. Report remaining N.	Small table: initial N → excluded (attention) → excluded (missing key vars) → final N
N per condition (A/B/C/D)	Count sessions per condition + % share of total	Table: condition, n, %

Donation rate per condition + 95% CI	Donation rate = mean(donation_decision) per condition and overall. 95% CI for proportions using **Wilson CI**.	Main descriptive table: condition, n, donate %, 95% CI (+ overall row). Optional bar chart.
Demographics (overall; by condition only if needed)	Frequency + % for each demographic category. If large imbalance suspected: add a by-condition cross-tab.	Table: overall distribution. If needed: appendix table by condition.
Manipulation checks (MC-T, MC-C)	Create composites: mc_transparency = mean(2 items), mc_control = mean(2 items). Summarize by condition and also by factor level (T0/T1 and C0/C1): mean, SD.	Table: means/SD by A/B/C/D and collapsed comparisons (T0 vs T1; C0 vs C1).
Risk + Trust (descriptive)	OUT-RISK composite = mean(2 items). OUT-TRUST single item. Summaries by condition: mean, SD.	Table: OUT-RISK mean/SD; OUT-TRUST mean/SD by condition.
Dashboard option frequencies (C/D only)	For C and D separately: frequency (%) of each option for scope/purpose/storage/retention; plus top configurations (most frequent combinations).	Table(s): for each dashboard variable, option → n/% in C and D. Optional "Top 5 configs" mini-table.
Q14 free-text response rate	Compute % non-empty responses by condition and overall; (optional) median character length.	Small table: response rate overall + by A/B/C/D.

Phase 1 outputs

- N per condition + exclusions
- Donation rate per condition + 95% CI
- Demographics overall *(by condition only if needed)*
- Manipulation checks (means/SD by condition and by T/C level)
- Dashboard option frequencies (C/D only)
- Q14 outputs (from Phase 6):
    1. Theme frequencies by condition (A/B/C/D)
    2. Theme frequencies by donate vs decline
    3. 5 short representative quotes

Phase 2: Chi² Analysis (Descriptive Foundation)

Test	Comparison	Correction

Chi² #1	T0 vs T1 (collapsed across C)	Bonferroni: α = .05/3 = **.017**
Chi² #2	C0 vs C1 (collapsed across T)	Bonferroni: α = **.017**
Chi² #3	A/B/C/D × Donate/Decline	Bonferroni: α = **.017**

Phase 2 outputs

- Contingency table with n and % (Donate/Decline) for the compared groups (T0 vs T1; C0 vs C1; A–D).
- Test statistics: χ^2, df, p (evaluate against Bonferroni α = .017).
- Effect size: Cramér's V with 95% CI.
- Visualization: bar chart of donation rates for the compared groups (T0 vs T1, C0 vs C1, and A/B/C/D) with 95% CI error bars.

Phase 3: Logistic Regression (Main Analysis)

Model	Predictors	Purpose
Model 1	Donation ~ T (Transparency)	H1 main effect
Model 2	Donation ~ C (Control)	H2 main effect
Model 3	Donation ~ T + C	Joint main effects
Model 4	Donation ~ T + C + T×C	H3 interaction
Model 5	Donation ~ T + C + T×C + age + gender + education	Full model with covariates

Phase 3 outputs

- Coefficient table: OR for each predictor (T, C, T×C, covariates) with 95% CI, p-value, and direction (OR>1 increases donation odds).
- Model fit / performance: log-likelihood, AIC (or BIC), Nagelkerke R^2, and Hosmer–Lemeshow p (calibration check).
- Overall model test: model Wald χ^2 (or equivalent omnibus test) with p-value.
- Model comparisons: Likelihood Ratio Tests (Δdeviance) for nested models (M1→M3, M3→M4, M4→M5), reporting $\Delta\chi^2$, Δdf, p, plus ΔAIC.
- Visualization: predicted donation probabilities for A/B/C/D from Model 4 (and Model 5 as robustness) with 95% CI.

Phase 4: Deeper Effect Analysis

Analysis	Purpose
Marginal effects at means	Probability changes per IV
Predicted probabilities per condition	Visualize interaction
Simple effects (if interaction significant)	T effect within C0/C1; C effect within T0/T1
Predicted probabilities for A/B/C/D from Model 4	Standardized condition-level interpretation

Phase 4 outputs

- Predicted probabilities of donation for each condition A/B/C/D (from Model 4; optionally also Model 5 as robustness) with 95% CI.
- Marginal effects (Δ probability) for T and C (and for the interaction if significant)
- If T×C significant: simple effects table
  - Effect of T within C0 and within C1
  - Effect of C within T0 and within T1
- Visualization: interaction plot / bar chart of predicted probabilities for A/B/C/D with CI.

Phase 5: Manipulation Checks

Test	Comparison	Output
t-test / Mann–Whitney	**MC-T:** T0 vs T1 Perceived transparency	mean diff, p, effect size
t-test / Mann–Whitney	**MC-C:** C0 vs C1 Perceived control	mean diff, p, effect size

Phase 5 outputs

For each manipulation check comparison (MC-T and MC-C):
- Group descriptives: mean, SD, N for the two groups (T0 vs T1; C0 vs C1)
- Test result: t (or U), df (if t), p-value
- Effect size: Cohen's d (if t-test) or rank-biserial r (if Mann–Whitney) with 95% CI if available
- Visualization: mean (or median) manipulation-check score by group with 95% CI error bars.

Phase 6: Exploratory Analysis

6A. Dashboard behavior (C1 only: Conditions C & D)

- Frequency analysis of each dashboard variable (scope/purpose/storage/retention) within C and within D
- Compare **C vs D** distributions for each dashboard variable (χ^2 + Cramér's V)
- Optional: cluster analysis of dashboard preference profiles (one-hot encoding)

6B. Q14 Open Text ("What mattered most…")

Goal: explain *reasons* behind donate/decline and how they differ across experimental conditions.

Method
- Short **theme codebook** (multi-label coding allowed).
 Typical themes aligned with your study: clarity/transparency, control/choice, anonymity/risk, purpose (academic vs commercial), storage/sovereignty, retention, institutional trust, general privacy stance.

The following required outputs:
1. Theme frequencies by condition (A/B/C/D)

2. Theme frequencies by donate vs decline
3. Condition contrasts explicitly reported: A vs B, A vs C, C vs D, B vs D (theme % deltas)
4. 5 short representative quotes (anonymized, selected from the most frequent themes)

Concrete Testing Protocol with AI Test Users (N=1000)

Purpose

Validate the data pipeline + analysis scripts + output templates before running the human study (AI test users are not used to confirm human effects).

Data Requirements

From your AI test-user dataset, extract:

Core
- `session_id`
- `condition` (A/B/C/D)
- `donation_decision` (1=donate, 0=decline)
- `transparency_level` (T: 0/1)
- `control_level` (C: 0/1)
- `attention_check_correct` (1/0)

Manipulation checks (preferred: item-level)
- MC-T item1, item2 (Likert 1–7) **or** a documented composite `mc_transparency`
- MC-C item1, item2 (Likert 1–7) **or** a documented composite `mc_control`

Other survey outcomes
- OUT-RISK item1, item2 (Likert 1–7) **or** composite `out_risk`
- OUT-TRUST (Likert 1–7)

Demographics (as available in the AI data)
- age, gender, education, language, voting eligibility

Dashboard (C1 only: Conditions C & D)
- `dashboard_scope`
- `dashboard_purpose`
- `dashboard_storage`
- `dashboard_retention`

Open text
- Q14 free text response

Step-by-Step Analysis Script

Step 1: Data Preparation
1. Load data (N=1000, target ~250 per condition).
2. Exclude failed attention checks (attention_check_correct=0).
3. Exclude rows missing condition or donation_decision.
4. Create variables: T (0/1), C (0/1), and T×C.
5. Create composites (if item-level available):
   - mc_transparency = mean(MC-T item1, item2)
   - mc_control = mean(MC-C item1, item2)
   - out_risk = mean(OUT-RISK item1, item2)

Step 2: Phase 1 Outputs (Descriptive templates)
- N per condition + exclusions (flow)
- Donation rate per condition + **95% CI (Wilson)**
- Demographics overall (by condition only if needed)
- Manipulation checks: means/SD by condition and by T/C level
- Dashboard option frequencies (C/D only)
- Risk + Trust descriptives by condition (mean/SD)
- Q14 response rate (% non-empty)

Step 3: Phase 2 — Chi² Analysis
Test 1: Chi²(T × Donation) + Cramér's V
Test 2: Chi²(C × Donation) + Cramér's V
Test 3: Chi²(Condition × Donation) + Cramér's V
→ Apply Bonferroni: α = .05/3 = **.017**

Outputs per test
- Contingency table (n and %)
- χ^2, df, p (vs α=.017)
- Cramér's V + 95% CI
- Visualization: donation-rate bar chart + 95% CI

Step 4: Phase 3 — Logistic Regression Sequence
Model 1: Donation ~ T
Model 2: Donation ~ C
Model 3: Donation ~ T + C
Model 4: Donation ~ T + C + T:C
Model 5: Donation ~ T + C + T:C + age + gender + education

Outputs per model
- OR + 95% CI + p for each predictor
- Log-likelihood + AIC (or BIC) + Nagelkerke R^2 + Hosmer–Lemeshow p
- Likelihood Ratio Tests for nested comparisons ($\Delta\chi^2$, Δdf, p)

Step 5: Phase 4 — Effect Analysis
If T×C significant:
● Simple effects of T at C=0 and C=1
● Simple effects of C at T=0 and T=1
Always:
● Predicted probabilities for A/B/C/D (Model 4; optionally Model 5 as robustness)
● Visualization: predicted probabilities by condition + 95% CI

Step 6: Phase 5 — Manipulation Checks
● Compare mc_transparency between T0 vs T1 (t-test if approx normal; otherwise Mann–Whitney U)
● Compare mc_control between C0 vs C1 (t-test if approx normal; otherwise Mann–Whitney U)
Outputs: group means/SD, test statistic + p, effect size (Cohen's d or nonparametric effect size), plot with CI.

Step 7: Phase 6 — Exploratory Checks (pipeline completeness)
Dashboard (C1 only):
● Frequency tables per dashboard variable (C vs D)
● Chi²(C vs D) for each dashboard variable + effect size

Q14 free text:
● Theme frequencies by condition (A/B/C/D)
● Theme frequencies by donate vs decline
● Condition contrasts: A vs B, A vs C, C vs D, B vs D
● 5 short representative quotes

Expected Output Table Structure

Condition	N	Donation Rate	95% CI	Predicted Prob (Model 4)
A (T0C0)	~250	X%	[X-Y]	X
B (T1C0)	~250	X%	[X-Y]	X
C (T0C1)	~250	X%	[X-Y]	X
D (T1C1)	~250	X%	[X-Y]	X

Validation Criteria for AI Test Data
● Manipulation checks: T1 > T0 on mc_transparency; C1 > C0 on mc_control
● Variance: donation not near-all 0 or 1 (no ceiling/floor)
● Model convergence: logistic regression converges (no separation warnings)
● Plausibility: effect directions not contradictory to design logic (flag if they are)
● Multicollinearity: VIF < 5
● Dashboard integrity (C/D): required dashboard variables present + non-degenerate distributions
● Q14 usability: sufficient non-empty responses to generate theme tables + 5 quotes