


HUMAN TECHNOLOGY INTERACTION

Coming to terms with Terms & Conditions

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In the digital age, companies exploit T&C loopholes to collect data and gain financial benefits, often disadvantaging users

T&Cs are often too long, complex, and poorly displayed (dark UI patterns), making users disregard critical information. This leads to uninformed decisions, as users fail to comprehend their rights and obligations. Simplifying design and content can improve user awareness and decision-making


 Straight Arrow News

Uber wins case based on terms and conditions agreement over 2022 crash

A New Jersey couple had their attempt to sue Uber blocked by a judge because they signed a terms and conditions agreement.

2 days ago



 Hindustan Times

New York doctor died from food allergy at Disney World; company says it cannot be sued due to 'terms and conditions'

Jeffrey J Piccolo accused Disney Parks and Resorts of negligence in his wife's death - caused by severe allergy - but Disney says he can't...

1 month ago



95% users tend to ignore or skim over Terms and Conditions (T&C) when interacting with websites. This can lead to misunderstandings about their rights, privacy issues, and reduced trust in the platform.

Obar, J. A., & Oeldorf-Hirsch, A. (2018). The biggest lie on the Internet: ignoring the privacy policies and terms of service policies of social networking services. *Information, Communication & Society*, 23(1), 128–147. <https://doi.org/10.1080/1369118X.2018.1486870>

EFFECTS

Potential Impact

①

Building Trust

Transparent T&Cs foster trust in companies and platforms, encouraging user loyalty

②

Informed decisions

Users will be more likely to understand their rights and reduce the risk of agreeing to unfair terms

③

Policy Making

Policymakers could mandate simplified T&C designs to improve consumer protection

The aim is to refine human-computer interaction by improving how users interact with T&Cs through the UI. This could potentially lead to more informed decision-making by users and better compliance with legal requirements by businesses.

EXPERIMENT AIM

Research Objectives

①

Awareness/Retention

How do different visual displays of T&Cs affect information retention and awareness?

②

Cognitive Load

How do different visual displays of T&Cs impact cognitive load and time spent on the page?

Literature Review

Service Research Center, Karlstads Universitet

Experiment condition	Outcome variable	Original study	Present experiment
<i>Icons</i>	Awareness overall	↑ +33.9%	↑ +25%
	Awareness of T&C facts shown in icons condition	↑ +80.7%	↑ +82%
	Awareness of remainder of T&C facts (not shown in icons condition)	↑ +4%	↓ -20
<i>Scroll</i>	Awareness overall	↑ +26.3%	↑ +29%
	Awareness of T&C facts shown in icons condition	↑ +37%	↑ +49%
	Awareness of remainder of T&C facts (not shown in icons condition)	↑ +14%	↑ +14
<i>Cost cue</i>	Awareness overall	↑ +13%	↑ +21%
	Awareness of T&C facts shown in icons condition	N/A	↑ +31%
	Awareness of remainder of T&C facts (not shown in icons condition)	N/A	↑ +14%

Kitkowska, A., Högberg, J., & Wästlund, E. (2022). Online Terms and Conditions: Improving User Engagement, Awareness, and Satisfaction through UI Design. CHI Conference on Human Factors in Computing Systems, 60, 1–22. <https://doi.org/10.1145/3491102.3517720>

Visual Displays

What they did: Experiment to test how various UI designs of T&Cs impact user engagement (opening-rate), awareness, and satisfaction

Result: Found that designs with icons (+25% / +82%) and scrolling (+29% / +49%) led to higher engagement and awareness with moderate effects
(Overall TnC awareness / Awareness of cues used)

Changes in the paper – product selection page, addition of satisfaction as an outcome variable, removed the bias by financial incentive and push to read T&C, diversity in sample

Literature Review

Berlin School of Management

Table 5: Number of correct answers for the different experimental scenarios

Disclosure Type / Scenario	N	S.D.	Min	Mean	Median	Max
A1 – Non-transparent; pre-purchase	104	0.92	0	1.13	1	3
A2 – Non-transparent; post-purchase	103	0.88	0	1.75	2	3
B1 – Textually optimized; pre-purchase	102	0.98	0	1.37	1	3
B2 – Textually optimized; post-purchase	116	0.88	0	1.88	2	3
C1 – Visually optimized; pre-purchase	103	0.95	0	1.59	2	3
C2 – Visually optimized; post-purchase	100	0.80	0	2.23	2	3
D1 – Visually and Textually optimized; pre-purchase	102	1.05	0	1.80	2	3
D2 – Visually and Textually optimized; post-purchase	105	0.80	0	2.22	2	3

Wulf, A. J., & Seizov, O. (2022). How to improve consumers' understanding of online legal information: insights from a behavioral experiment. *European Journal of Law and Economics*, 56(3), 559–584. <https://doi.org/10.1007/s10657-022-09755-4>

Multimodal Approaches to Disclosure

What they did: Tested multimodal disclosure techniques (text, visuals) to improve consumer comprehension of T&C in both pre- and post-contract scenarios

Result: Found that multimodal disclosures (visual, visual + text optimised) significantly increased retention and understanding, especially in post-purchase scenarios

Literature Review

Behavioural Insights Team (BIT)

Improving consumer engagement with contractual terms and privacy policies

Make it easy

Make it attractive

Make it social

Make it timely

Improving consumer comprehension of contractual terms and privacy policies

Make it easy

Make it attractive

Make it social

Make it timely

Behavioural Insights Ltd & The Behavioural Insights Team for the Department for Business, Energy and Industrial Strategy. (2019). Improving consumer comprehension of online contractual terms and privacy policies: Literature review. <https://assets.publishing.service.gov.uk/media/5d303836e5274a14ed4871c7/improving-consumer-comprehension-online-contractual-terms-literature-review.pdf>

Different interventions

What they did: Reviewed behavioral techniques to increase engagement and comprehension of T&C through interventions

Result: Found that shortening terms, improving readability, using summaries, and displaying reading cost cues increased engagement. Visual elements like icons enhanced comprehension.

WHAT ARE WE DOING DIFFERENT

Improvements & Inspiration from Literature

Including Cognitive Load in Our Analysis

We are measuring cognitive load to assess how mentally taxing each design variation is for users.

Multiple Design Layouts

We are testing multiple UI designs—icons, swimlane, FAQ/QnA, and summary—for broader insights.

Sector-Based Trials for Broader Context

Trials will be conducted 5 times, covering different sectors (Education, Government, E-commerce, Social Media, LLMs)

Tracking Time Spent

We are tracking how long participants spend on the T&Cs page to analyse engagement duration.

Effect of Muscle Memory

We are running multiple trials to observe changes in behaviour and whether users skip the terms over time.

Testing Sign-In and Click-Wraps

We are testing both click-wrap and sign-in-wrap designs to explore different interaction models.

Experimental Protocol

Participants

5 groups of 10 users per trial, repeated over 5 trials/sectors (total 250 data points).

Control vs. Treatment

Control group interacts with traditional T&C design. Treatment groups interact with 4 UI variations: Icons, FAQ/QnA, Swimlane, and Summary.

CONTROL

Traditional

E-Commerce

1
2
⋮
10

Government

1
2
⋮
10

Social Media

1
2
⋮
10

SaaS (LLM etc)

1
2
⋮
10

Education

1
2
⋮
10

4 TREATMENT GROUPS

Summary

1
2
⋮
10

Swimlane

1
2
⋮
10

Icons

1
2
⋮
10

QnA/FAQ

1
2
⋮
10

Data Collection



Experiment

Demographic + Baseline

T&C Knowledge Test

Analysis



PNN50: Measured IBI, HR, and PPG.

FAUs & Gaze Points:

Processed using openface.

Fixation Heatmap

Time Spent: Time spent on the T&C page (timer)

Demographic: Age, gender etc

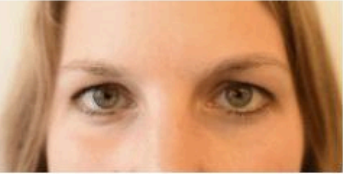
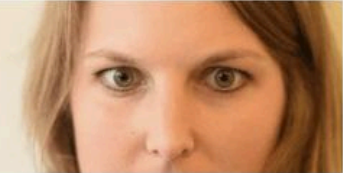
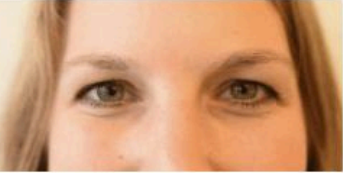
Familiarity: Subjective questions regarding their attitudes toward privacy and familiarity with the sector (some using Likert scale)

Retention: Questionnaire score (max 8 points) measuring understanding after interaction.

6 questions – testing info given through intervention

2 questions – testing info in the complete T&C

Variables: Retention Score (continuous), Cognitive Load (categorical), Time Spent (categorical – in s) and Baseline

4	Brow Lowerer	<i>Depressor Glabellae, Depressor Supercilli, Currugator</i>	
5	Upper Lid Raiser	<i>Levator palpebrae superioris</i>	
6	Cheek Raiser	<i>Orbicularis oculi, pars orbitalis</i>	

Facial Action Units

AU04, AU05, AU06, gaze_angle_x, gaze_angle_y, pose_Rx, pose_Ry, pose_Rz

Variable	Unit	Description
NN	ms	Time between two consecutive beats.
RR std	s	Standard deviation of all RR interval
RR mean	s	Mean of all RR interval
HR mean	1/min	Mean of all heartbeat
HR std	1/min	Standard deviation of all heartbeat
RMSSD	ms	The square root of the mean squared differences of successive NN intervals
NN50 Count	N/A	Number of pairs of adjacent RR intervals differing by more than 50 ms in all the measurements.
pNN50	%	NN50 count divided by the total number of all RR intervals.

IBI is InterBeat Interval, the time period between successive heartbeats (Normal-to-Normal interbeat interval, also known as the R-R interval), measured in milliseconds (ms).

Source: Heart rate variability, Wikipedia. HTI, Lecture 9

```
{'AU04_r': 0.5, 'AU05_r': 0.3,
```

```
'AU06_r': 0.2}
```

+Dominant Emotion

AU Score

Used the sensor to get ibi

```
nn50_count = np.sum(rr_diffs > 50)
pnn50 = (nn50_count / len(ibi_data[' ibi'])) * 100
```

HRV (pNN50)

Cognitive Index

```
data['Cognitive_Index'] =
```

```
(0.7 * (70 - data['pNN50'])) + (0.3 * data['AU_Score'])
```

70 - HRV because HRV is it is inversely correlated with cognitive load. To align with AU score where higher values mean high cognitive load (direct relation), we us 70 - HRV. (70 because most HRV vales fall below 70)

Low: Index <= 3.5

Medium: 3.5 <= Cognitive Index <= 7

High: Cognitive Index > 7

	Group	Retention_Score	Full_Score	Total_Score	Opened	Time_Spent	Cognitive_Load	Cognitive_Index	HRV (Analysis_pNN50)	weighted_AU_mean	Analysis_RR_std	Analysis_RR_mean	Analysis_HR_mean	Analysis_HR_std
0	Icon	3	0	3	0	57	Medium	5.70509787910689	62.01791737035990	0.3921334611960920	217.05103804115500	751.9384709801660	82.98468333755840	12.92516835798740
1	Icon	5	0	5	0		Medium	6.21724738895294	61.31077503716830	0.4492997165690960	204.90781466216200	740.8249647155770	81.44692851597280	15.718577307768800
2	Icon	6	0	6	1	32	High	10.247724923261700	55.679452531360500	0.7444723173800830	243.5050177587610	713.3213284001280	83.9007439678934	21.17960368495280
3	Icon	6	0	6	0	19	High	9.874703386665540	56.155656355804100		233.54448393344900	721.3058126553790	83.24919037409960	24.985347646734400
4	Icon	2	0	2	0	25	Medium	4.21467513329167	64.18345211817730	0.47697205338583500	205.4343923863050	747.4239789122620	81.01038975118270	13.095603620447800
5	Icon	2	0	2	1		Medium	5.240274377685810	62.71268433296310	0.46384470253321100	211.19496546365900	745.0918238251420	80.6004034655032	19.75408689203950
6	Icon	5	1	6	1	33	Medium	6.95805391770541	60.19272646233140	0.3098748044579520	211.18873296226800	758.5858639242420	81.68045554437230	18.858637770797600
7	Icon	2	0	2	1	50	Low	2.1393829774406700	67.02790358759360	0.1963849625205200	185.64965887406700	774.1797729649910	79.00558177425140	7.787727984982210
8	Icon	6	0	6	0	74	Low	1.8440314957966100	67.45118874552890	0.19954539222267600	150.29281493952400	775.3553143159360	78.85756029762480	7.112650192287550
9	Icon	6	0	6	0	33	Low	3.258331750721090	65.46097613042850	0.2700501400700000	167.62039935470100	768.9091642689850	78.07311617337310	11.877521133014000
10	Icon	6	0	6	0	42	Low	1.1329595390710100	68.49618709445420	0.26763501729658900	157.03503017400100	769.2009894660630	79.67112587693840	9.800127208146300
11	Icon	6	0	6	0	15	Medium	4.733151595950480	63.38689133134370	0.3465850929702190	205.20910405493300	746.512804801406	81.11776226763690	15.064208327491700
12	Icon	4	1	5	1	13	Medium	6.665908310872230	60.62314030372420	0.34035507826401200	205.4019308802710	747.8154400504720	81.10914145837580	16.72646128837510
13	Icon	4	1	5	0		High	9.062824401412950	57.495625750114400	1.0325414216434800	230.35494428939000	725.87672165333	84.81047176316950	22.66015255629040
14	Icon	4	0	4	0	30	Low	2.379464712535310	66.70823360696280	0.2507607913642960	196.10713492970900	773.5902222938300	79.13915501869890	9.703150191065360
15	Icon	4	0	4	0	52	Low	1.2575850907442200	68.30579921815200	0.2388151448352720	178.00637687627700	777.1946516817400	78.13111328786390	9.598401935819130
16	Icon	4	1	5	0	55	Low	1.375218193490580	68.11049611987130	0.17521825800166900	183.48947533303400	763.739736724142	78.5676952870672	9.160569289334360
17	Icon	6	0	6	0	46	High	9.851251787810670	56.38747364958590	1.0749444750693800	241.53021395892700	737.5398276809750	83.70167219013880	25.307909642723900
18	Icon	4	1	5	0	80	Medium	5.611832385493060	62.23582644962930	0.5897030007784500	200.769895859925	750.3658568279550	81.60900952999640	14.867181258308100
19	Icon	6	1	7	0	24	Medium	4.281381306588790	64.13636404026610	0.5894537825833960	216.0737611087650	754.8266260287950	80.13752683427840	19.28653844983090

Snapshot of our data

How the final dataset (used for further analysis – hypothesis testing) looks like

Fixations/ heatmaps

Welcome; Intro

Welcome, and thank you for your interest in Khan Academy, Inc., a 501(c)(3) organization ("Khan Academy," "we," "us," or "our"), which operates the web site located at www.khanacademy.org/ and other websites (collectively, the "Website") and related application programming interfaces ("APIs"), mobile applications and online services, including, but not limited to, the Duck Duck Moose website and related applications, any Downloadable Content (as defined below), and any other products and services that Khan Academy may provide now or in the future (collectively, the "Services"). The following Terms of Service are a legal contract between you ("you" and "your") and Khan Academy regarding your use of the Services. Visitors and users of the Services are referred to individually as "User" and collectively as "Users". Use of the Services is governed by these Terms of Service and our [Khan Academy Privacy Policy](#) and [Khan Academy Kids Privacy Policy](#) (as applicable to which Services you choose to use), where the Privacy Policy describes the personal information that we collect and how we use and share it.

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IF YOU ARE A PARENT OR LEGAL GUARDIAN AND YOU PROVIDE CONSENT FOR YOUR CHILD TO REGISTER WITH THE WEBSITE, YOU AGREE TO BE BOUND BY THESE TERMS OF SERVICE IN RESPECT OF SUCH CHILD'S USE OF THE WEBSITE. IF YOU ARE SCHOOL PERSONNEL (AS DEFINED BELOW) AND YOU REGISTER A SCHOOL USER (AS DEFINED BELOW), YOU AGREE, ON BEHALF OF YOUR INSTITUTION, THAT THE SCHOOL USER IS BOUND BY THE TERMS, UNLESS YOUR INSTITUTION HAS A SEPARATE WRITTEN SERVICE AGREEMENT WITH KHAN ACADEMY THAT ACCEPTS THESE TERMS ON BEHALF OF SCHOOL USERS.

PLEASE NOTE THAT THESE TERMS INCLUDE A BINDING ARBITRATION PROVISION, INCLUDING A CLASS ACTION WAIVER. BY AGREEING TO BINDING ARBITRATION, TO THE EXTENT PERMITTED UNDER APPLICABLE LAW, YOU WAIVE YOUR RIGHT TO LITIGATE DISPUTES THROUGH A COURT AND TO HAVE A JUDGE OR JURY DECIDE YOUR CASE.

1. Eligibility; Accounts

Control

FAQs

Who can use Khan Academy's Services? →

Services are available to users 13 years or older (or the legal age of consent in your country). Child Users can use the platform with parental or school consent.

What happens if I use the Services without following the Terms? →

Khan Academy may suspend or terminate your account if you violate the Terms or fail to comply with laws.

How does Khan Academy handle Child User accounts? →

Child Users must have parental consent or school consent to register. Parents or schools are responsible for monitoring usage.

Can parents or schools manage accounts? →

Yes, parents can create and manage Child User accounts, and schools can create accounts for students under specific consent guidelines.

What should I know about using Khan Academy outside the U.S.? →

By using the Services internationally, you agree to comply with local laws and consent to data processing in the U.S.

What is Khanmigo, and what are the expectations for its use? →

Khanmigo is Khan Academy's AI-based learning assistant. Users are responsible for fact-checking its outputs and using AI responsibly.

I agree to the [Terms and Conditions](#)

Continue

FAQ

Icons

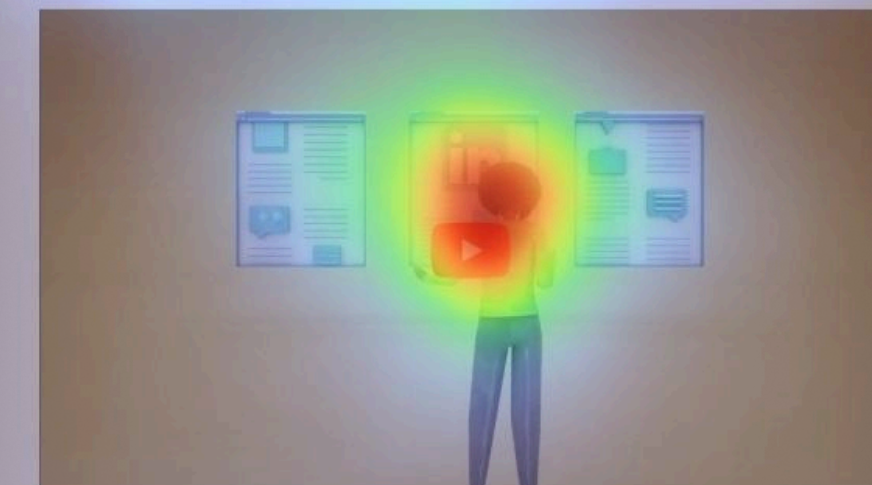
On November 20, 2024, we updated our User Agreement.

[Click here for more details](#)

User Agreement

Effective on November 20, 2024

Our mission is to connect the world's professionals to allow them to be more productive and successful. Our services are designed to promote economic opportunity for our members by enabling you and millions of other professionals to meet, exchange ideas, learn, and find opportunities or employees, work, and make decisions in a network of trusted relationships.



Terms and Conditions

- Using LinkedIn means agreeing to its legally binding User Agreement.
- LinkedIn may update terms, with notice to users, but changes are not retroactive.
- Minimum age to use LinkedIn is 16 (or older based on local laws).
- Breaching terms may result in suspension or termination of your account.
- Misrepresentation, scraping data, and spamming are violations of LinkedIn's policies.
- Personal data is collected, stored, and processed as per the Privacy Policy.
- LinkedIn can use, modify, and share your content for providing its Services.

I agree to the [Terms and Conditions](#)

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IRCTC INDIAN RAILWAYS
29 July 2023 11:14:59

Swimlane

Ask Disha Contact us

Trains Buses Flights

Review Journey Complete Payment

Payment Methods

- IRCTC iPay
- UPI / Bharat QR / BHIM / USSD
- Net Banking
- Payment Gateway / Credit Card / Debit Card
- Gift Cards, Wallets & More
- EMI

- Search Your Bank
- State Bank of India
 - ICICI Bank
 - Indian Bank
 - Punjab National Bank
- + View all banks

Total Fare
₹ 507.7

Pay & Book N

By continuing to pay, I understand and agree with the [privacy policy](#), the [user agreement](#) and [terms of service](#) of IRCTC.

- Right to book tickets without ID input
Book tickets without submitting ID details. Provide an accessible online portal for ticket booking.Ensure user-friendly gateways and secure processing.
- Right to cancel tickets and get refunds
Cancel tickets through the IRCTC website (Booked Ticket History). Process cancellations and refunds as per Railway Rules.Credit refunds original payment method.
- Right to reschedule or prepone journey
Cancel original tickets and rebook for desired dates. Allow journey modifications through new bookings.
- Right to name change for passengers
Follow the defined procedure to request a name change. Support name changes as per IRCTC policies.Process valid name-change.
- Right to travel with a valid ID
Carry one of the 10 valid photo IDs in original during travel. Enter correct passenger details during booking. Verify IDs during travel to ensure authenticity. Accept only government-approved photo IDs.

Hypothesis Testing

Normal Data or Not: Chi-Squared Test

Cognitive Load Across UI Groups

Why: If a particular UI design is more likely to reduce cognitive load

H₀: There is no association between cognitive load and different UI groups

H₁: There is a significant association between cognitive load and different UI groups

Normal: Pearson's Corr Not Normal: Spearman Corr

Relationship Between Time Spent and Retention

Why: If spending more time on the T&C page affects how much information participants retain

H₀: There is no significant correlation between time spent and retention

H₁: There is a significant correlation between time spent and retention

Normal Data: ANOVA

Data Not Normal: Kruskal-Wallis

Retention Across UI Groups

Why: If retention is higher for specific UI designs compared to others

H₀: The median retention scores are the same across all UI groups

H₁: The median retention scores are different for at least one UI group

Time Spent Across UI Groups

Why: If different UI designs affect how much time participants spend on the T&C page

H₀: The median time spent is the same across different UI groups

H₁: The median time spent is different for at least one UI group

Relationship Between Time Spent and Cognitive Load

Why: If participants with higher cognitive load spend more time on the T&C page

H₀: The median time spent is the same across all levels of cognitive load

H₁: The median time spent is different for at least one level of cognitive load

Relationship Between Retention and Cognitive Load

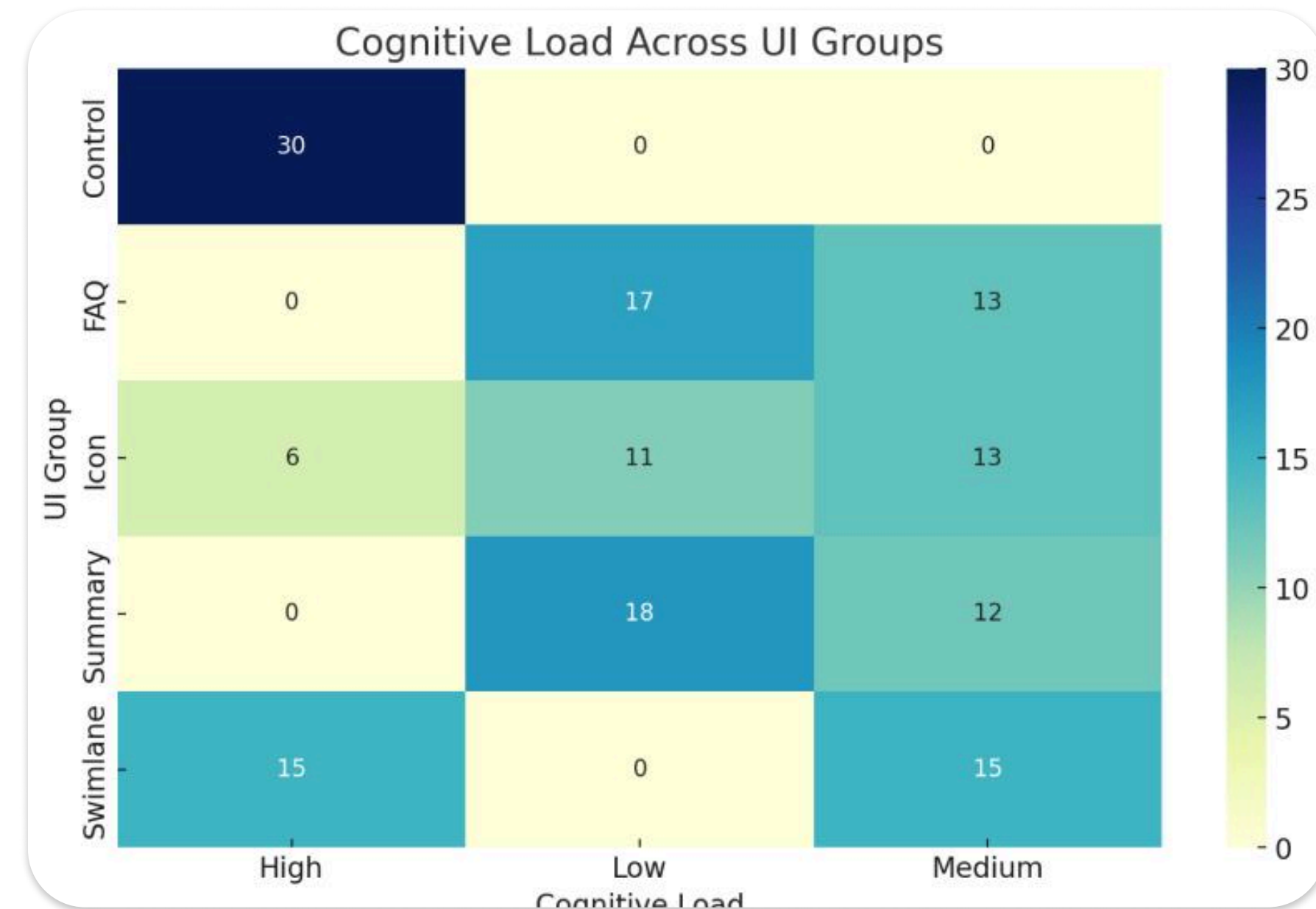
Why: If higher cognitive load leads to lower retention of the T&C content

H₀: The median retention scores are the same across all levels of cognitive load

H₁: The median retention scores are different for at least one level of cognitive load

RESULT

Hypothesis Testing



① Cognitive Load Across UI Groups

STATISTICAL TEST

Chi Squared

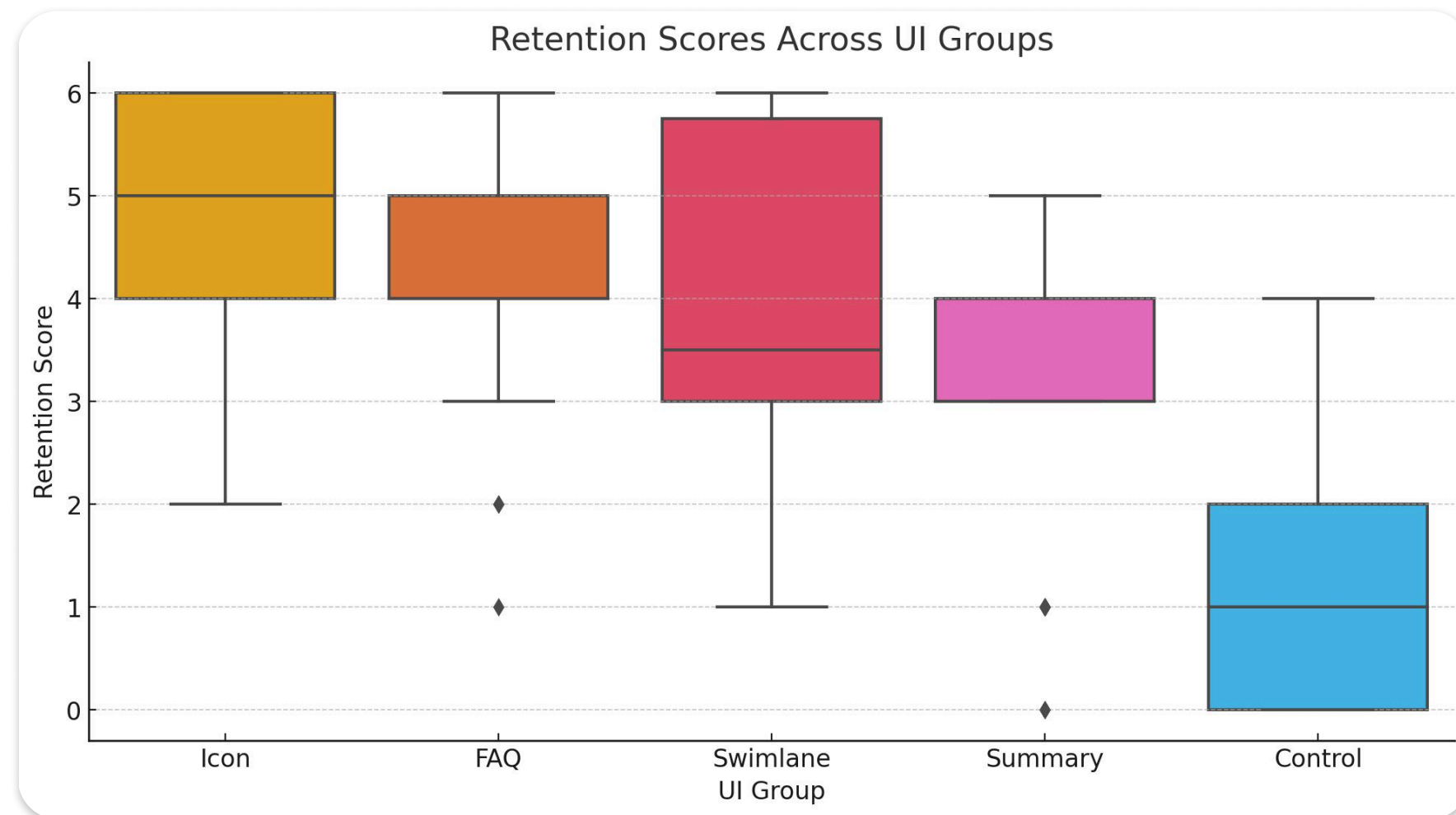
SIGNIFICANT OR NOT

Significant

- If a particular UI design is more likely to reduce cognitive load
- **Null Hypothesis (H₀):** There is no association between cognitive load and different UI groups
- **Alternative Hypothesis (H₁):** There is a significant association between cognitive load and different UI groups
- **Results:**
 - The chi-squared test ($p < 0.0001$) indicates a highly significant result, leading to the rejection of the null hypothesis.
 - FAQ and Summary groups significantly reduce cognitive load compared to the Control group. The Control group design results in high cognitive load for all participants.

RESULT

Hypothesis Testing



Group Comparison	p-value	Significant?
0 Icon vs FAQ	0.17900	No
1 Icon vs Swimlane	0.05400	No
2 Icon vs Summary	0.00010	Yes
3 Icon vs Control	0.00010	Yes
4 FAQ vs Swimlane	0.39800	No
5 FAQ vs Summary	0.00200	Yes
6 FAQ vs Control	0.00010	Yes
7 Swimlane vs Summary	0.07900	No
8 Swimlane vs Control	0.00010	Yes
9 Summary vs Control	0.00004	Yes

② Retention Across UI Groups

DATA NOT NORMAL

Kruskal–Wallis

SIGNIFICANT OR NOT

Significant

- If retention is higher for specific UI designs compared to others
- **Null Hypothesis (H_0):** The median retention scores are the same across all UI groups
- **Results:**
 - There is a significant difference in retention scores across UI groups ($p = 3.1e-12$).

And so we ran a pair-wise test to compare treatments with each other and with control

DATA NOT NORMAL

Pair-wise Mann–Whitney U

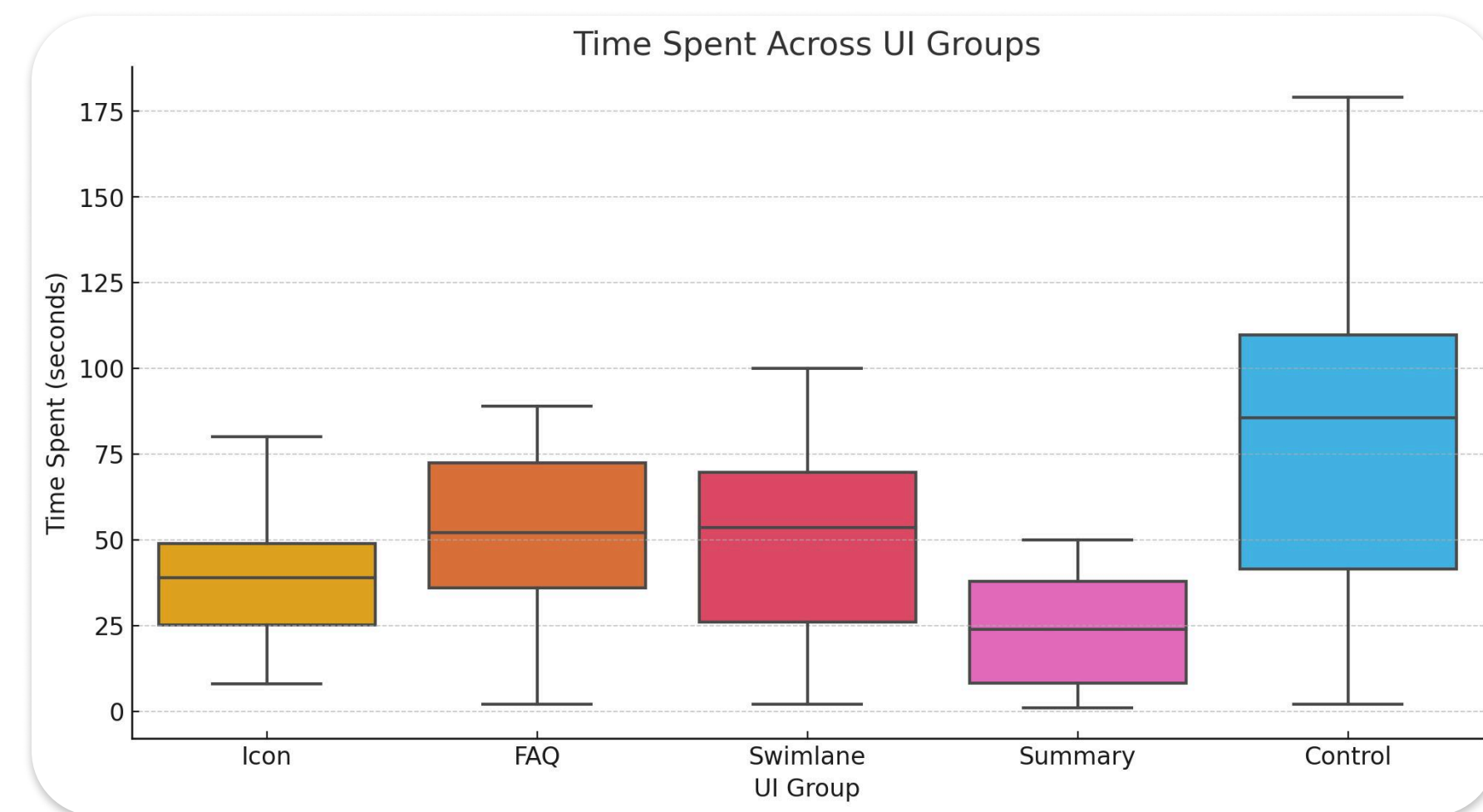
SIGNIFICANT OR NOT

Significant

The Summary UI group has significantly higher retention scores compared to the Control, Icon, and FAQ groups, while the Control group performed the worst.

RESULT

Hypothesis Testing



③ Time Spent vs Different UI Groups

DATA NOT NORMAL

Kruskal-Wallis

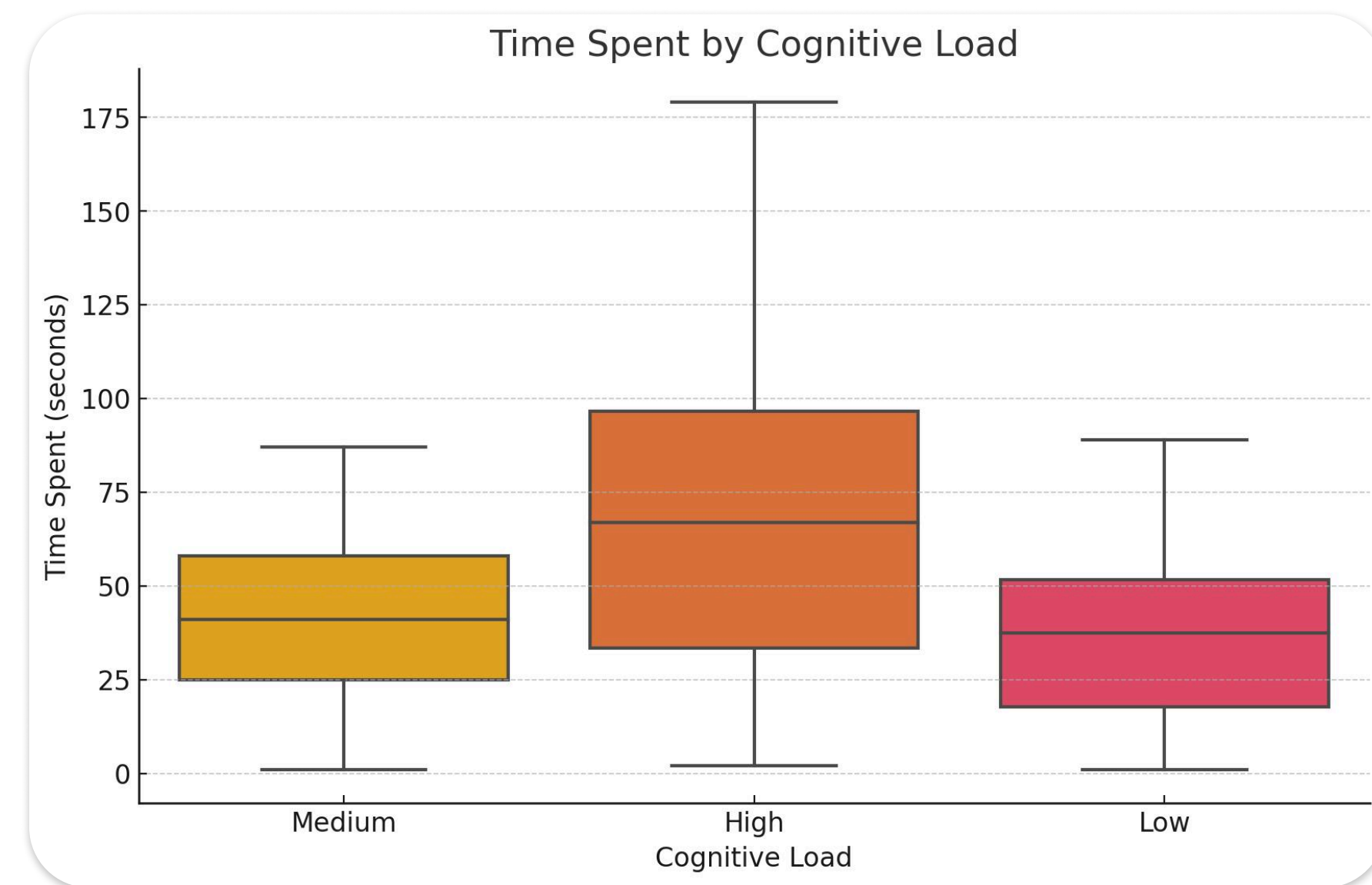
SIGNIFICANT OR NOT

Significant

- If different UI designs affect how much time participants spend on the T&C page
- **Null Hypothesis (H_0):** The median time spent is the same across different UI groups.
- **Alternative Hypothesis (H_1):** The median time spent is different for at least one UI group
- **Results:**
 - The Kruskal-Wallis test ($p < 0.0001$) reveals a significant difference in time spent across UI groups.
 - The Control group spends the most time, while the Summary group spends the least.

RESULT

Hypothesis Testing



④ Relationship Between Time Spent and Cognitive Load

DATA NOT NORMAL

Kruskal-Wallis

SIGNIFICANT OR NOT

Significant

- If participants with higher cognitive load spend more time on the T&C page
- **Null Hypothesis (H_0):** The median time spent is the same across all levels of cognitive load
- **Alternative Hypothesis (H_1):** The median time spent is different for at least one level of cognitive load
- **Results:**
 - The Kruskal-Wallis test ($p = 0.00096$) indicates a significant difference in time spent across cognitive load levels.
 - With higher cognitive load leading to longer time spent, as observed in the boxplot.

Relationship between

Time Spent & Retention

DATA NOT NORMAL

Spearman Correlation

SIGNIFICANT OR NOT

Significant

Spearman Correlation Coefficient: -0.186

p-value: 0.022

The relationship between time spent and retention score is statistically significant but negative. This indicates that more time spent on the page does not necessarily increase retention.

Retention & CL

DATA NOT NORMAL

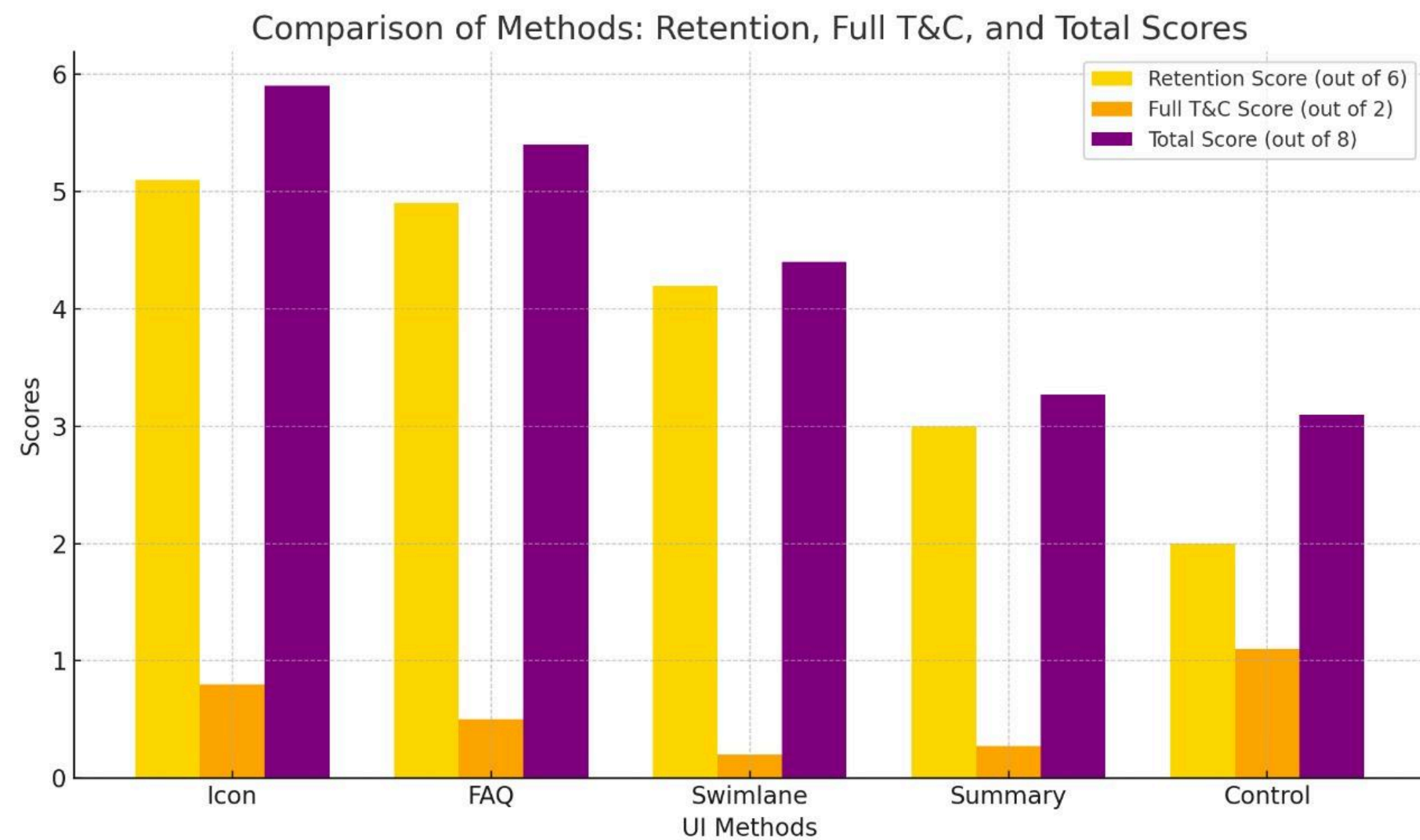
Kruskal-Wallis

SIGNIFICANT OR NOT

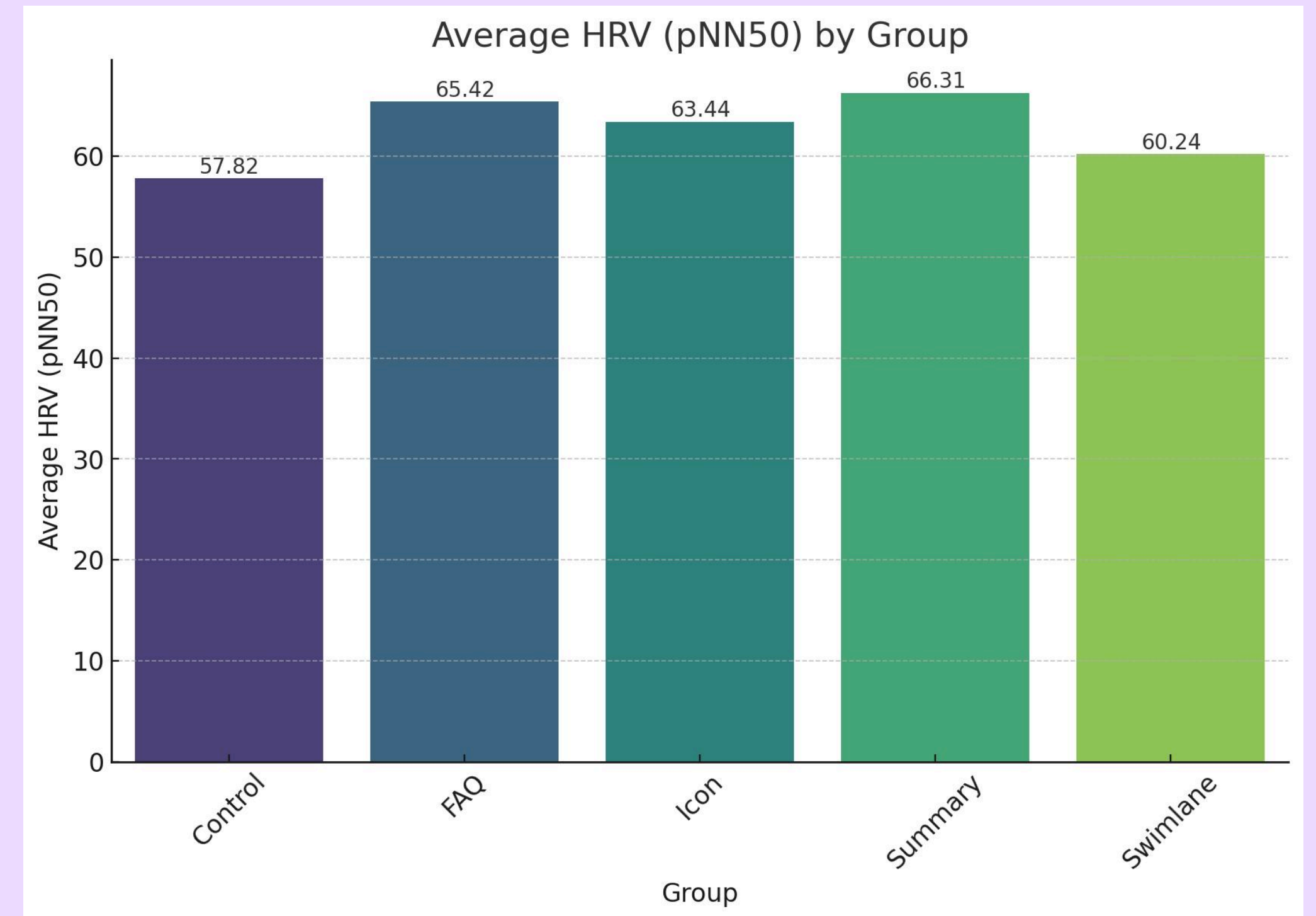
Significant

p-value: 0.096

Since the p-value is less than 0.05 , we reject the null hypothesis. This indicates that cognitive load significantly impacts retention scores.



Icon and FAQ/QnA formats have the highest retention and total scores, while Summary and Control perform poorly. Visual formats like Icons and interactive formats like FAQ/QnA are the most effective at helping users understand and retain T&C information.



HRV is highest for FAQ and Summary, suggesting these formats cause the least stress or cognitive load (for summary this was unexpected). Simplified T&C formats like FAQ and Summary are easier for users to process compared to the full T&C.

PRIVACY, ETHICS, LEGAL

Ethical & Privacy Considerations

Ensured participants give **informed consent**, understanding the study's purpose and their role.

Anonymized all personal data and store it securely to protect participants' privacy.

Allowed participants to **withdraw from the study** at any time without penalty.

Were transparent about the study, and debrief participants if any deception is involved.

Minimized potential psychological stress or discomfort from tasks like cognitive load assessment.

Selected participants fairly, without discrimination based on irrelevant factors like age or gender.

Challenges & Limitations

- ① **Bias:** We had the same person test control for multiple sectors, bias might have seeped in after their first trial
- ② **Data Collection:** Data size is small to confirm if the correlations we've received are actually prevalent
- ③ **User Behaviour:** Even after being nudged/prompted to read the T&C the users didn't pay too much attention to it and at the max skimmed through the content. AUs might not represent the entire story

IMPACT OF THE EXPERIMENT

What are we proposing?

Standardisation of TnC formats

This experiment can pave the way for standardizing Terms and Conditions (T&Cs) across industries by identifying universally effective UI designs, such as summaries, icons, and FAQ formats, that optimize comprehension and reduce cognitive load. A standardized framework for presenting T&Cs can ensure clarity, fairness, and accessibility for all users while maintaining legal compliance.

A notable example of such standardization is the **Nutrition Facts Label on food packaging**, which was mandated by the FDA. Before its introduction, consumers struggled to understand complex and inconsistent nutritional information. By standardizing the format with clear sections (calories, serving size, daily values, etc.), the label made it easier for people to compare products and make informed choices.

New Label / What's Different?

Servings:
larger,
bolder type

Nutrition Facts

8 servings per container
Serving size 2/3 cup (55g)

Amount per serving
Calories 230

% Daily Value*

Total Fat 8g **10%**

Saturated Fat 1g **5%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 160mg **7%**

Total Carbohydrate 37g **13%**

Dietary Fiber 4g **14%**

Total Sugars 12g

Includes 10g Added Sugars **20%**

Protein 3g

Vitamin D 2mcg 10%

Calcium 260mg 20%

Iron 8mg 45%

Potassium 240mg 6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Serving sizes
updated

Calories:
larger type

Daily Values
Updated

New:
added sugars

Change
in some
nutrients
required

Actual
amounts
declared

New
footnote

IMPACT OF THE EXPERIMENT

How will the stakeholders actually benefit out of it?

①

USERS

1. Faster Access to Key Information
2. Reduced Risk of Unknowingly Agreeing to Unfavorable Terms
3. Better Protection of User Rights

②

INDUSTRY

1. Higher Adoption of Transparent Practices
2. Streamlined Compliance with Regulations
3. Reduced Customer Complaints and Disputes

Deployment ways

Companies can offer [customisable T&C displays](#) where users choose their preferred format

Present [Icons or FAQ formats as the default option](#) for users, while providing a checkbox with a link to the full T&Cs for legal compliance.

Companies can use [A/B testing](#) to determine which T&C presentation style works best for their audience

Scaling issues

Legal teams may resist [simplified formats](#), as they might argue that reducing or summarizing content could lead to liability risks or misinterpretations.

Adapting T&C formats into existing platforms (e.g., websites, apps) may [require additional development resources](#), especially for interactive formats like FAQ/QnA

Ensuring a [consistent experience across web, mobile, and other interfaces](#) will be a challenge

[Simplified T&Cs](#) will need to be translated and localized for different languages and regions, which can add significant overhead.

Thanks!