

UTAH VALLEY UNIVERSITY



Deepfake Media Study



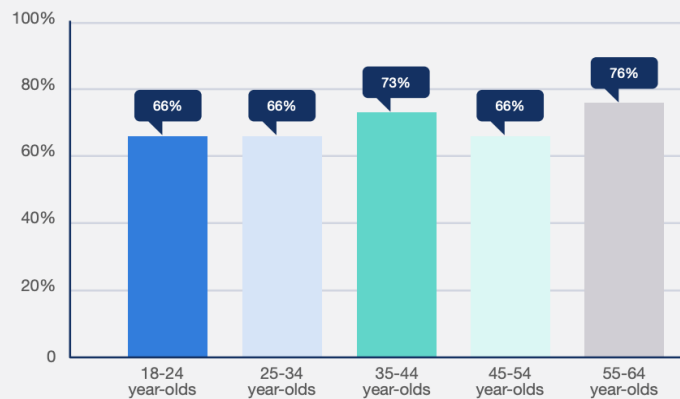
UTAH VALLEY UNIVERSITY



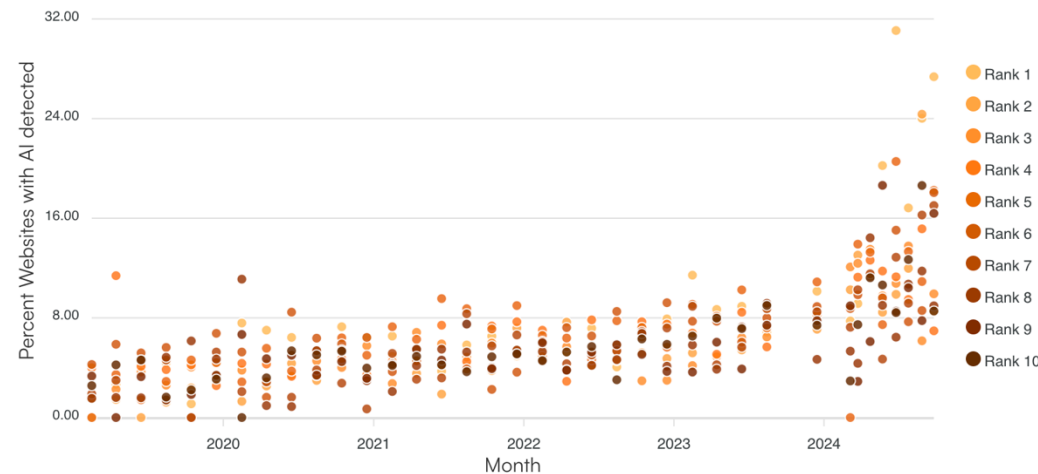
Deepfake Media Study

THE SCOPE OF THE PROBLEM

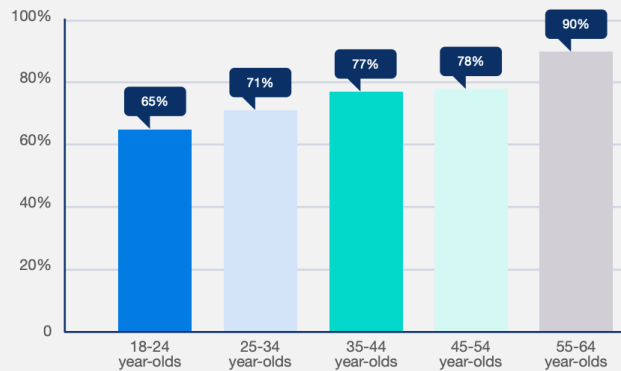
“I believe US elections are more vulnerable to AI deepfakes that other countries.”



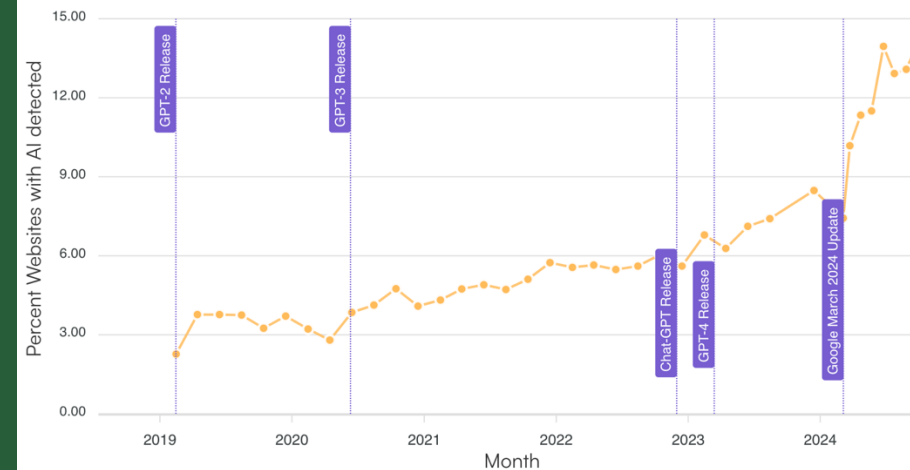
Percent Websites with AI Detected Content for Ranks 1-10 over Time



“I believe policymakers and regulators should educate Americans on the risks of political AI deepfakes and how to protect people against them.”



Percent Websites with AI Detected Content over Time



OUR
GOAL:

equip policymakers and campaigns with the information and tools needed to **secure elections and maintain public trust** in light of technological advancements.

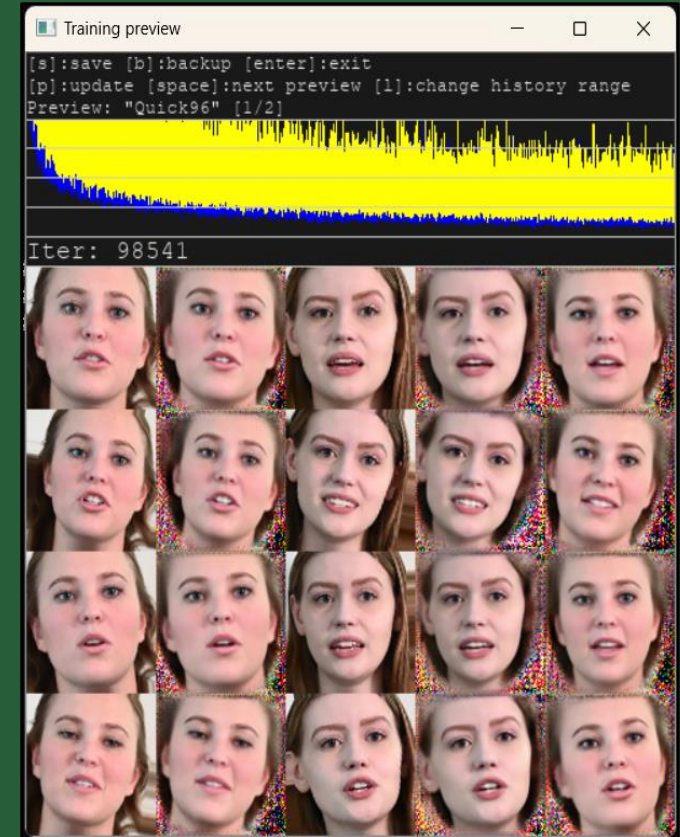
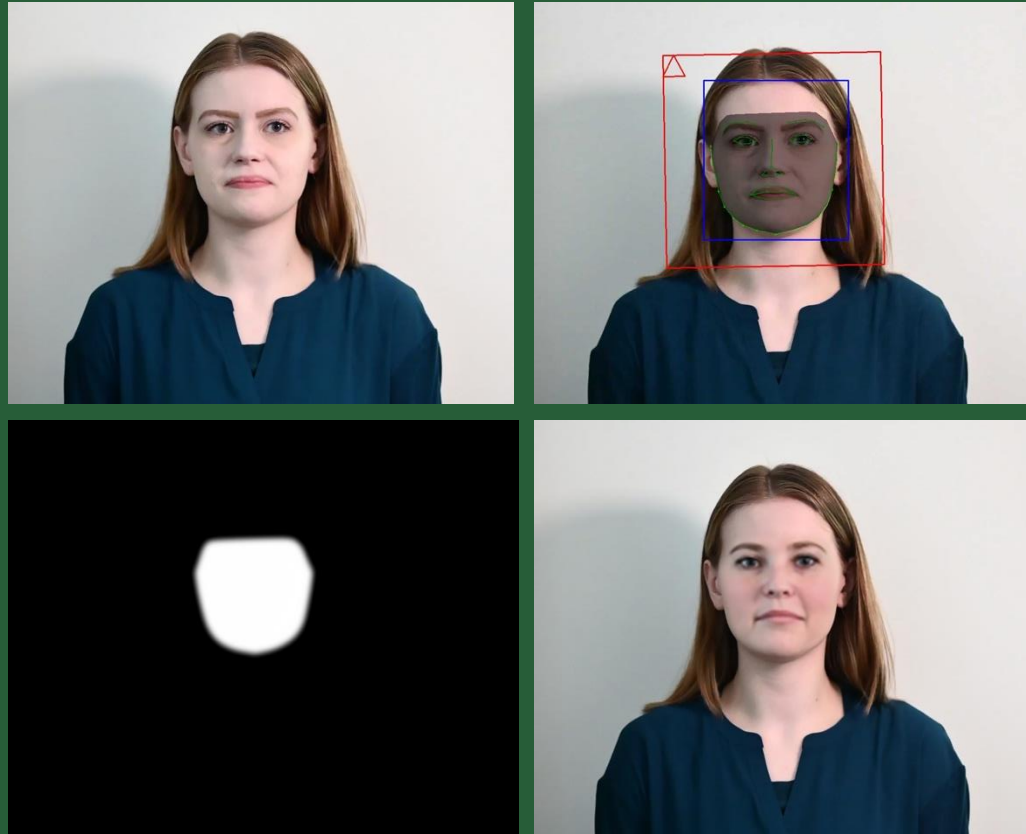
DEEPPFAKE



REAL



PROCESS BEHIND THE CREATION OF THE DEEPPFAKE



WHAT IS THE SMARTLab?

Multi-Award-Winning
Neuromarketing
Research Lab



8X

What we do for our clients:

1

Take the guesswork out of marketing campaigns by showing how they will perform before they are launched

2

Allow clients to make data-driven decisions that result in more effective marketing campaigns

3

Save time and money by having the most effective marketing materials

SMARTLab

BIOMETRIC TESTING MEASURES **PEOPLE'S NON-CONSCIOUS RESPONSE**
TO MARKETING STIMULI

Biometric Technologies

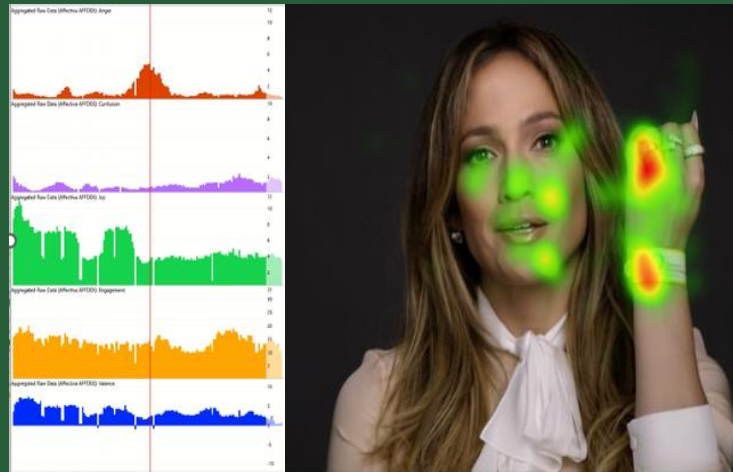
Eye Tracking

Facial Expression Analysis

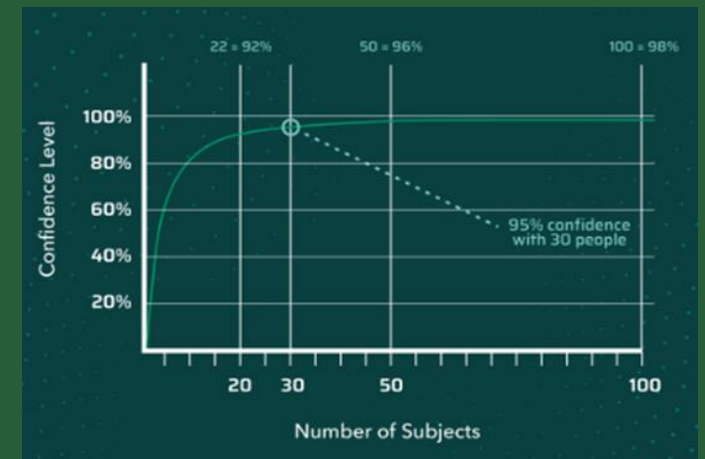
Electroencephalography (EEG)

Galvanic Skin Response (GSR)

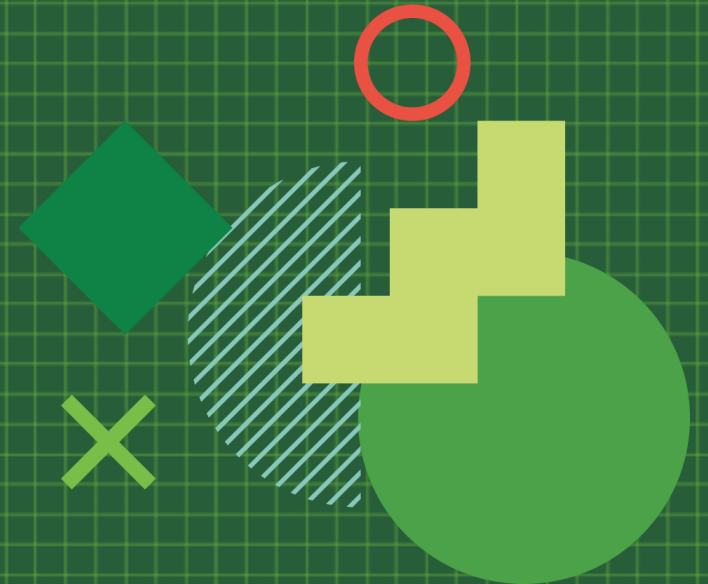
Analysis



Confidence



ARTIFICIAL INTELLIGENCE (AI) GENERATED DEEPFAKE MEDIA STUDY



RESEARCH QUESTIONS

1

Is there a measurable difference in credibility between legitimate media and deepfake media?

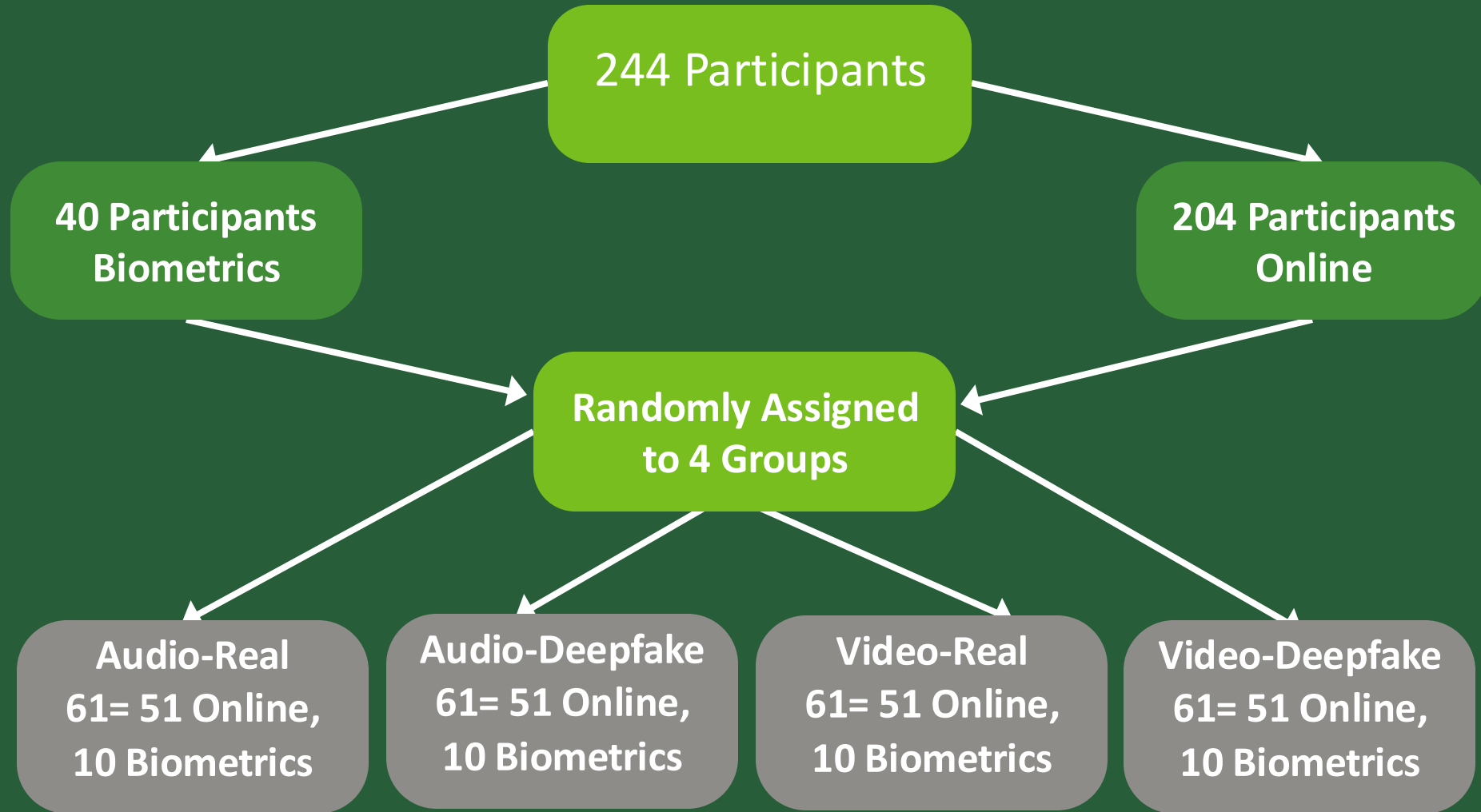
2

How effectively can test subjects identify deepfake media compared to real media?

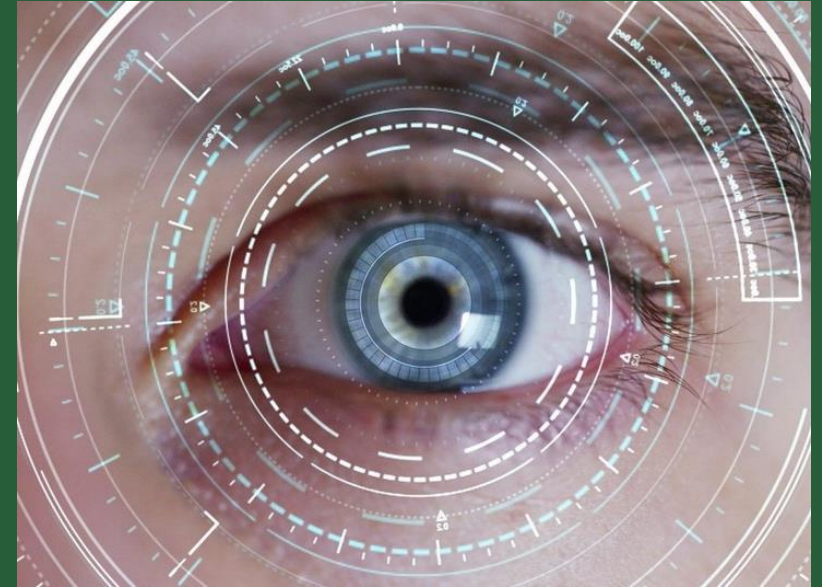
3

Is there a measurable difference in non-conscious responses of test subjects when subjected to real media compared to deepfake media?

RESEARCH METHODOLOGY



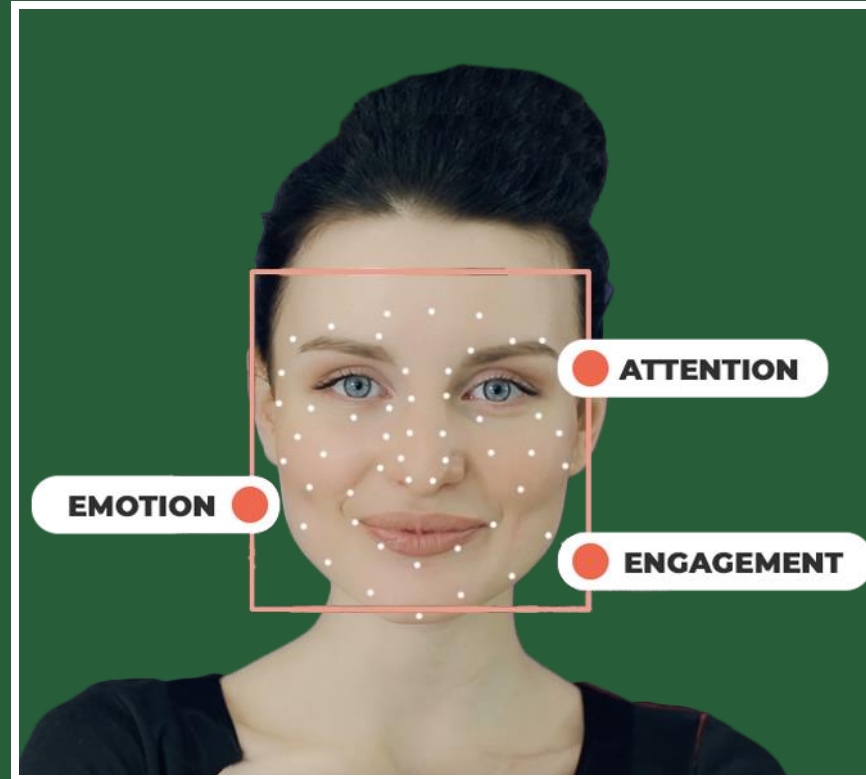
EYE TRACKING



Tracks where test participants are looking while viewing and listening to the speaker

FACIAL EXPRESSION ANALYSIS

3,000 Micro-Expressions ↔ 7 Emotions



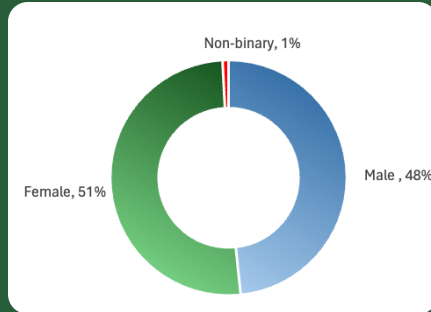
- Confusion
- Contempt
- Engagement
- Fear
- Joy
- Surprise
- Valence

Measures micro-expressions of test participants to understand what emotions they are experiencing

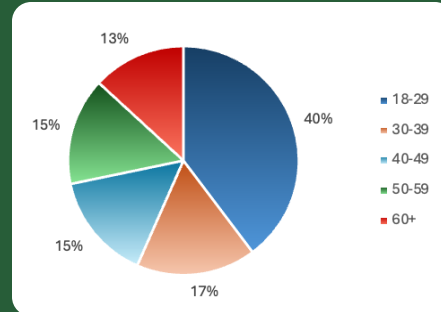
DEMOGRAPHICS

(N= 40) IN PERSON (N=204) ONLINE

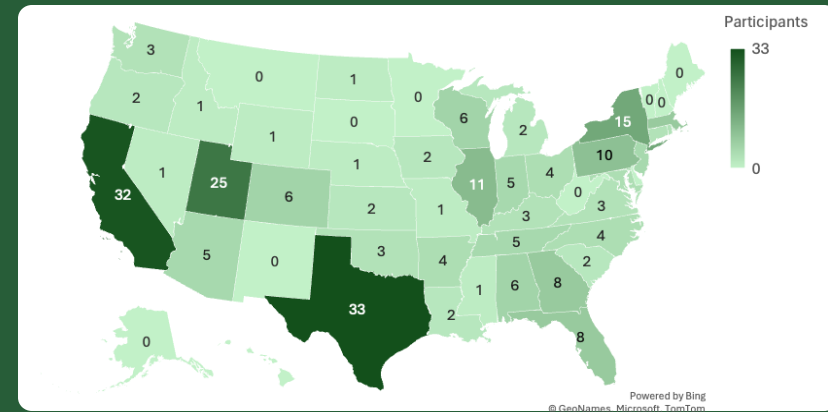
Gender



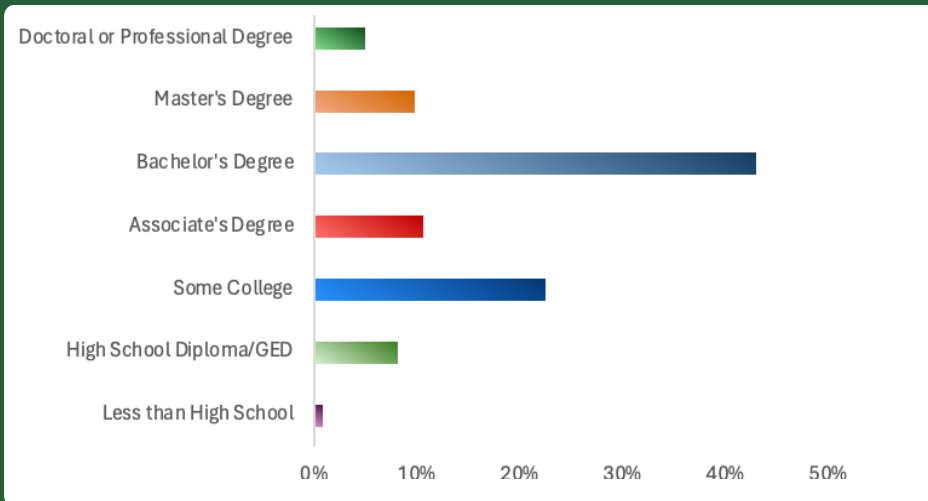
Age



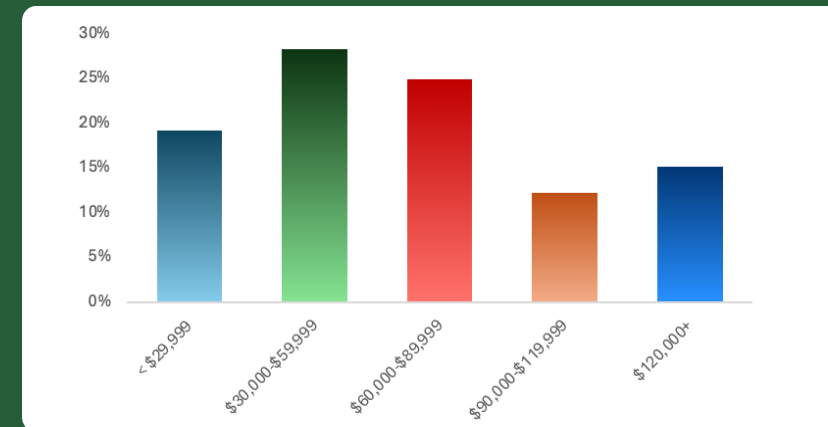
State Distribution

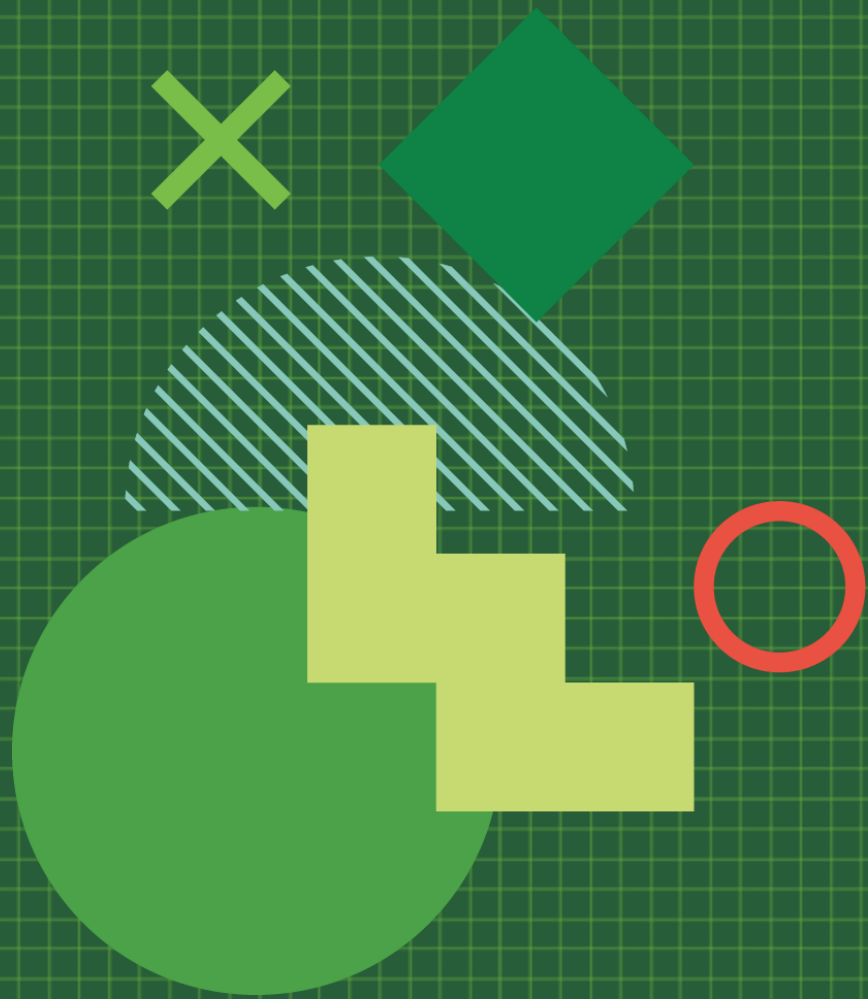


Education



Income





FINDINGS



Is there a **measurable difference in credibility** between legitimate media and deepfake media?

FINDINGS (MEAN SCORE)

E.g.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

Perceived Knowledge

Video	
Real	Deepfake
5.59	5.95

Audio	
Real	Deepfake
5.77	5.64

Perceived Reliability

Video	
Real	Deepfake
5.44	5.44

Audio	
Real	Deepfake
5.57	5.44

Perceived Trustworthiness

Video	
Real	Deepfake
5.61	5.62

Audio	
Real	Deepfake
5.7	5.64

Content Quality

Video	
Real	Deepfake
5.21	5.64

Audio	
Real	Deepfake
5.97	6.02

Perceived Persuasiveness

Video	
Real	Deepfake
5.26	5.41

Audio	
Real	Deepfake
5.48	5.57

Perceived Authenticity

Video	
Real	Deepfake
5.41	5.25

Audio	
Real	Deepfake
5.9	5.56



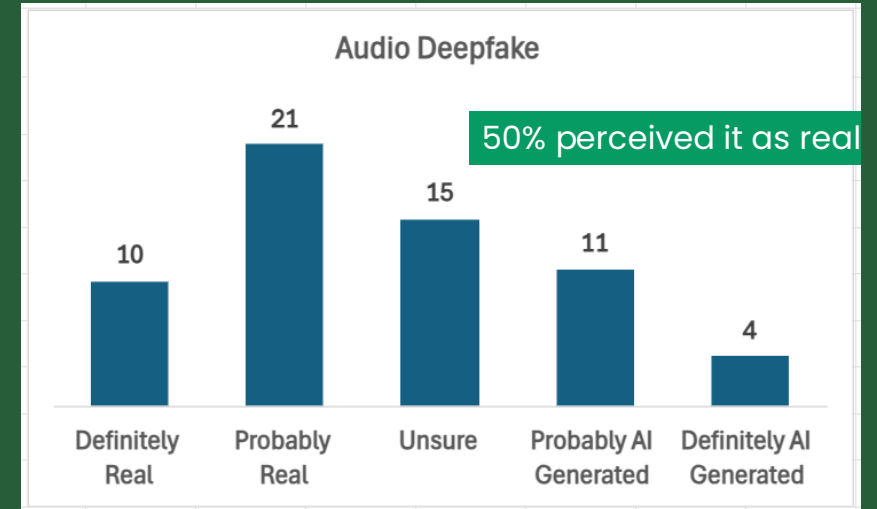
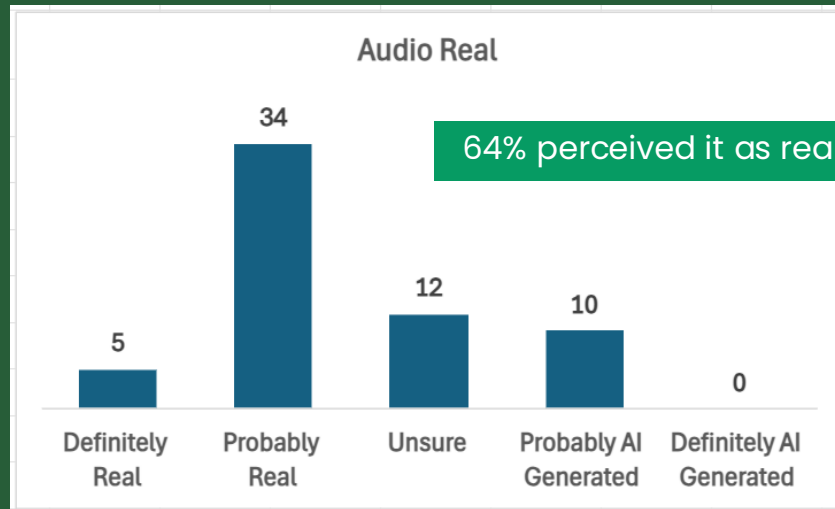
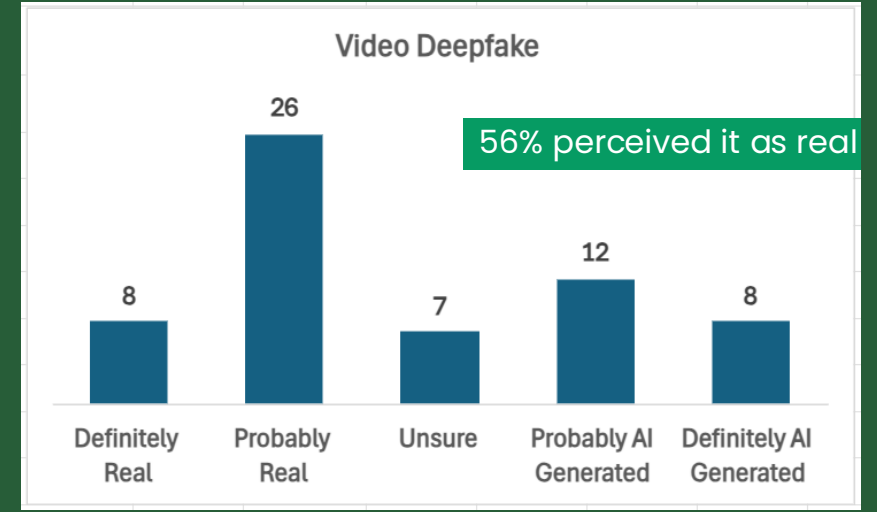
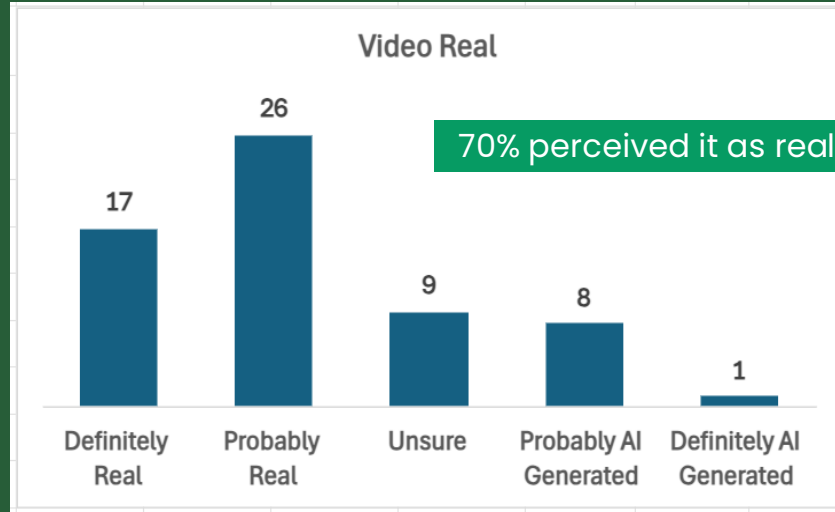
How effectively can test **subjects**
identify deepfake media
compared to real media?

REAL

VS.

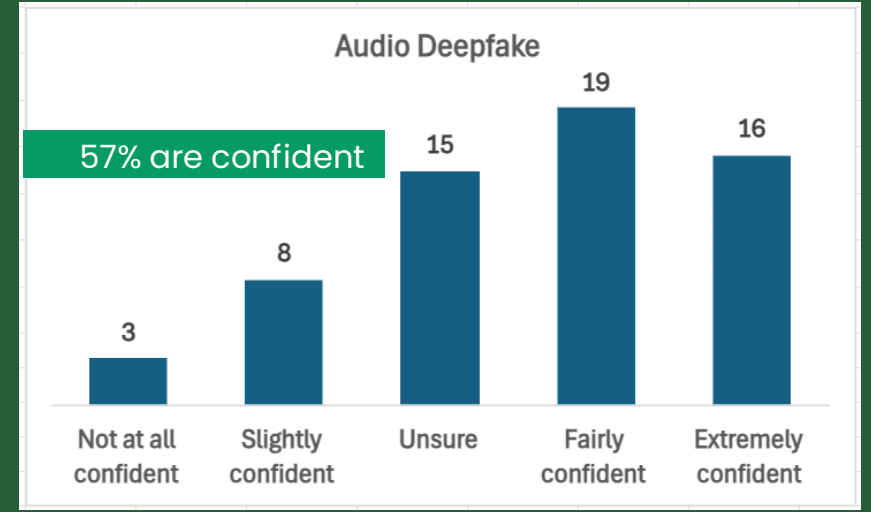
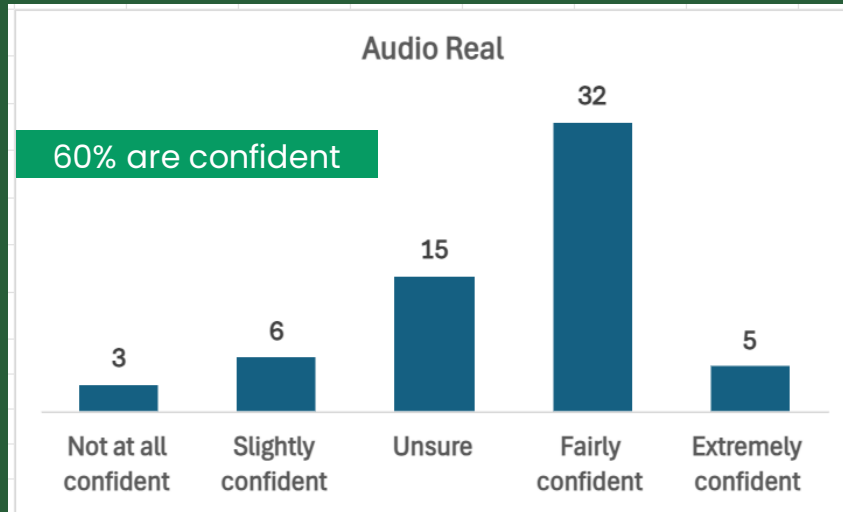
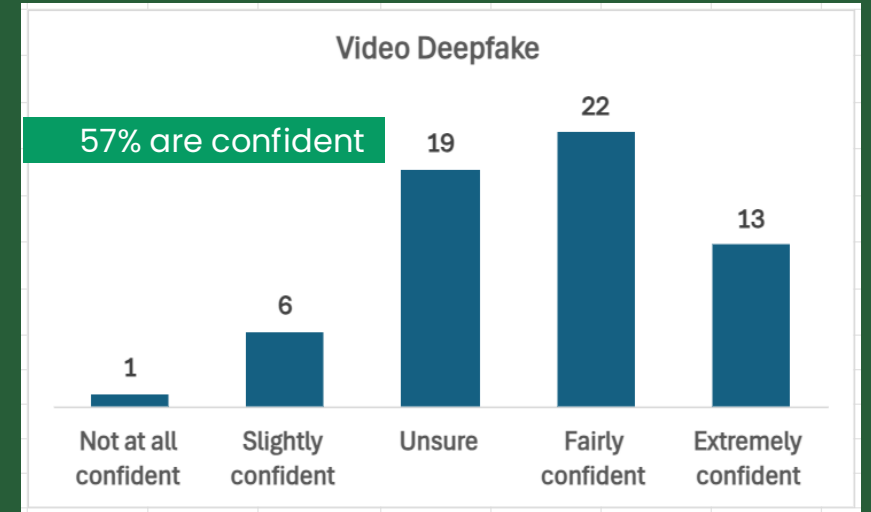
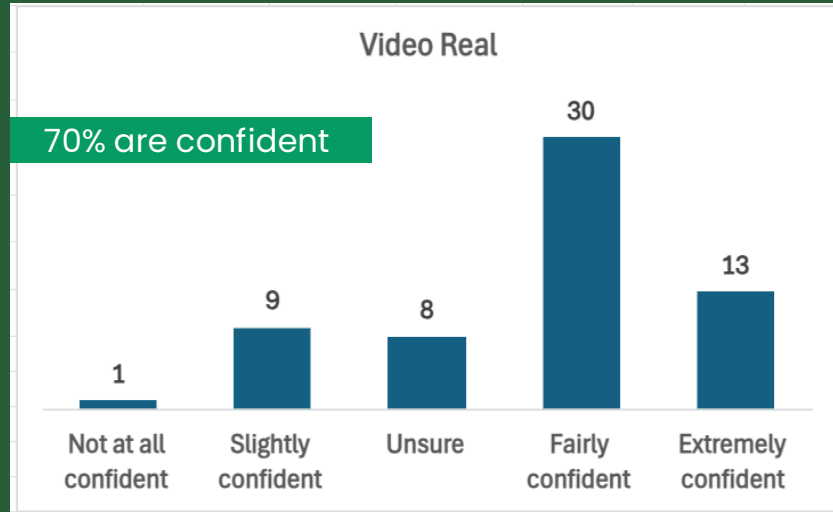
DEEPAKE

(N = 61)



CONFIDENCE

IN REAL VS. DEEPFAKE JUDGEMENT (N = 61)

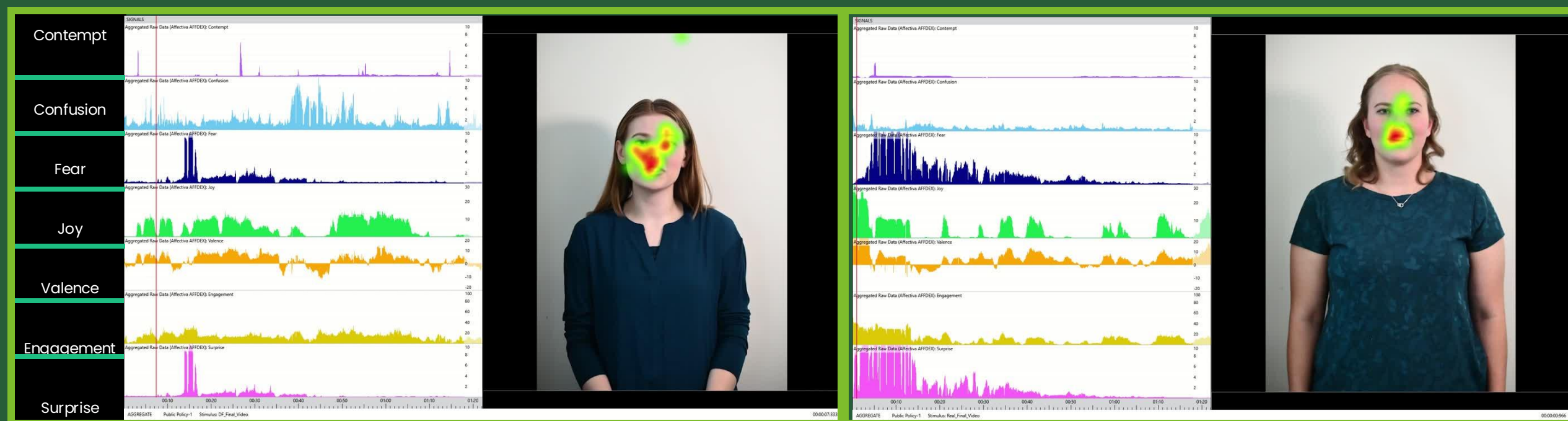




Is there a measurable difference
in **non-conscious responses** of
test subjects when subjected to
real media compared to
deepfake media?

BIOMETRICS - EYE TRACKING & FACIAL EXPRESSION

While no significant differences were observed in the eye-tracking data, notable variations were detected in the facial expression analysis.



FACIAL EXPRESSIONS

AVERAGES AND RANKINGS

REAL AUDIO

Contempt	
Real Audio	3.44
DF Audio	0.87
DF Video	0.33
Real Video	0.24

DEEPPFAKE AUDIO

Did not rank first
in any emotion

REAL VIDEO

Joy	
Real Video	4.14
DF Audio	3.75
DF Video	3.64
Real Audio	0.18

Fear	
Real Video	2.39
DF Audio	0.96
DF Video	0.84
Real Audio	0.34

Valence	
Real Video	4.27
Real Audio	0.70
DF Audio	0.61
DF Video	0.17

Surprise	
Real Video	2.64
DF Audio	0.66
DF Video	0.54
Real Audio	0.18

DEEPPFAKE VIDEO

Confusion	
DF Video	1.93
DF Audio	1.20
Real Audio	1.00
Real Video	0.74

Engagement	
DF Video	11.82
Real Video	10.81
DF Audio	10.11
Real Audio	2.90

SUMMARY OF KEY FINDINGS

1

The deepfake video ranked higher on 4 out of 6 metrics: it was seen as more knowledgeable, trustworthy, persuasive, and of better content quality, with reliability being tied.

2

Over half of participants believed the deepfake content was real (56% for the video and 50% for the audio).

3

The deepfake video scored higher on engagement and confusion. The real video ranked higher for joy, valence, fear, and surprise. The real audio showed the most contempt.

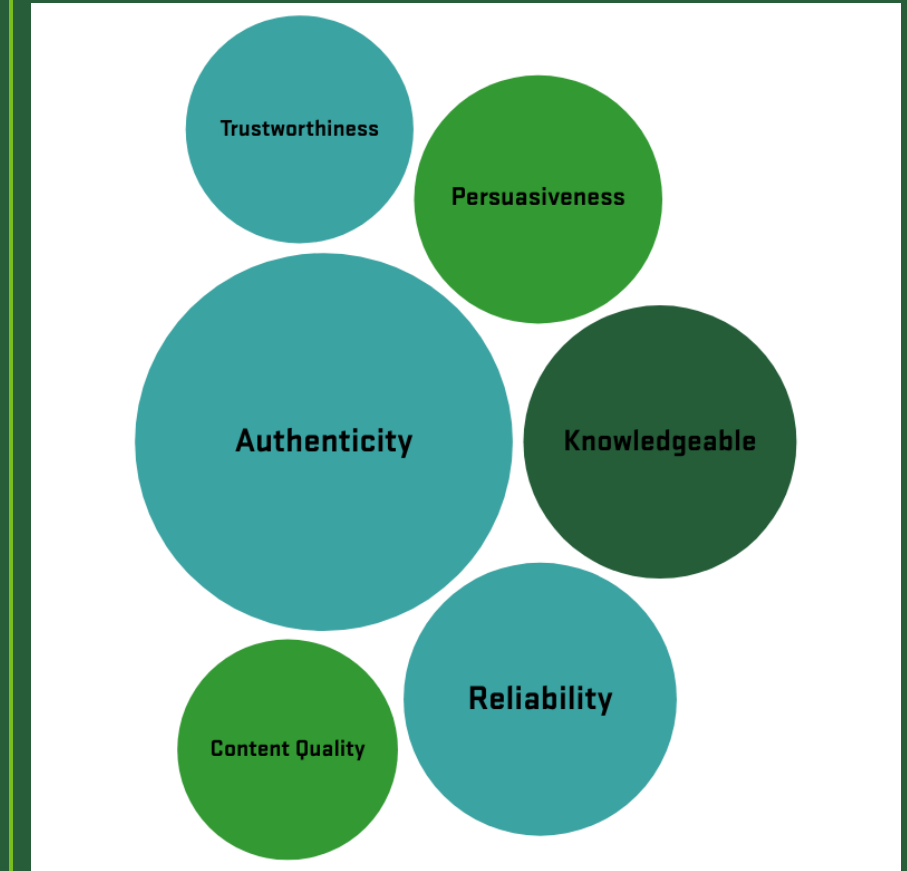
Q:
ARE DEEP-FAKES CREDIBLE?

A:
DEEPAKES ARE SEEN TO BE AS CREDIBLE AS REAL MEDIA

Video Comparison



Audio Comparison



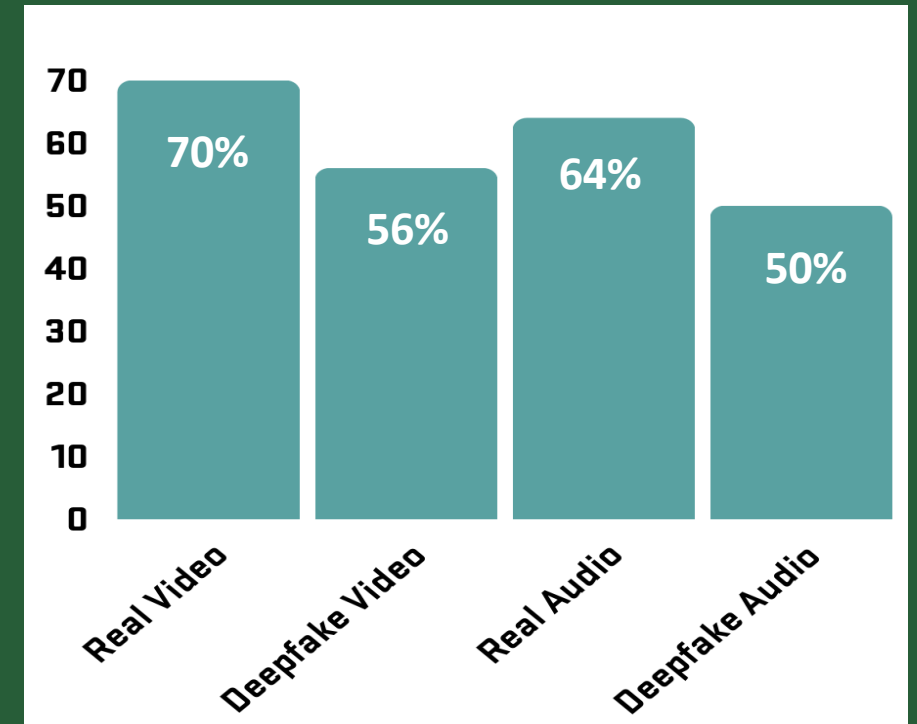
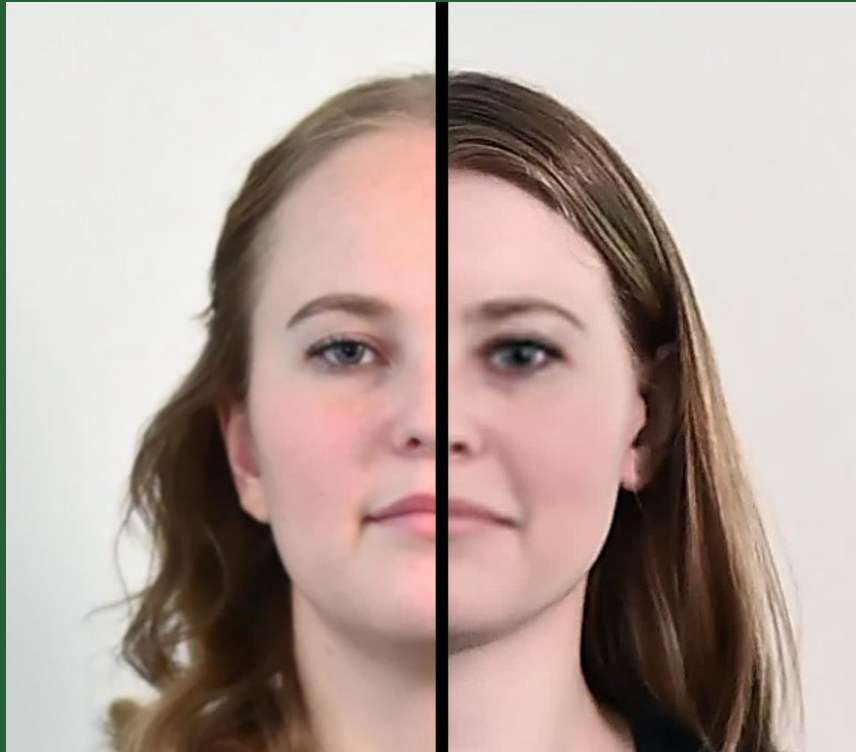
Written Value Calculated as (Deepfake Average Value - Real Average Value) Bubble Size Calculated as $(((|\text{Written Value}|) * 1000) + 100)$ **blue bubbles** represent values where real media scored higher, **green bubbles** where deepfake media scores higher, & **white** where they were completely equal.

Q:
**CAN YOU
IDENTIFY
A DEEFAKE?**

A:
**AFTER BEING
INFORMED, DETECTING
DEEFAKES REMAINED
DIFFICULT**

Real

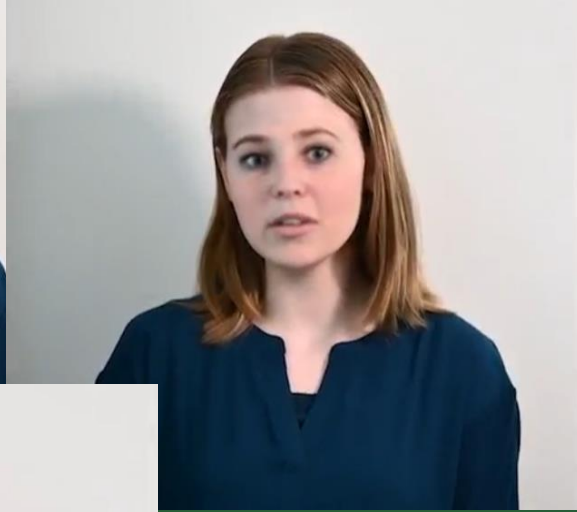
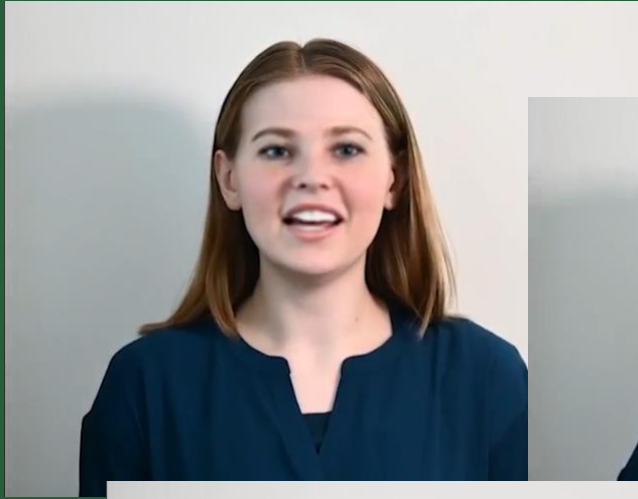
Deepfake



**PERCENTAGE OF PARTICIPANTS WHO
GUESSED THEY'D SEEN REAL MEDIA**

Q:
**HOW DO
PEOPLE
RESPOND TO
DEEPAKES?**

A:
**DEEPAKES TRIGGER
HIGHER ENGAGEMENT
& NON-CONSCIOUS
CONFUSION COMPARED
TO REAL CONTENT**



Confusion Engagement

"The speaker seemed confident about the topic and everything she said made sense."

"She provided clear and valid reasons why the space is needed on campus, such as the stressful college life and how beneficial this space would be."



DEEPPFAKE MEDIA STUDY PARTNERS

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Jake Huber

Leah Olsen

Amanda Tew

PANEL

DISCUSSION

