

m

Can browser choice screens be effective?

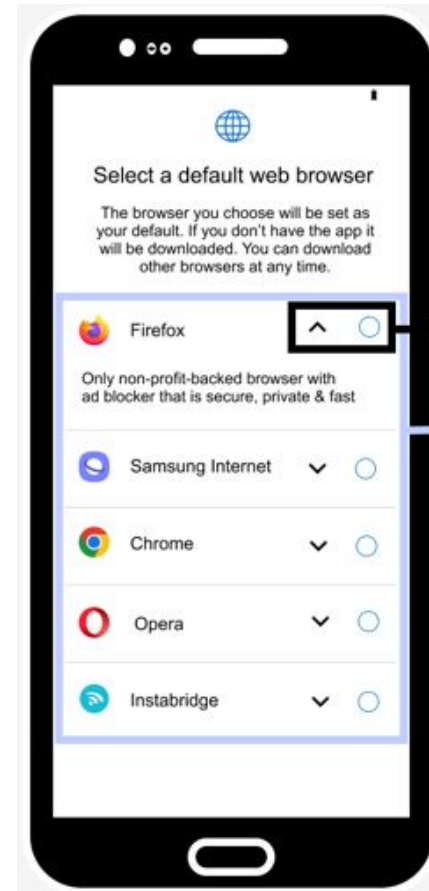
Experimental analysis of the impact of their design, content and placement

Quick poll

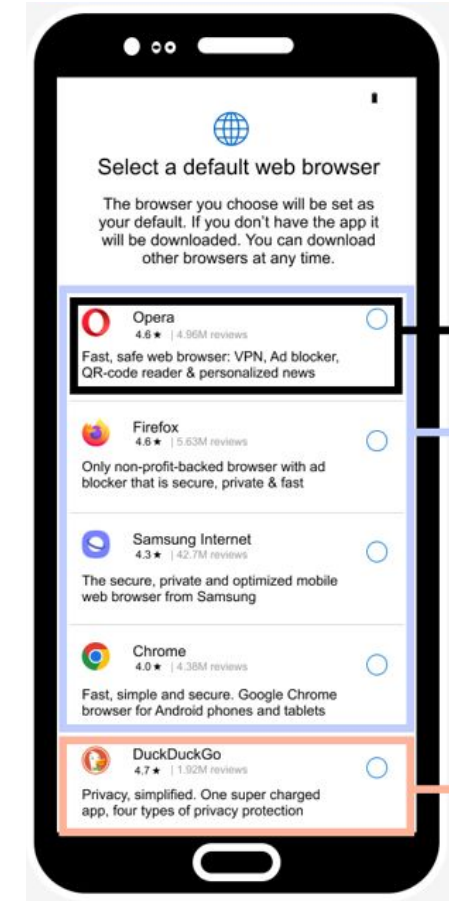
You are setting up your phone: which process would you prefer?

- Option 1: Android automatically defaults you to Chrome browser
- Option 2: Android automatically defaults you to Opera browser

Option 3



Option 4





Agenda

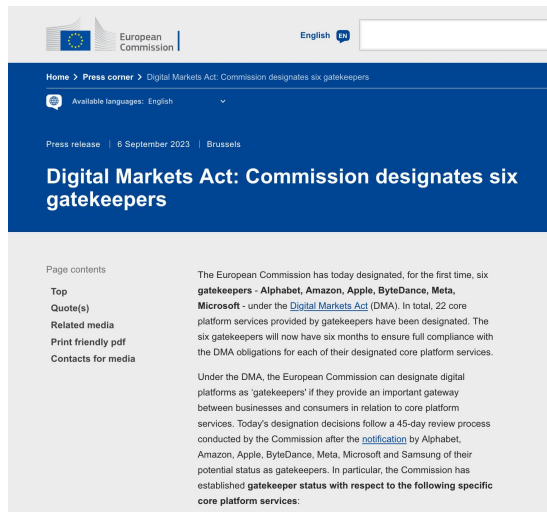
- 1 Background**
- 2 The experiment**
- 3 Results**
- 4 Next steps**

Background



Significant regulatory interest & not much research

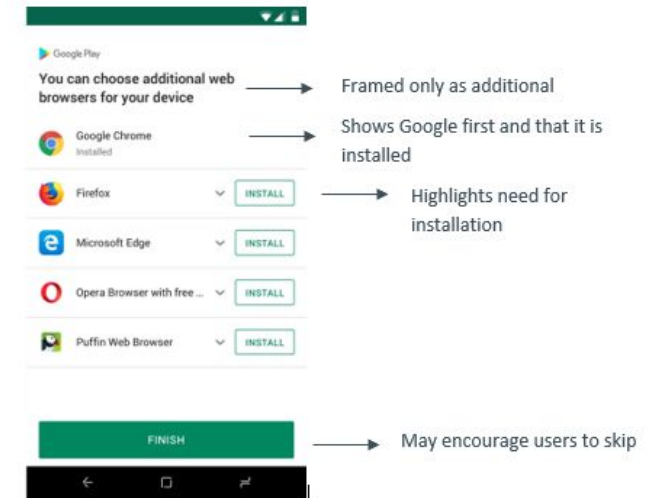
Regulatory action



Competition research



Previous choice screen experience



Aim: understanding the role of design in choice screen effectiveness through rigorous evidence

The experiment

2

Hypotheses

Primary

- Choice screen effectiveness influenced by content & design
 - Information, number browsers, ordering
 - Choice screen effectiveness influenced by when it is served
 - First use of new device vs first use of browser
-

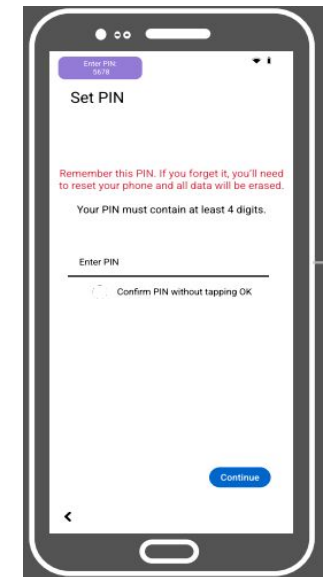
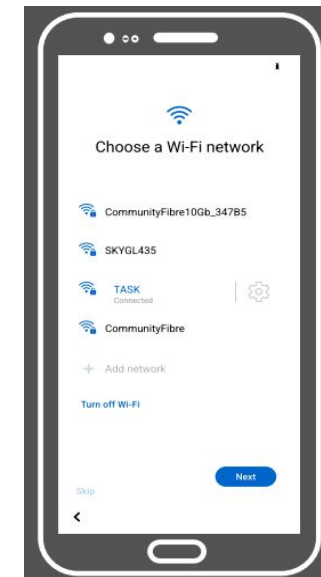
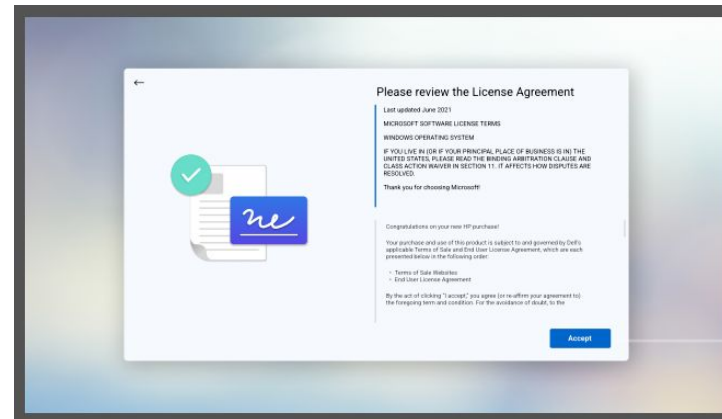
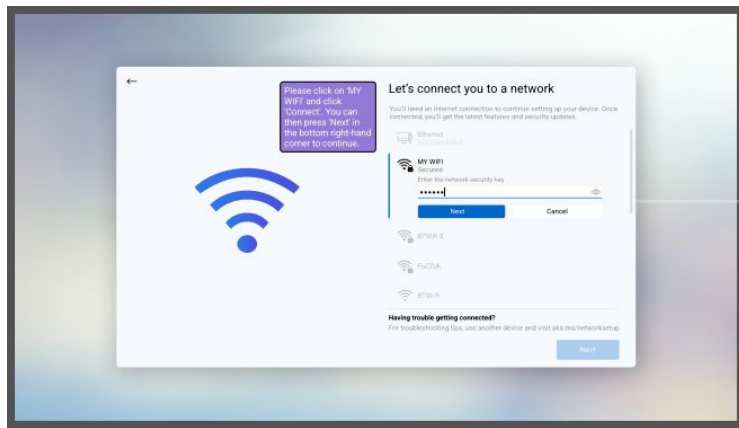
Secondary

- Consumers want more active choice over their default browser
- Choice selection is not overly onerous

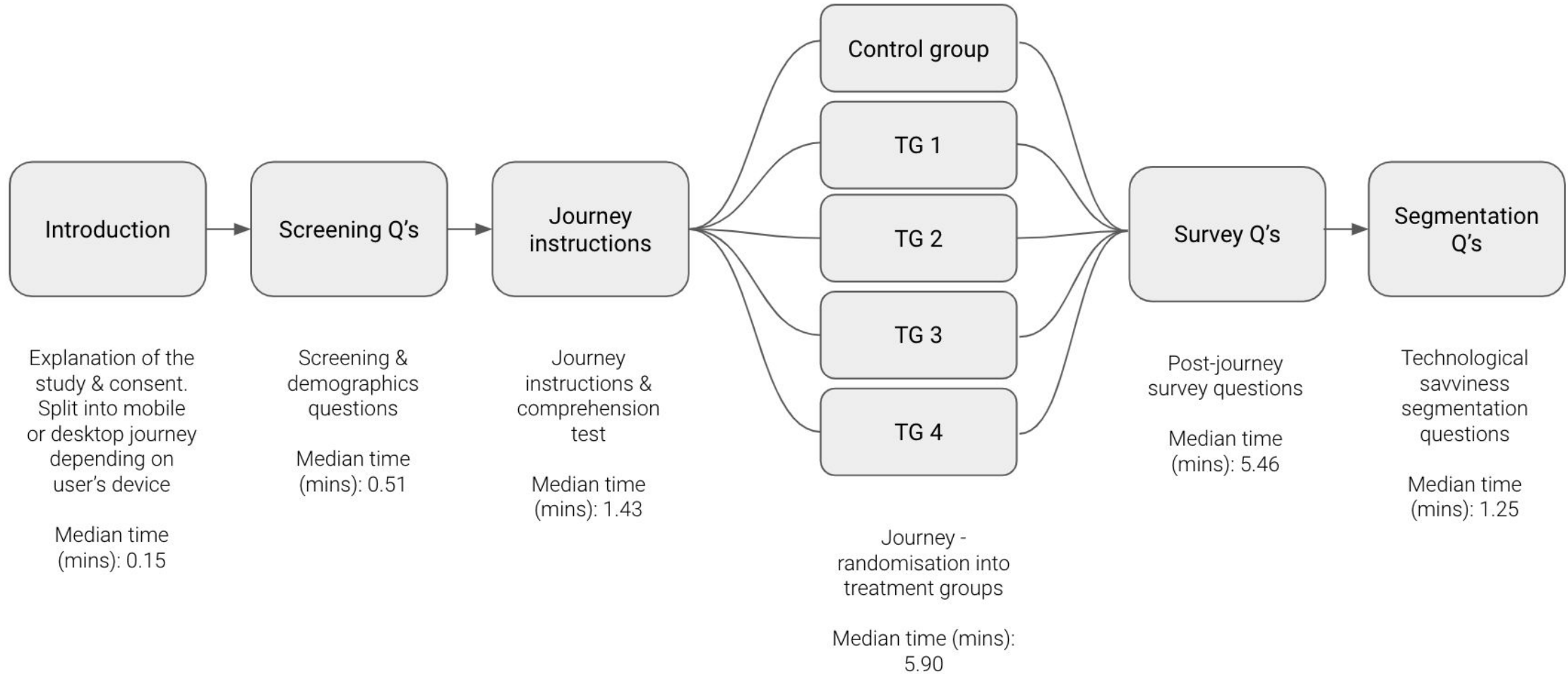
Scope

- Germany, Spain & Poland - 12,000 participants
- Samsung Android & HP Windows desktop

Highly realistic virtual environment



Research Design



Treatment Groups

Group	Information	# browsers	Placement	Browser shown
Control	N/A	N/A	N/A	Samsung/Edge pre-set
Treatment #1	Low <i>Browser descriptions (revealed on clicking downwards arrow)</i>	12	Device first use - during set-up	Chosen
Treatment #2	High <i>Q&A screen, browser descriptions, star ratings, reviews</i>	12	Device first use - during set-up	Chosen
Treatment #3	High <i>Q&A screen, browser descriptions, star ratings, reviews</i>	5	Device first use - during set-up	Chosen
Treatment #4	High <i>Q&A screen, browser descriptions, star ratings, reviews</i>	5	Browser first use	Chosen

Treatment 1

"Low information"

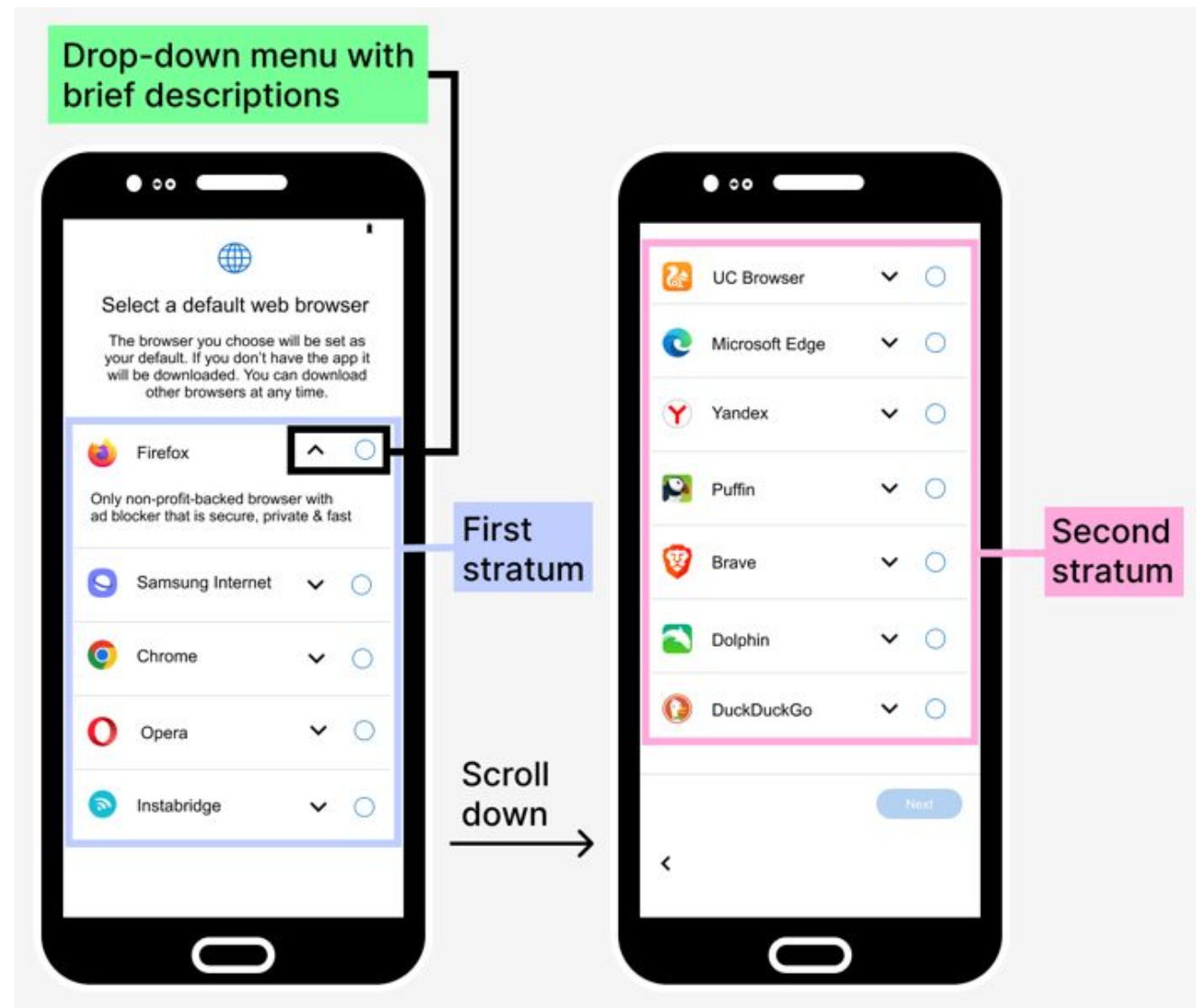
Aim: Similar design to current c/screens (minus negative choice architecture elements) i.e neutral bare minimum

Key elements

- **List of 12 browsers*** on scrollable continuous screen - into 5/7, randomised
- **Optional drop-down** short description
- **Mandatory** selection of browser

*List based on: 1) desktop / mobile statcounter shares for each country (12-month average), and in absence of share data, include based on 2) Play Store downloads and where this is equal 3) awareness rating data from ACCC/Mozilla research [for desktop must also have official Windows version available for download]

Android version

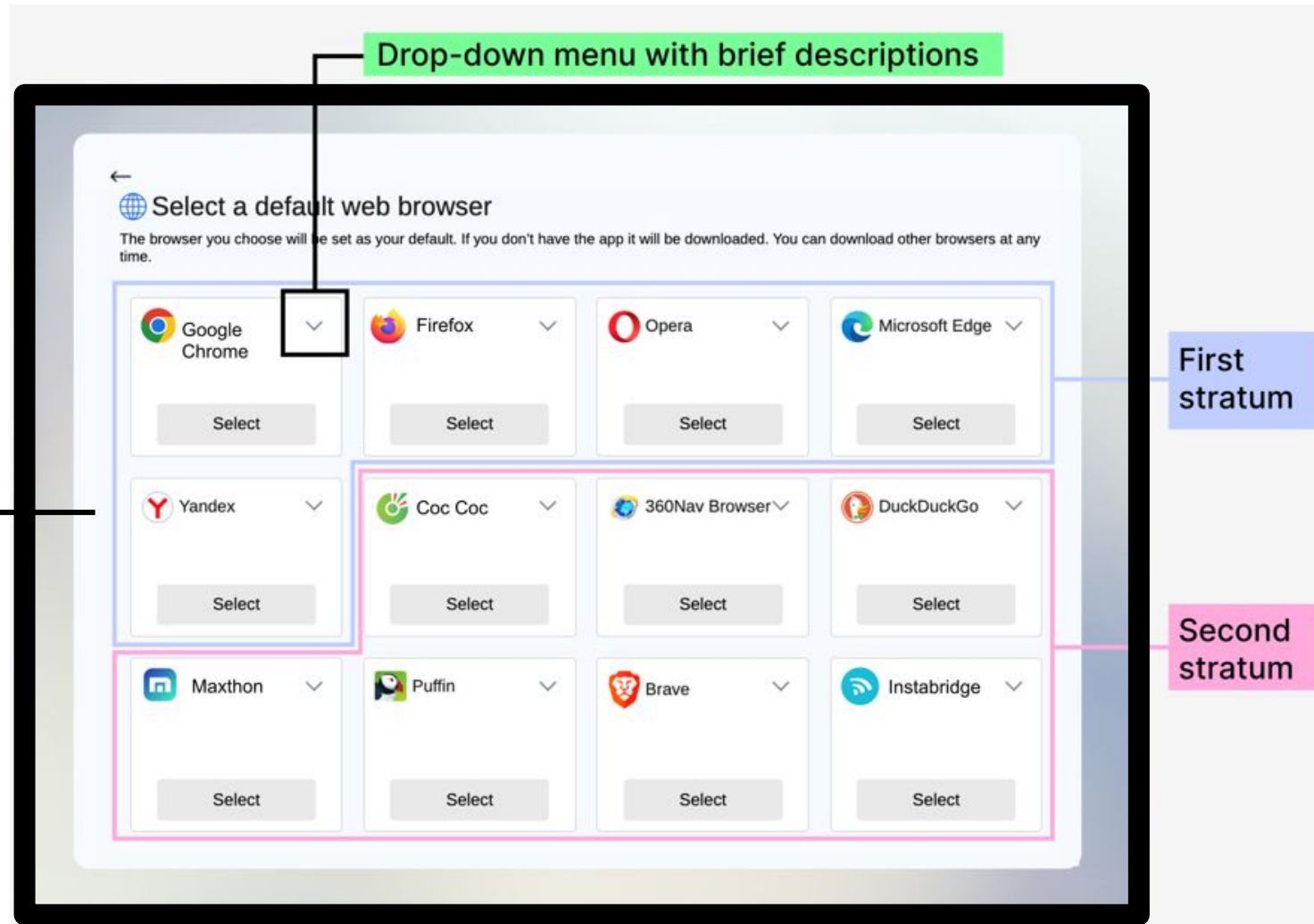


Treatment 1

"Low information"

Windows version

Note: Differences in layout, due to screen size



Treatment 2

"High information"

Aim: test effect of additional information

Key elements

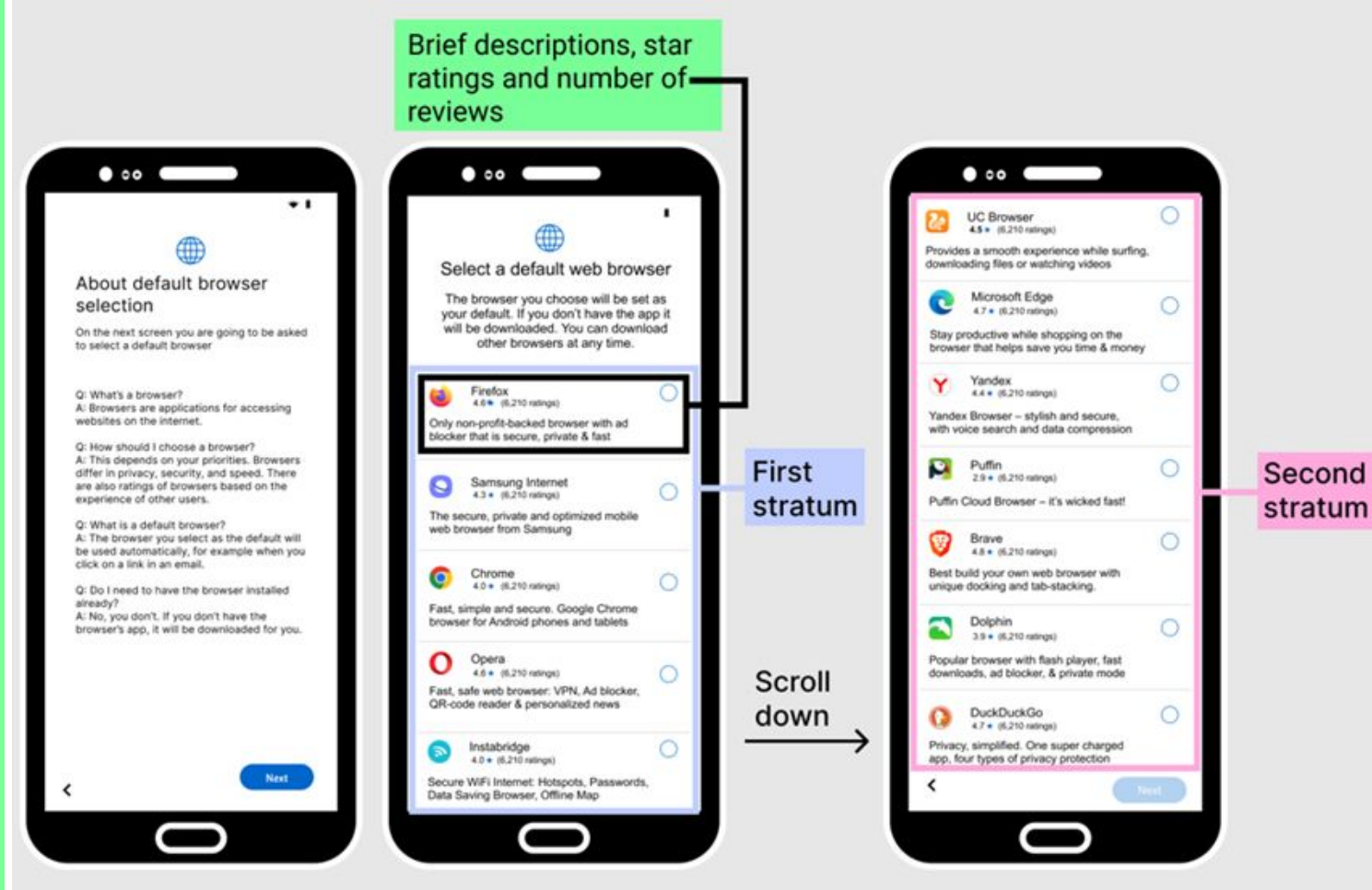
- List of 12 browsers (as T1)
- **Explanatory Q&A page**
- **Short description*** without clicking
- **Star ratings & no. of reviews****

Note: This additional information was taken from providers - necessary for purposes of this experiment. But see value in more independent sources.

* taken from browsers' self-descriptions in Play Store

** taken from Play Store

Android version



Treatment 2

"High information"

Windows version

Brief descriptions, star ratings and number of reviews

Select a default web browser

The browser you choose will be set as your default. If you don't have the app it will be downloaded. You can download other browsers at any time.

Google Chrome 4.0★ 42.7M reviews Fast, simple and secure. Google Chrome browser for Android phones and tablets Select	Microsoft Edge 4.7★ 800K reviews Stay productive while shopping on the browser that helps save you time & money Select	Firefox 4.5★ 4.95M reviews Only non-profit-backed browser with ad blocker that is secure, private & fast Select	Yandex 4.4★ 2.38M reviews Yandex Browser – stylish and secure, with voice search and data compression Select
Opera 4.6★ 4.38M reviews Fast, safe web browser: VPN, Ad blocker, QR-code reader & personalized news Select	Brave 4.5★ 1.33M reviews Fast internet with Adblock. Secure web browser and incognito search engine Select	Coc Coc 3.4★ 137K reviews Fast, safe and convenient internet surfing with Coc Coc! Select	DuckDuckGo 4.7★ 1.92M reviews Privacy, simplified. One super charged app, four types of privacy protection Select
360Nav Browser N/A★ 5K reviews A full featured web browser with simple, fast, lightweight and secure web browsing Select	Puffin 2.9★ 1.33M reviews Puffin Cloud Browser – It's wicked fast! Select	Instabridge 4.0★ 2.18M reviews Secure WiFi Internet: Hotspots, Passwords, Data Saving Browser, Offline Map Select	Maxthon 3.5★ 281K reviews Start an easy and free life with the Maxthon 6 browser! Select

Next

First stratum

Second stratum

Treatment 3

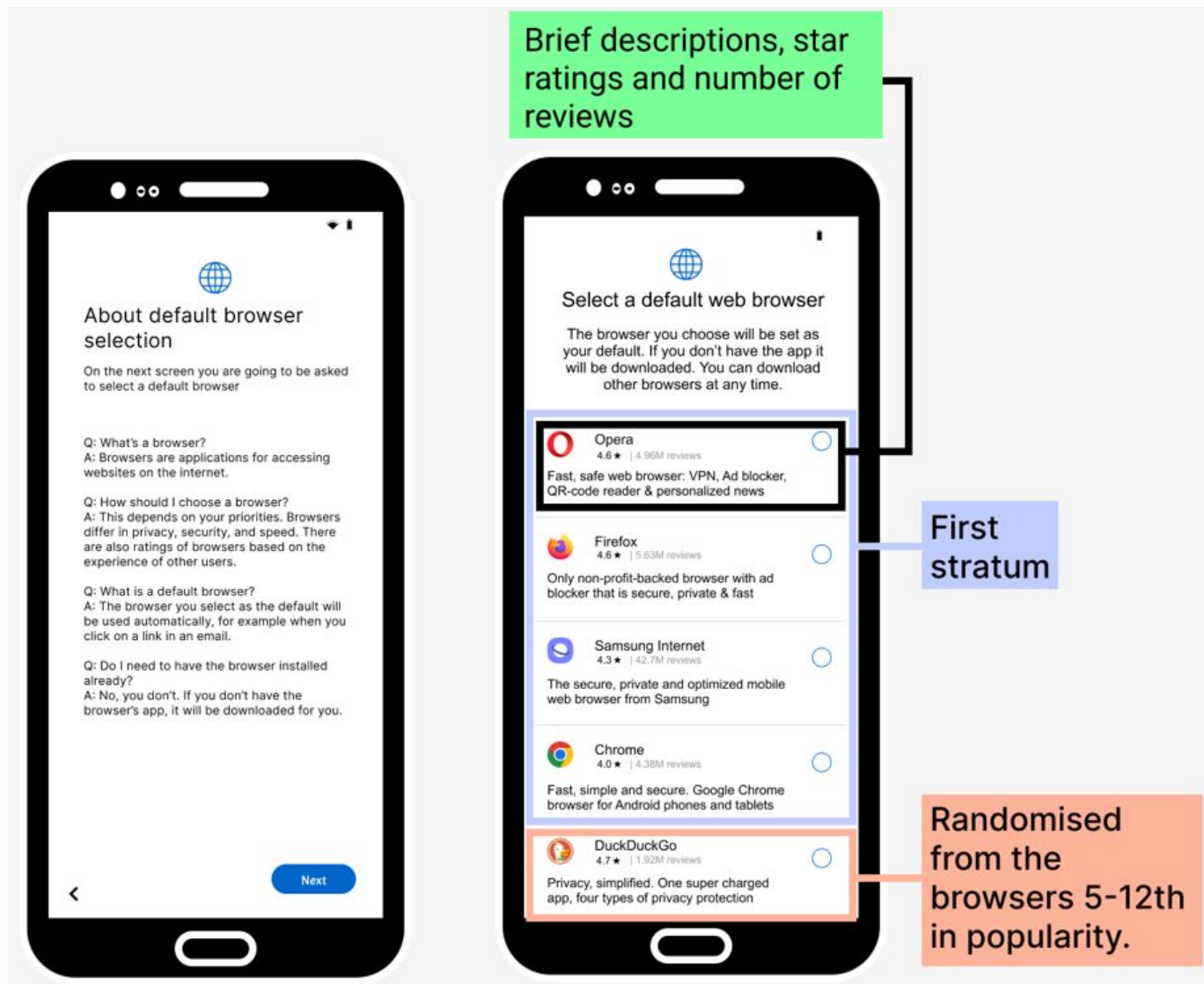
"Fewer Browsers"

Aim: test interaction of information and number of browsers (choice overload?)

Key elements

- Additional information (as T2)
- **Reduced list of 5 browsers**
 - top 4 (statcounter)
 - rotating 'smaller browser' bottom slot (randomised from remaining 8)

Android version



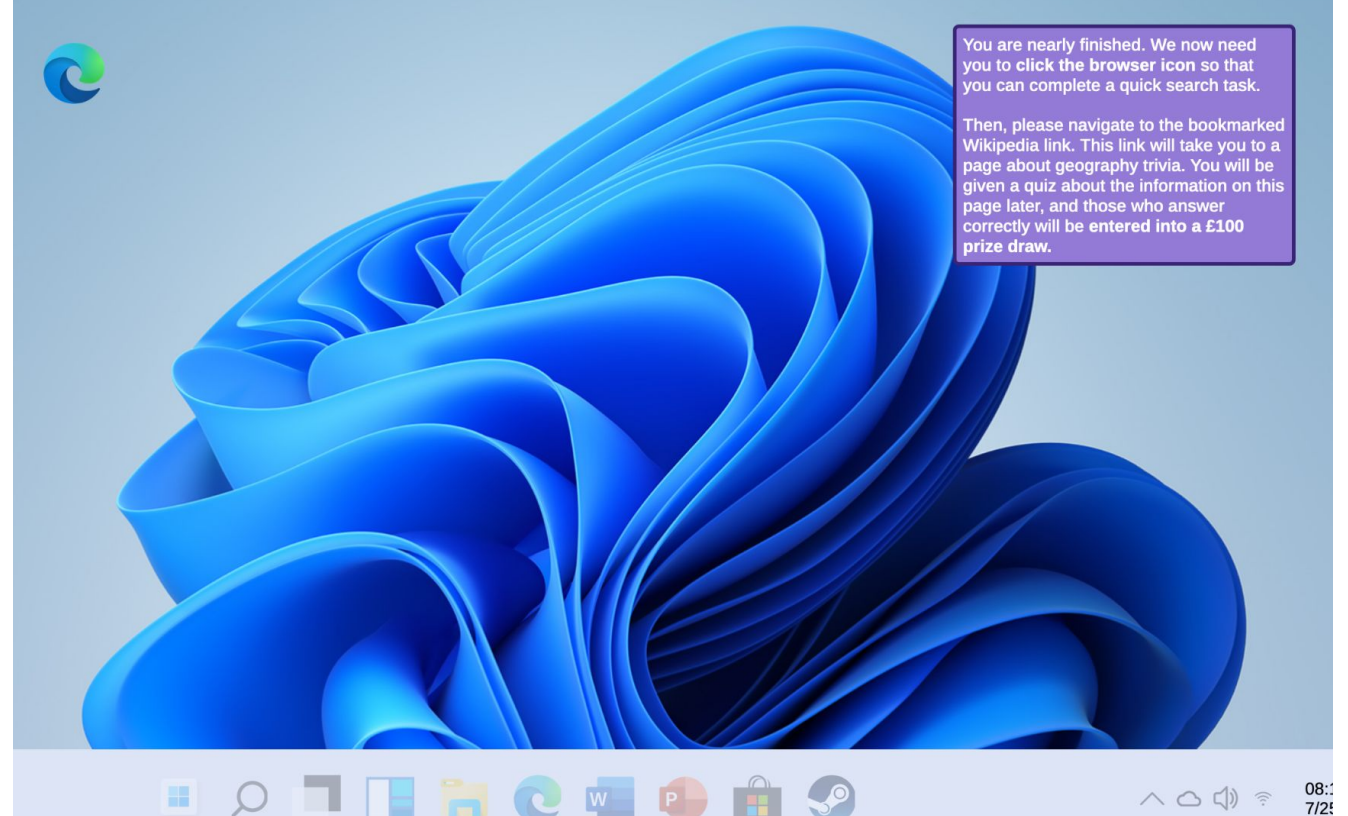
Treatment 4

"Browser first use"

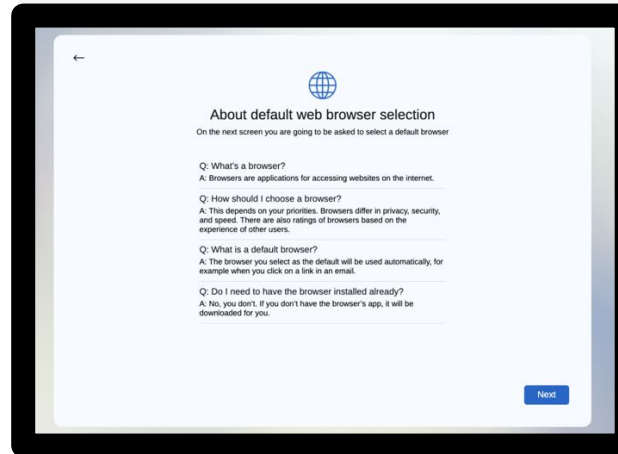
Aim: test effect of point at which c/screen shown - when first enter browser

Key elements

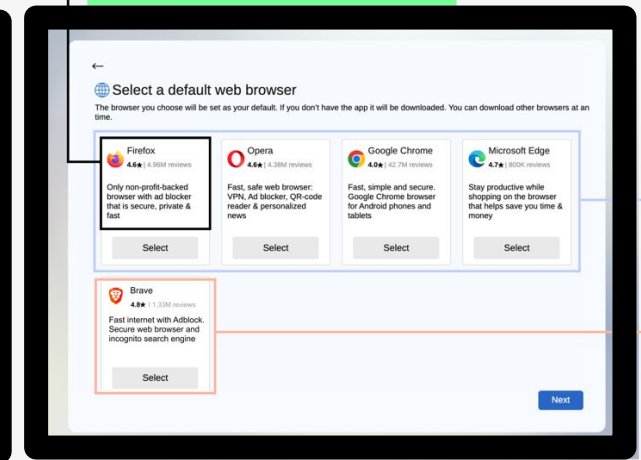
- High information, 5 browsers (as T3)
- Served at browser first use (Edge/Samsung)



Additional information screen that explains what default browsers are.



Brief descriptions, star ratings and number of reviews



First stratum

Randomised from the browsers 5-12th in popularity.

Browser Task

Aim: replicate sense of purpose and urgency when first opening browser in real life

*"You are nearly finished. We now need you to **click the browser icon** so that you can complete a quick task."*

*Then, please navigate to the bookmarked Wikipedia link. This link will take you to a page about geography trivia. You will be given a quiz about the information on this page later, and those who answer correctly will be **entered into a €100 prize draw.**"*

Please read the information displayed on this page and then press the "Next" button below.



Geography trivia

From Wikipedia, the free encyclopedia

Trivia fact 1: Russia is the largest country in the world

Trivia fact 2: India is the country with the largest population in the world

Trivia fact 3: New Delhi is the capital city of India

Trivia fact 4: Mount Everest is the highest mountain in the world

Trivia fact 5: London is the capital city of the United Kingdom of Great Britain and Northern Ireland

Before continuing with the survey, please complete the quiz below. Those who get 1/3 of the questions right will be entered into a prize draw for £100.

Quiz question 1: Which is the largest country?

Greece

Portugal

Russia

Quiz question 2: Which country has the largest population?

India

Switzerland

Monaco

Quiz question 3: What is the capital city of the United Kingdom of Great Britain and Northern Ireland?

Singapore

Survey

Satisfaction	<ul style="list-style-type: none">• Ease of setting up, time to set up, feeling of control, range of settings to customise• Amount of information, variety of browsers, time to select
Stated preferences	<ul style="list-style-type: none">• When prompted to select a default• Which choice screen did you prefer (shown three versions)
Value of the choice	<ul style="list-style-type: none">• Being given a choice vs manufacturer/OS selects default• Expect to continue using default browser in 6 months' time, if not which browser
Awareness of browsers	<ul style="list-style-type: none">• Range, which would consider as default
Attention / realism	<ul style="list-style-type: none">• What defaults are, which actions recall, time and effort broadly reflective of real-life
Factors underpinning choice	<ul style="list-style-type: none">• Factors affecting selection e.g ratings, descriptions• Factors considered e.g speed, website compatibility etc
Segmentation	<ul style="list-style-type: none">• Current browsers, familiarity with default browser etc

Results

3

Main Findings

1 Well-designed browser choice screens can impact people's decisions

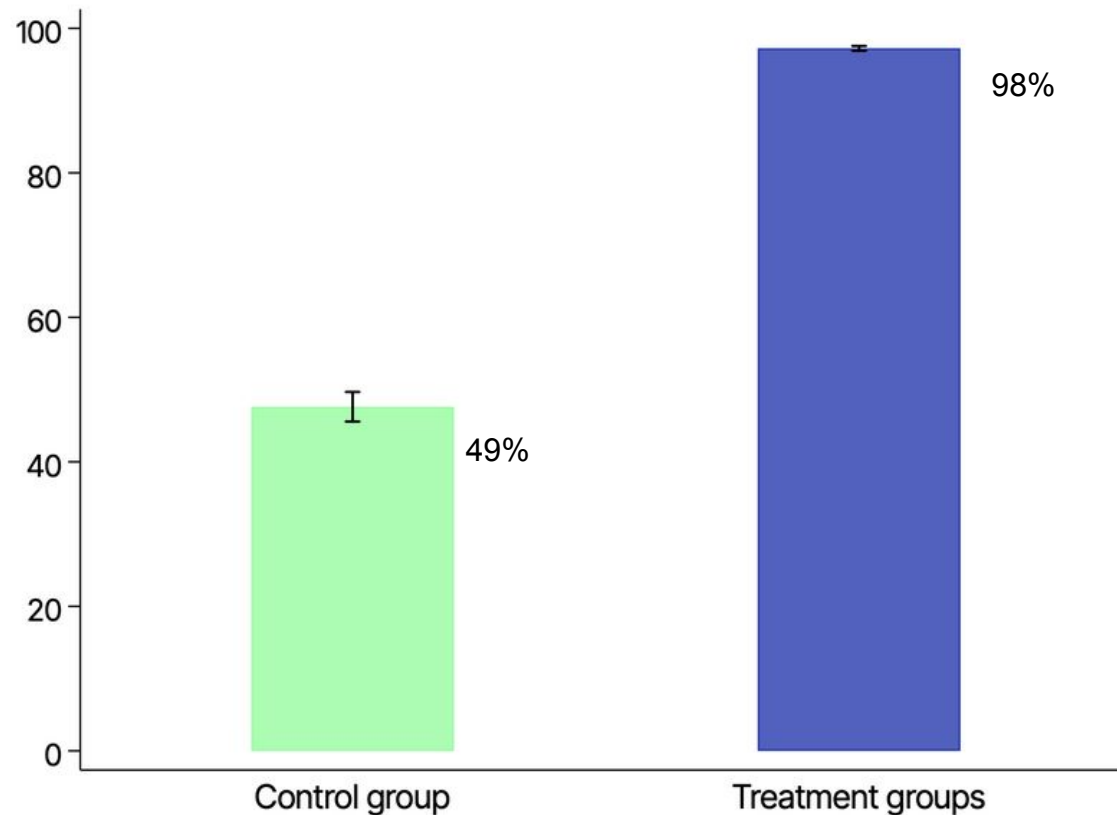
2 The design, content & timing of browser choice screens matters

3 People have clear preferences about browser choice screens

4 Browser choice screens improve satisfaction without significantly increasing burden

Choice screens help people choose a browser they expect to stick with

Percentage that expect to continue using default browser



- 98% of treatment expect to stick with chosen browser
- Almost half (49%) of control expect to use Samsung Internet/ Edge while only 10% of T1-T3 do
- 51% of control expect to switch away. However, 29% of these uncomfortable switching default and 19% not confident would switch
- Defaults make big difference. Fits with what know from Apple and Samsung
- Suggests choice screens effective for matching users with browsers they intend to use

Content and placement influence choice of default browser

Browser chosen	T1 <i>Low info</i> 12 browsers Set-up	T2 <i>High info</i> 12 browsers Set-up	T3 High info <i>5 browsers</i> Set-up	T4 High info 5 browsers <i>first browser use</i>	P-value
Samsung Internet /Edge	11%	11%	11%	19%	0.000
Chrome	62%	59%	60%	54%	0.000
Firefox	20%	20%	22%	20%	0.298
Opera	3.2%	4.4%	5.1%	4.9%	0.005
5th place browser	0.3%	0.2%	0.1%	0.0%	0.036
Bottom 7 browser	4.6%	5.3%	1.6%	1.0%	0.000
Observations	2,372	2,447	2,371	2,325	

- All treatments statistically significantly different, bar T1 v T2
- Opera and Brave, highly rated, increase from T1 to T2
- Share choosing incumbent decreases (73% to 70%)
- Share choosing small browsers decreases from T2 to T3, but mechanical
- T4 leads to significant increase in Samsung Internet/ Edge

Across countries and devices, large differences in market shares, but very consistent treatment effects

Windows

Germany

	T1	T2	T3	T4	P-value
Edge	17%	17%	16%	24%	0.007
Chrome	39%	37%	33%	28%	0.007
Firefox	40%	39%	46%	42%	0.173
Opera	2.1%	3.8%	3.6%	5.7%	0.057
Other	2.3%	4.3%	1.2%	0.8%	0.003

Spain

	T1	T2	T3	T4	P-value
Edge	12%	13%	14%	25%	0.000
Chrome	69%	67%	68%	57%	0.001
Firefox	13%	13%	13%	13%	0.989
Opera	3.1%	2.1%	5.3%	3.1%	0.088
Other	3.6%	5.2%	0.5%	1.3%	0.000

Poland

	T1	T2	T3	T4	P-value
Edge	10%	9.1%	13%	22%	0.000
Chrome	54%	50%	46%	47%	0.152
Firefox	25%	32%	29%	23%	0.017
Opera	7.0%	7.1%	9.7%	7.6%	0.452
Other	4.4%	2.3%	2.0%	0.7%	0.007

Across countries and devices, large differences in market shares, but very consistent treatment effects

Android

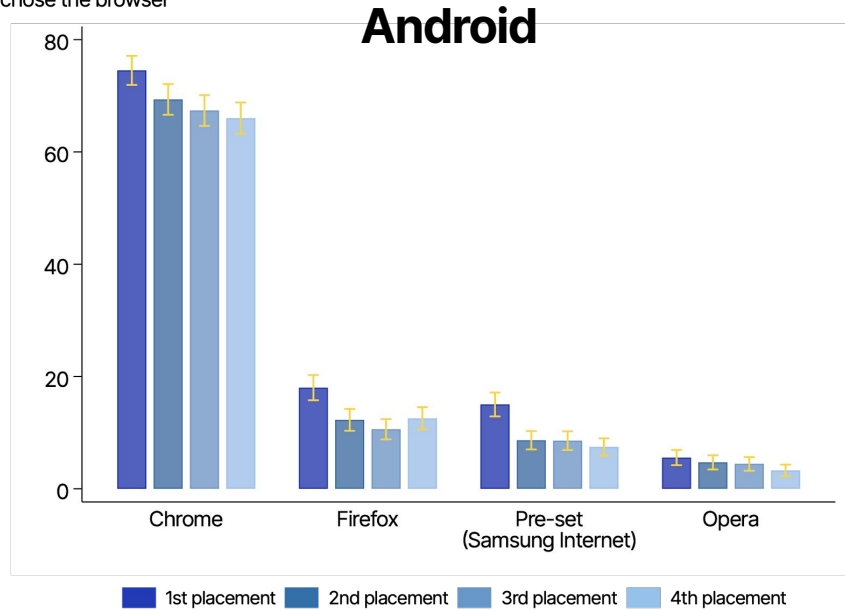
	Germany					Spain				
	T1	T2	T3	T4	P-value	T1	T2	T3	T4	P-value
Samsung Internet	13%	12%	14%	22%	0.000	5.9%	6.9%	5.0%	11%	0.006
Chrome	58%	54%	60%	48%	0.004	82%	75%	82%	78%	0.044
Firefox	22%	23%	21%	25%	0.563	3.6%	6.7%	8.9%	8.0%	0.018
Opera	1.0%	4.3%	2.9%	3.4%	0.042	1.5%	2.1%	2.2%	1.7%	0.888
Other	5.4%	7.3%	2.4%	1.2%	0.000	6.2%	7.2%	1.7%	0.7%	0.000

Poland

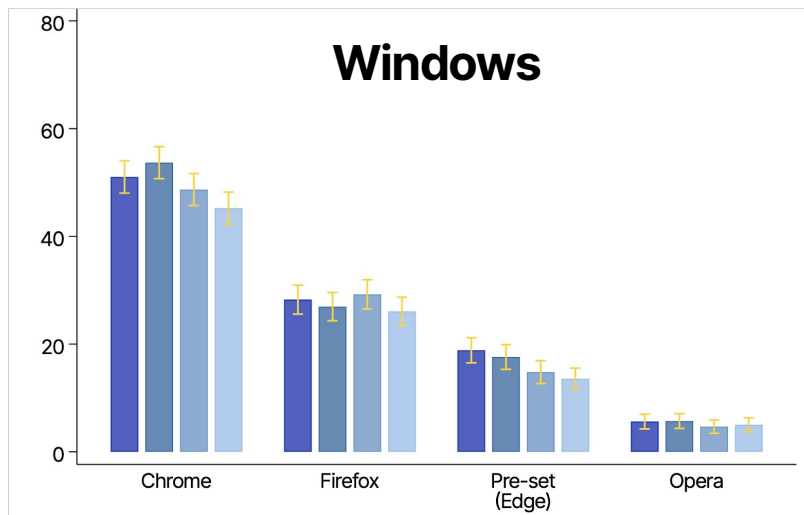
	T1	T2	T3	T4	P-value
Samsung Internet	4.8%	4.6%	5.0%	12%	0.000
Chrome	74%	74%	76%	69%	0.105
Firefox	9.8%	8.5%	7.7%	9.4%	0.700
Opera	5.0%	8.5%	9.3%	9.6%	0.060
Other	6.2%	4.9%	1.7%	0.8%	0.000

Browsers positioned lower are less likely to be selected - big effects

Percentage who chose the browser



- Positioning browsers 1st increases likelihood of picking that browser by several % points
- Highest absolute drop for Chrome (from 1st to 4th, 7.1 % pts - relative drop 11%)
- Pre-set browsers highest relative drop (absolute 6% pts - relative drop 38%)
- Firefox/Opera fall, but less (relative drop 16%/26%)
- Stronger effects on Android than Windows
- Android - strong effects on Samsung (relative drop 50%)
- Windows - more mixed, Chrome only decreases sig when placed 4th (far right), Edge (relative drop 28%)



People want informative choice screens with more browsers during device set-up

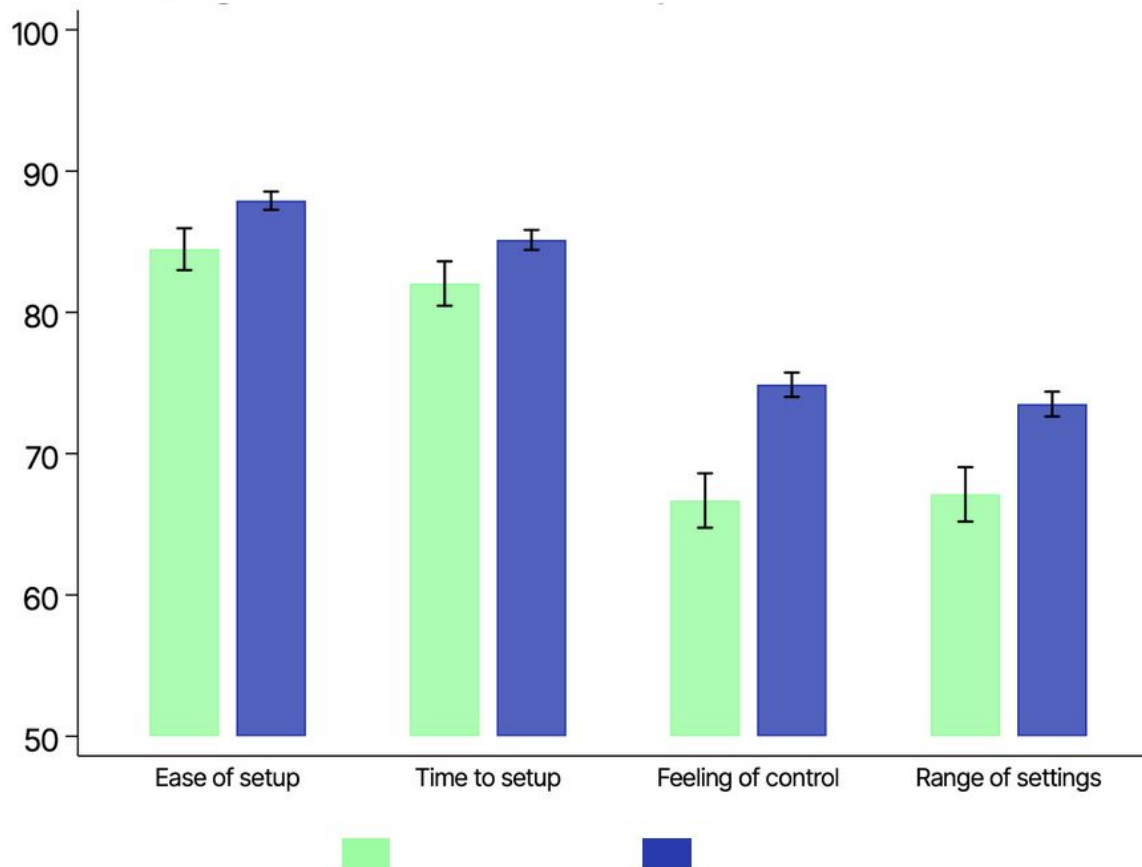
- 97-98% of treatment and control want a choice screen
- Want during device set-up (including control and T4)
- 12 browsers/ high info preferred by all

Participants shown each version of the choice screens and asked which they prefer

Preferences	Share of people
<i>When should the choice screen be presented?</i>	
Choice screen at set-up	65%
Choice screen at first browser use	33%
Choice screen at other time	1%
No choice screen at all	2%
<i>What type of choice screen should be presented?</i>	
Choice screen with 12 browsers/low info	20%
Choice screen with 12 browsers/high info	44%
Choice screen with 5 browsers/high info	26%
Any type of choice screen	10%

Choice screens increase satisfaction (some more than others)

Percentage who were somewhat or very satisfied



- Treatment groups more satisfied with every aspect of set-up. Increase particularly high for feeling of control (up 12% to 75%)
- Across treatment groups measure satisfaction with:
 - amount of information on browsers
 - variety of browsers
 - amount of time to choose browser
- T2 scores highest on all measures

Choice screens do not significantly increase device set-up time

Measured time taken to set up device and time spent on the choice screen

Time taken to set up device:

- Control group and T4 ~10 minutes
- T1 and T2 (more browsers), but less time on set-up than T3/T4 (not statistically significant)
- T1 and T2 spent less time than control (not statistically significant)

Time taken on choice screens:

- T1 (low information) ~12.6 seconds
- T2 or T3 (high information) ~ twice as much time than T1 but:
 - Half of this time on the Q&A screen and half on the actual choice screen

Choice screens influence the browsers people would consider as their default

- People asked which browsers would consider using as a default in the future
- Control group said 1.75 browsers
- Treatment groups state 0.2 fewer browsers ($p < 0.01$)
- But while 62% of control said would consider non-incumbent as default, T1 and T2 4.4 and 4.9 percentage points more likely to state this ($p < 0.01$). Not T3 or T4

People lack good understanding of browsers and defaults, even after choice screens

- What do they think happens after choose a default?
 - 52% (only) understand default opened when, eg, click on link. Did not vary across treatments, surprising
 - 6% incorrectly believe only able to use default browser
 - 53% erroneously believed default would be pinned to taskbar
- Actions thought had completed when set up, in terms of setting defaults
 - Control: 40% thought had chosen browser, and 33% thought had selected search engine (did neither)
 - Treatment: 94% thought had chosen browser, but 74% incorrectly thought selected search engine
- Confusion about what default browsers actually do and how default browsers differ from default search engines
- Q&A screens as in this experiment do not adequately educate people - does not necessarily mean there is no value

Our results provide good estimates for the impact of implementing choice screens

Addressed external validity of experiment in a number of ways

- **Ecological validity**
 - Goal: set-up process as close to real life as possible. Exactly replicated details, e.g., specific screens, their order, logos and fonts
 - Clear instructions and prompts for participants to act as ordinarily would
- **Robustness: motivation and attentiveness**
 - Same results: i) when dropping people (16%) who say behaviour not reflective of real life, ii) for more or less attentive sub-groups
- **Representativeness, balance checks and attrition:**
 - Nationally representative in terms of gender, region of residence and age
 - Also data on income and education. Not nationally representative. But results robust to reweighting to make representative
 - Significant number dropped out while completing survey - many failing comprehension test. And small but statistically significant differences in drop out rate of some of treatment groups and control. Robustness of results to attentiveness and other checks mean we are confident results extrapolate to the wider population.

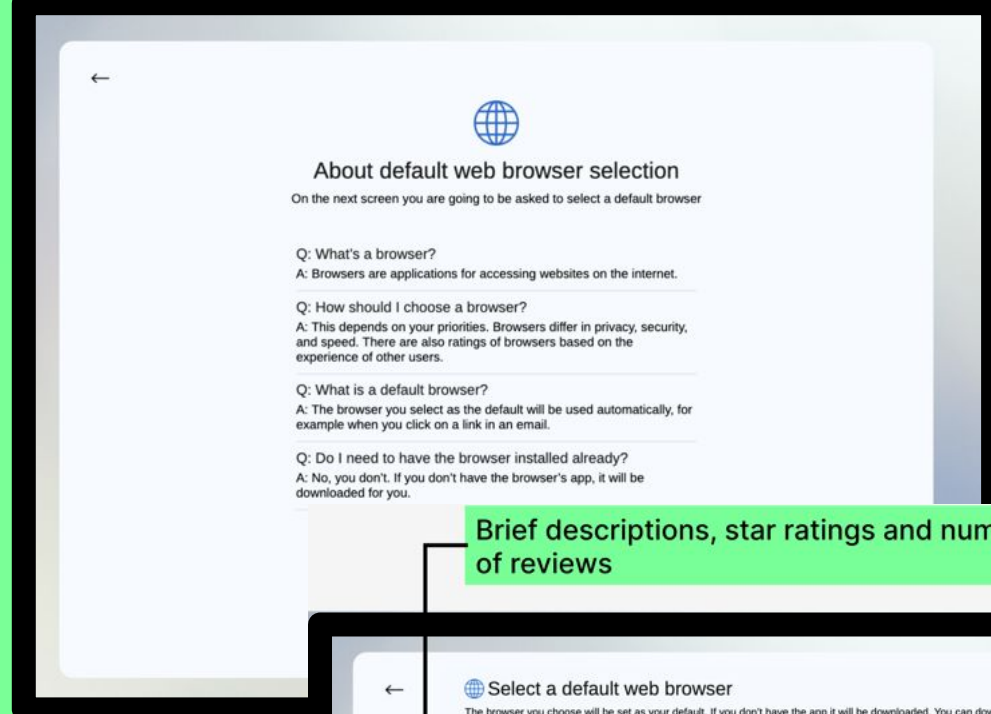
Overall Conclusions

A well-designed browser choice screen is one that is:

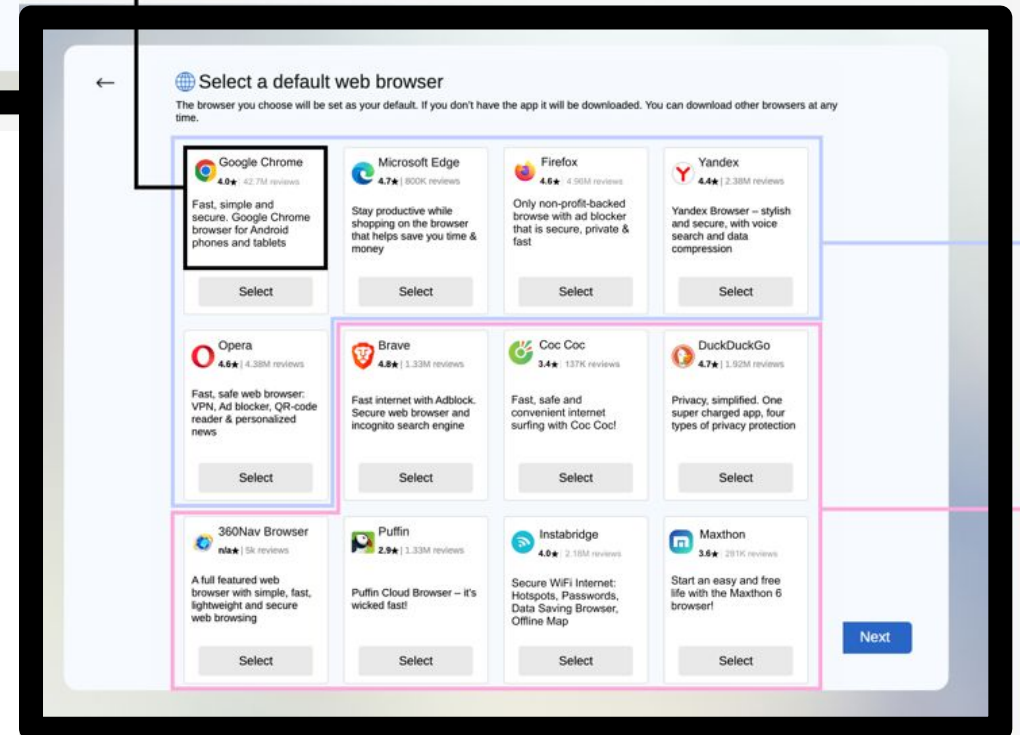
- Shown during device set-up (or at major updates)
- Includes key information
- Presents a wide range of browsers
- Addresses ordering effects

Well-designed browser choice screens:

- Enable people to more easily select a default they want to stick with
- Increase browser contestability
- Align with people's preferences
- Increase people's satisfaction with the ease of setting up their device
- Do not burden consumers



Brief descriptions, star ratings and number of reviews



First stratum

Second stratum

Next Steps

4

Next steps and questions

- Welcome any feedback and questions
- Importance of experimentation and testing to support regulatory interventions
- Closing the asymmetry of information
- Future research: many other elements to research and test