



Prof. Antonio Rangel

Behavioral Economics Expert

Ex. No.
UPXD101
1:20-cv-03010-APM

What are Defaults?

- A default is an option pre-selected by a third party.



Tip				
18% \$3.47	20% \$3.85	22% \$4.24	25% \$4.82	
Custom				

- Default is automatically chosen unless the consumer makes an explicit decision to select another alternative.

Assignment

Assignment 1: Evaluate the impact of Google's search defaults.

Assignment 2: Compare the impact of search defaults on mobile devices versus personal computers.

Assignment 3: Evaluate the impact of defaults on consumers' decisions regarding privacy in search.




Key Conclusions

Conclusion 1: Search engine defaults generate a sizable and robust bias towards the default.

Conclusion 2: Search engine default effects have stronger effects on mobile devices than on personal computers.

Conclusion 3: Power of defaults also affects consumers' privacy decisions in search.

Sample Primary Ballot Example

			REPUBLICAN PARTY <i>PARTIDO REPUBLICANO</i> PRIMARY ELECTION OFFICIAL BALLOT <i>ELECCIÓN PRIMARIA BOLETA OFICIAL</i> HARDIN COUNTY, TEXAS <i>CONDADO DE HARDIN, TEXAS</i> March 04, 2014 - <i>04 de Marzo de 2014</i> Precinct <i>Precinto</i> 1		
Instruction Text: Please use a black or blue ink pen only. Completely fill in the box provided to the left of your choice. Make no stray marks on the ballot. Do not use inks that soak through the paper. <i>Texto de Instrucción:</i> Por favor use solamente una pluma de tinta negra o azul. Llene completamente el espacio cuadrado a la izquierda de su selección. No haga marcas extraviadas. No use tintas que se pueden penetrar el papel.		Lieutenant Governor <i>Gobernador Teniente</i> <input type="checkbox"/> Jerry Patterson <input type="checkbox"/> Todd Staples <input type="checkbox"/> Dan Patrick <input type="checkbox"/> David Dewhurst		Judge, Court of Criminal Appeals, Place 3 <i>Juez, Corte de Apelaciones Criminales,</i> <i>Lugar Núm. 3</i> <input type="checkbox"/> Bert Richardson <input type="checkbox"/> Barbara Walther	
  Correct Incorrect		Attorney General <i>Procurador General</i> <input type="checkbox"/> Ken Paxton <input type="checkbox"/> Barry Smitherman <input type="checkbox"/> Dan Branch		Judge, Court of Criminal Appeals, Place 4 <i>Juez, Corte de Apelaciones Criminales,</i> <i>Lugar Núm. 4</i> <input type="checkbox"/> Kevin Patrick Yeary <input type="checkbox"/> Richard Dean Davis <input type="checkbox"/> Jani Jo Wood	
"I am a Republican and I understand that		Comptroller of Public Accounts <i>Contralor de Cuentas Públicas</i>		Judge, Court of Criminal Appeals, Place 9 <i>Juez, Corte de Apelaciones Criminales,</i> <i>Lugar Núm. 9</i>	

Defaults Strongly Influence Choice

401(k) plans: Introducing opt-in default increased participation from 37% to 86%.

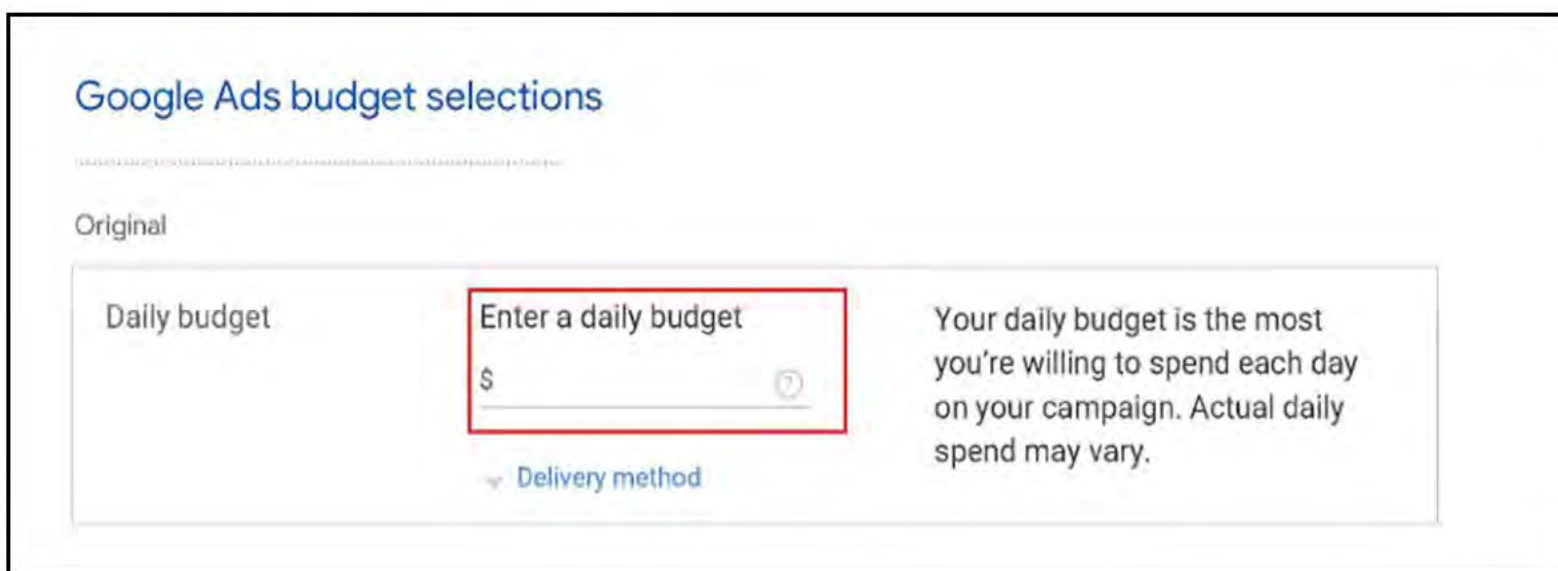
End-of-life care: 77% of patients chose comfort-oriented directive when default, versus 43% when life extension was the default.

Organ Donation:

- In Austria, where citizens were registered as organ donors by default, 99% were registered donors.
 - In neighboring Germany, where citizens had to affirmatively register, only 12% were registered donors.
-

Google's Behavioral Economics Team

Case study: Initially, advertisers entered maximum daily budgets in an interface with no default setting.








The screenshot shows the 'Google Ads budget selections' interface. It features a section titled 'Original' containing a 'Daily budget' input field. The input field is highlighted with a red rectangle and contains the text 'Enter a daily budget' and a dollar sign '\$'. To the right of the input field is a help icon (a question mark inside a circle). Below the input field is a 'Delivery method' dropdown menu. To the right of the input field is a text box explaining: 'Your daily budget is the most you're willing to spend each day on your campaign. Actual daily spend may vary.'

Google's Behavioral Economics Team

Case study (cont.): Google experimented with a \$10 default to increase spending among advertisers.

The image shows a screenshot of the Google Ads budget selection interface. The title is "Google Ads budget selections". Below it, there is a section labeled "Redesigned". Inside this section, there is a form with a "Daily budget" label. The form contains a text input field with the placeholder text "Enter a daily budget" and a default value of "\$ 10.00". A red box highlights the input field. Below the input field, there is a "Delivery method" dropdown menu. To the right of the form, there is a blue box with the text "Redacted" and "Low budget campaigns".

Google on the “Power of Defaults”

	2007	Presentation to Hal Varian	“Power of defaults.” “Default home page can be a powerful strategic weapon in the Search battle.”
	2014	Android Top Insights	“The power of default apps. Users rarely stray from pre-loaded apps provided by GMS core, carrier, and/or OEM bundle.”
	2015	Code Red (Apple) Update	“Our brand is in good standing among iPhone users . . . but our position is still very vulnerable if defaults were to change.”
	2016	Global Partnerships Search Strategy	“There’s tremendous power in the default OS access points but it’s pay to play. . . . There is no substitute for the default access points: we should continue to explore broad default access across all OS (including newer and emerging access points).”
	2017	Email from David Tar (Google Technical Writer)	“I think default options presented (in anything from finance to gaming) are very powerful, and will probably end up being what most people choose (out of lack of knowledge about customization, or convenience.)”

Google Pays Billions for Search Defaults



Redacted (worldwide, 2020)



Redacted (U.S.-only, 2020)



Redacted (worldwide, 2021)

Google Apps Encounter “Power of Defaults”

Redacted

2019 Google Podcasts Presentation:

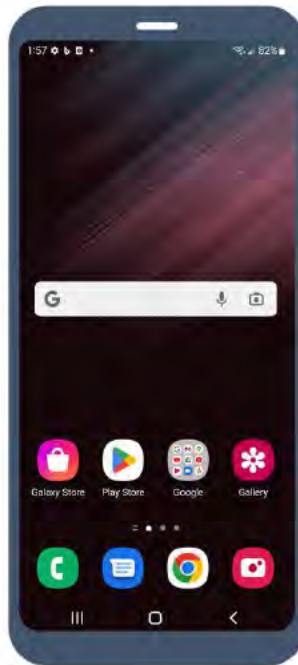
Secondly, if we take another view, Apple Podcasts has amassed a majority market share on iPhones. There are other podcasting apps what we believe offer an equivalent or better user experience, but Apple Podcasts still has a ^{Redacted} share over all other apps combined. This goes to show the power of the default. There are many examples of other apps where a preinstalled app in premium placement is the primary driver of user. (For example, Google Photos. We also know the reverse is true - Google Maps illustrates how even a superior product with great brand recognition can struggle to gain share). We also see from consumer surveys that podcasting apps are incredibly sticky.

Even basic experiences have proven extremely sticky
Apple Podcasts remains 80%+ of iOS listening

Google's Search Engine Defaults



Apple iPhone



Android Phone








Firefox Browser

Conclusion #1

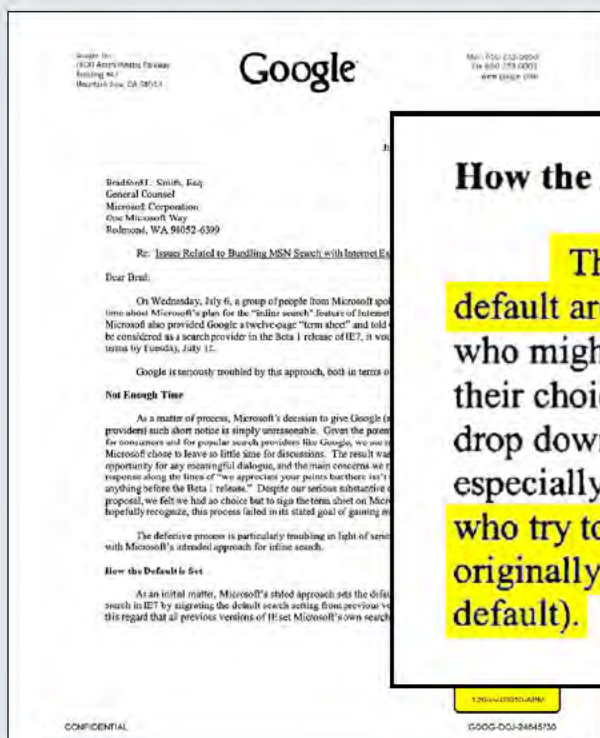
- Search engine defaults generate a sizable and robust bias towards the default.
- Most search engine choice is implicitly driven by habit.
- Behavioral biases and choice friction further strengthen Google's defaults.

Habit & Implicit Search Engine Choice

	2006	Thoughts on Google v. Microsoft (Hal Varian)	"Recommendation. Get users addicted to our interface and tools, particularly those where we have intellectual property protection."
	2015	iOS App Switching	Listing "Habit/Regular Usage" as the #1 reason users choose Chrome, the Google Search application, and Safari.
	2016	Search/Assist Presentation	"iOS HeadWinds: We need to break the Safari habit . . . and Safari is a deeply-ingrained habit." "Changing behavior is hard, displacing defaults even harder."
	2022	Marketing Plan	"[T]he power of habit drives many users to stick with Apple's Spotlight and Safari."
	March 23, 2022	Former Google SVP and Neeva CEO Sridhar Ramaswamy	"People are creatures of habit, and if you interject yourself into a habit, good things will happen." "Most people settle on – you know, one mechanism to do things and – so what is the default within that mechanism is incredibly powerful for establishing market share."

Habits & Rare Default Changes

2005 Google Letter to Microsoft



How the Default is Changed

The problems with the default setting are further compounded by how changes to the default are handled. As you know, most end users do not change defaults. And even the few who might try to make a change from the drop down menu in IE7 will be surprised to learn that their choice will revert to the original default the next time they start IE7. Making changes in the drop down menu temporary rather than permanent differs from normal convention and is especially likely to mislead and confuse end users. Undoubtedly, of the tiny fraction of end users who try to change the default, many will become frustrated and simply leave the default as originally set (in all likelihood to MSN Search in light of Microsoft's previous setting of the default).

Cognitive Effort & Explicit Search Engine Choice

To change the search engine default, users must:



Be aware there is a default search engine.



Discover alternatives.



Learn the steps necessary to change or evade the default.



Implement the steps.

Choice Friction Matters



Google's Behavioral Economics Team, 2021

Google

Smart Campaigns: Simplify Guided Actions

Behavioral Econ brainstorm / audit

#1: Actionability and making the best choice the easiest

Reducing friction



Seemingly small friction points in user experiences can have a dramatically disproportionate effect on whether people drop or stick. Reducing friction can also create delight and immediate value.

Status Quo Bias



Inertia is the path of least resistance. Stick with the status quo, as it takes more effort to make changes. Given this, set the default

#1: Actionability and making the best choice the easiest

Reducing friction



Seemingly small friction points in user experiences can have a dramatically disproportionate effect on whether people drop or stick. Reducing friction can also create delight and immediate value.

Status Quo Bias



Inertia is the path of least resistance. People tend to stick with the status quo, as it takes more effort to make changes. Given this, set the default option wisely.

Choice Friction Matters (cont.)



Difficult process (**friction**)

If you start by thinking that thinking is hard, that people have lots of things to do, and that each barrier in terms of time attention, and demand for thinking is 10X what you think it is — this will be a good start

For example, starting a signing process by asking people “What do you want to advertise” might create higher friction that one would imagine

If this is the case, you want to think about each step, as small as it might be, and see if there is a way to eliminate it, delay it, simplify it, default it.

Google prevents Samsung and other Android partners from
Redacted (2017)

Redacted

Redacted

Google stopped Samsung from

Redacted
(2018)

----- DO NOT COPY -- Notification of breach - Note #3 -----
To: Andrew Hong (ea.hong@samsung.com), Steve Lee (jsteve.lee@samsung.com)
Cc: jay8.kim@samsung.com, seung.song@samsung.com, jr531.oh@samsung.com, lichristopher@google.com, boyoung@google.com
From: Helen Tsao
Subject: Notice of RSA Section 2.4 violation - Notice #3

Dear Andrew and Steve,

On February 10, 2018,
Ad Revenue, on a Samsung device not qualified for revenue share in violation of Section 2.4 of the Google Mobile Revenue Share Agreement ("RSA") dated July 1, 2017. The details of the Device Model are below:

Device Model:

Model Name: J2 (T)
Model Number: SM
Serial Number: H3
Launch date: January

This Device Model is
of Exhibit B of the R

Redacted

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To: Andrew Hong (ea.hong@samsung.com), Steve Lee (jsteve.lee@samsung.com)

Cc: jay8.kim@samsung.com, seung.song@samsung.com, jr531.oh@samsung.com, lichristopher@google.com, boyoung@google.com

From: Helen Tsao

Subject: Notice of RSA Section 2.4 violation - Notice #3

Dear Andrew and Steve,

On February 10, 2018, we discovered that Samsung used a Client ID, of which Google pays Samsung Shared Net Ad Revenue, on a Samsung device not qualified for revenue share in violation of Section 2.4 of the Google Mobile Revenue Share Agreement ("RSA") dated July 1, 2017. The details of the Device Model are below:

Redacted

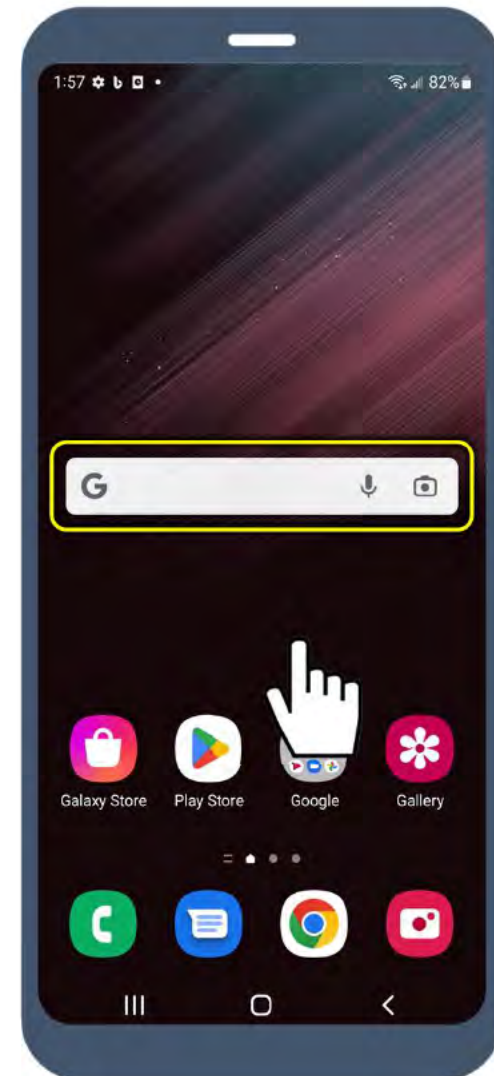
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Steps to Change the Android Search Widget

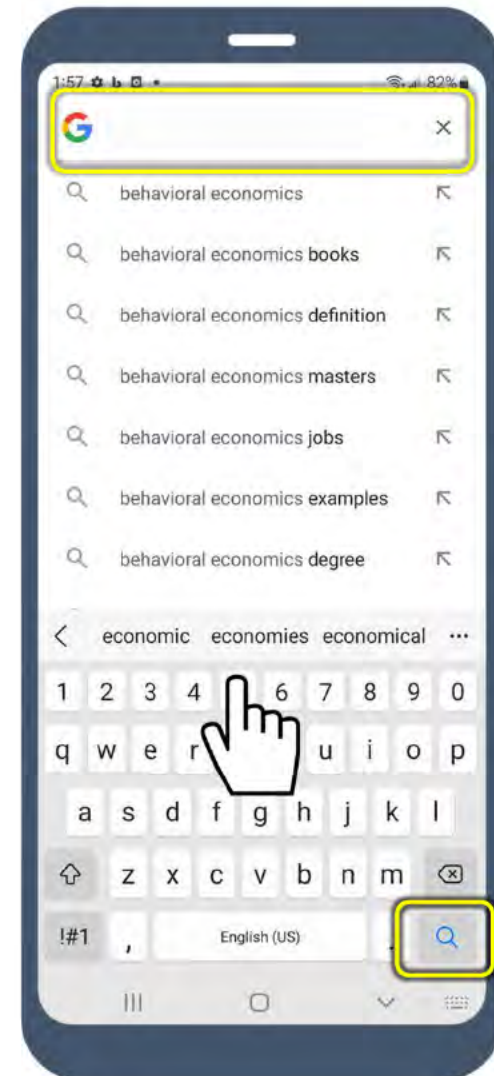
Replacing Google Search Widget on Android 12

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- 7 ▶ Choose Bing in List of Widgets
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- 9 ▶ Long Press Google Widget
- 10 ▶ Tap Remove



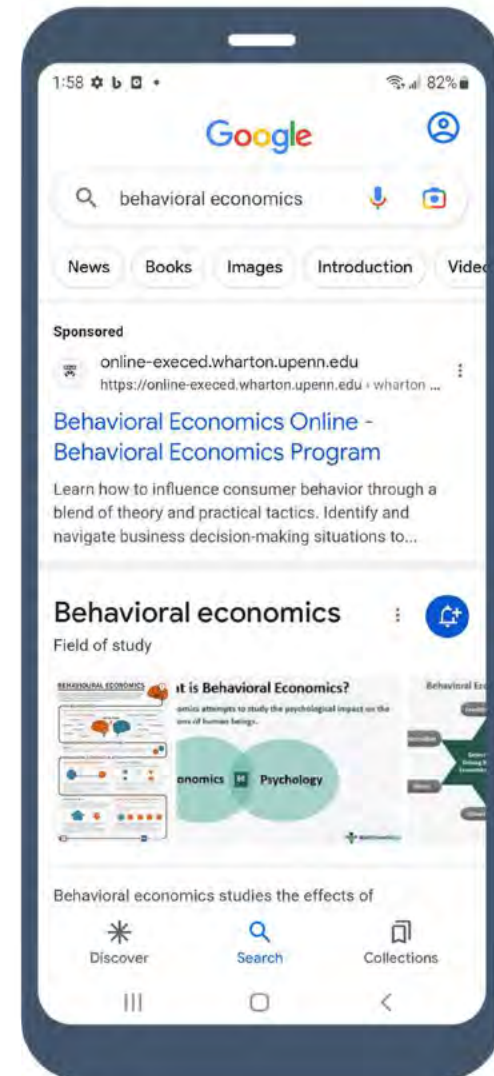
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- 7 Choose Bing in List of Widgets
- 8 a) Long Press Bing Widget 3s or b) Tap and hold
- 9 Long Press Google Widget
- 10 Tap Remove



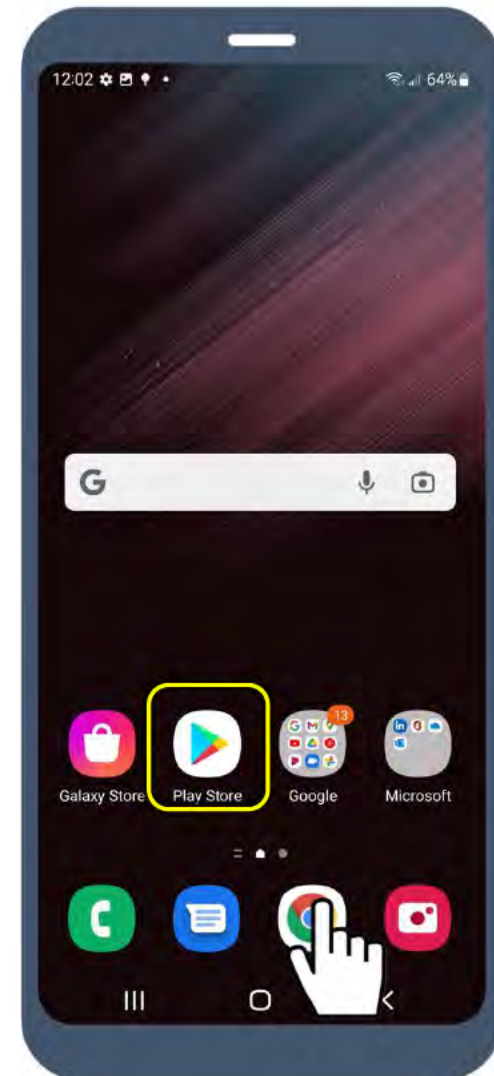
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- 8 (a) Long Press Bing Widget Above / (b) Tap and
- 9 Long Press Google Widget
- 10 Tap Remove



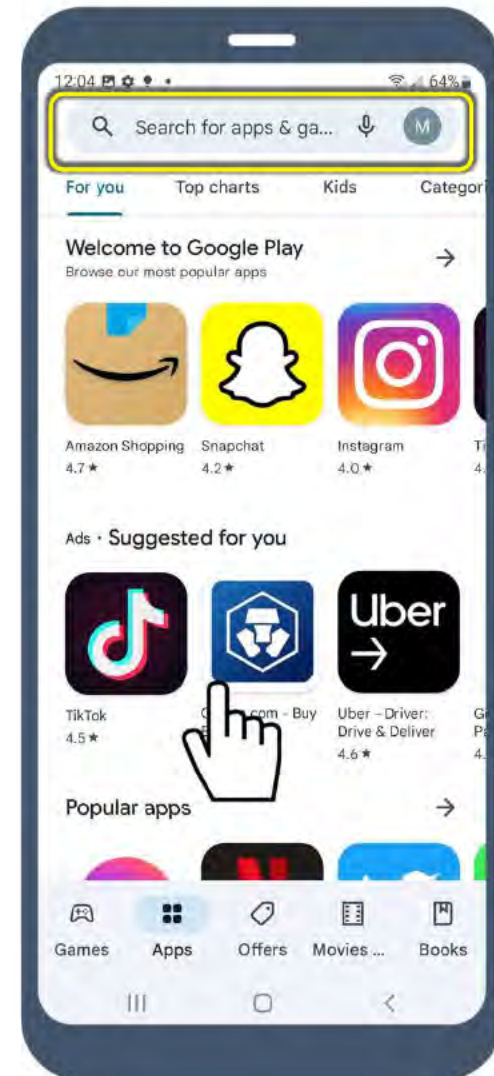
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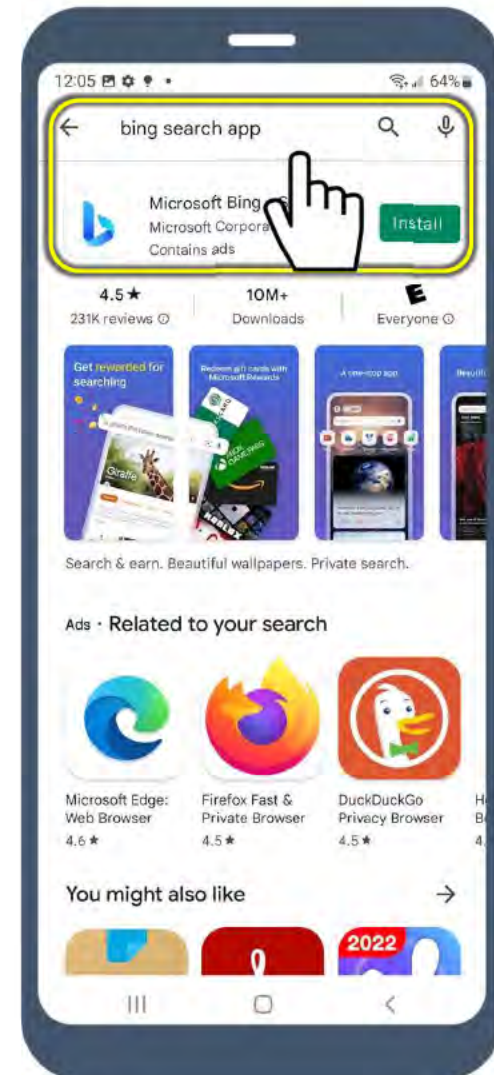
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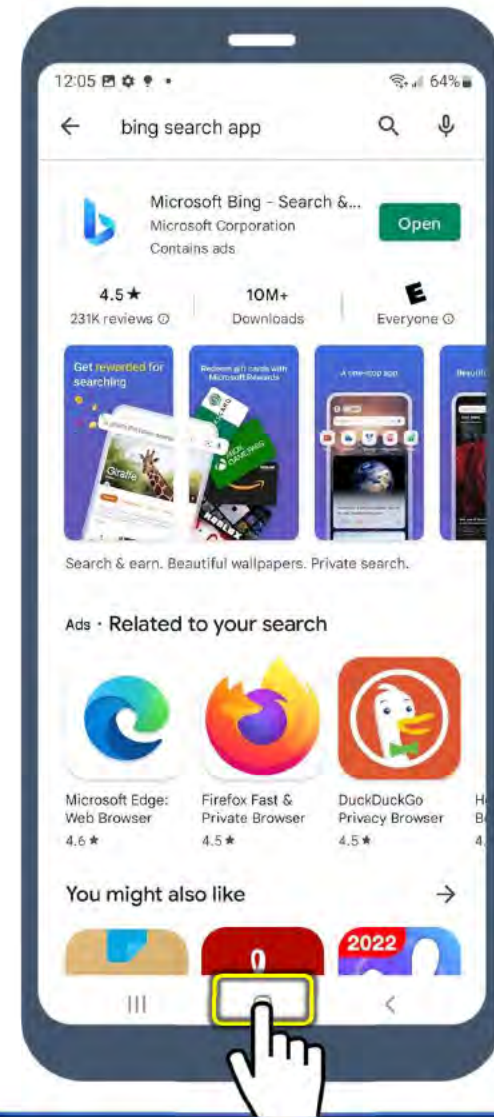
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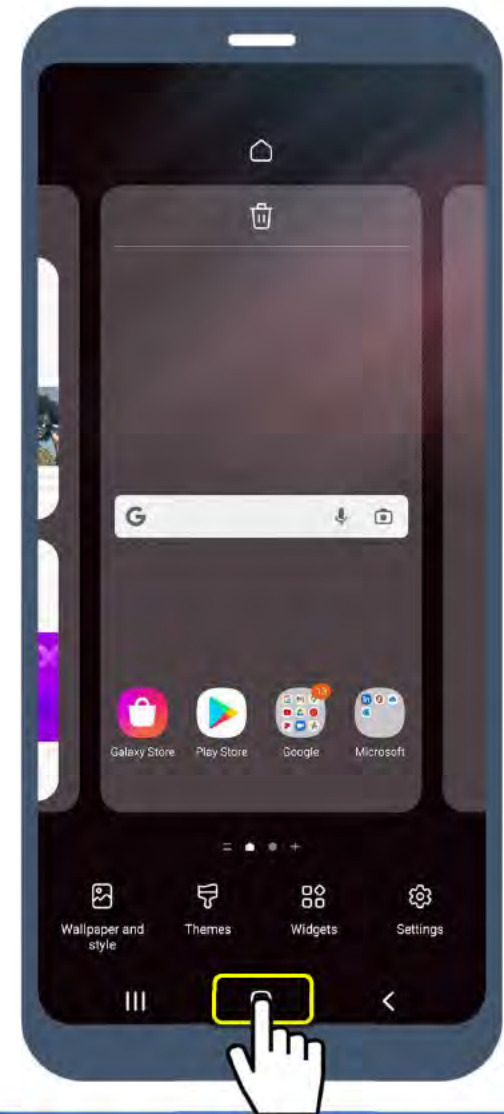
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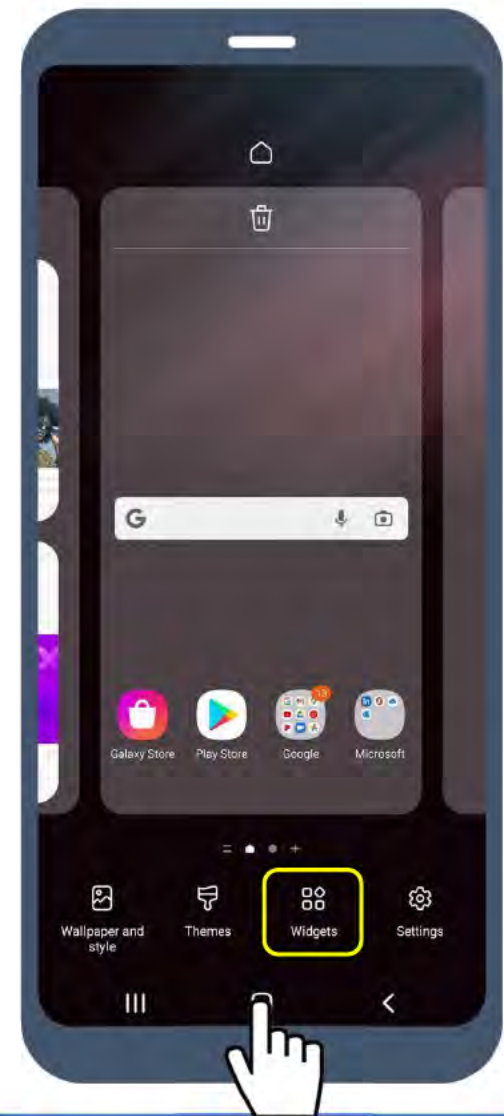
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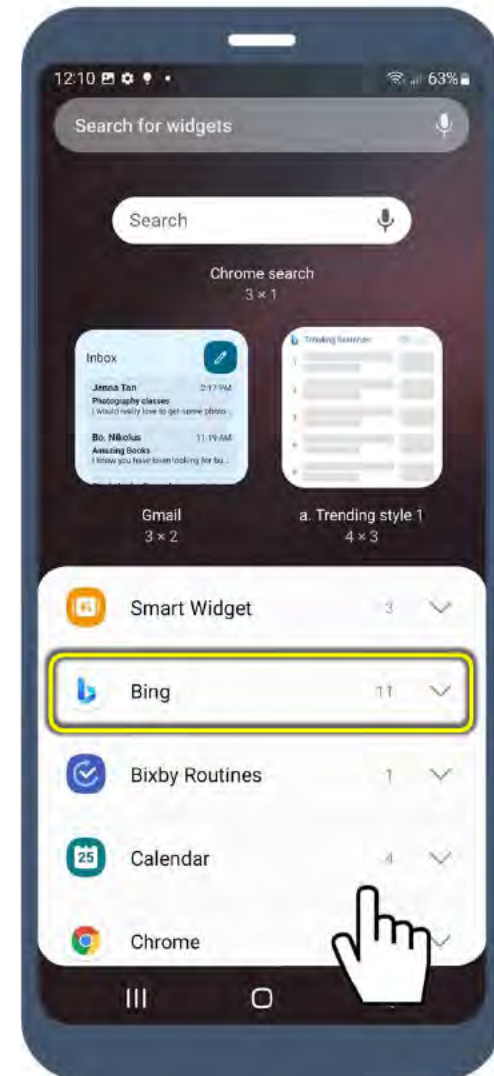
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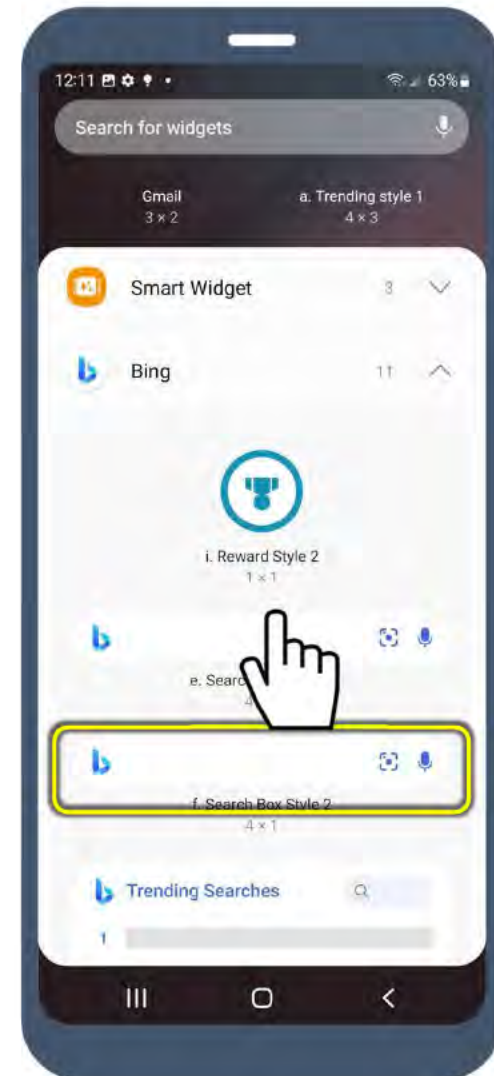
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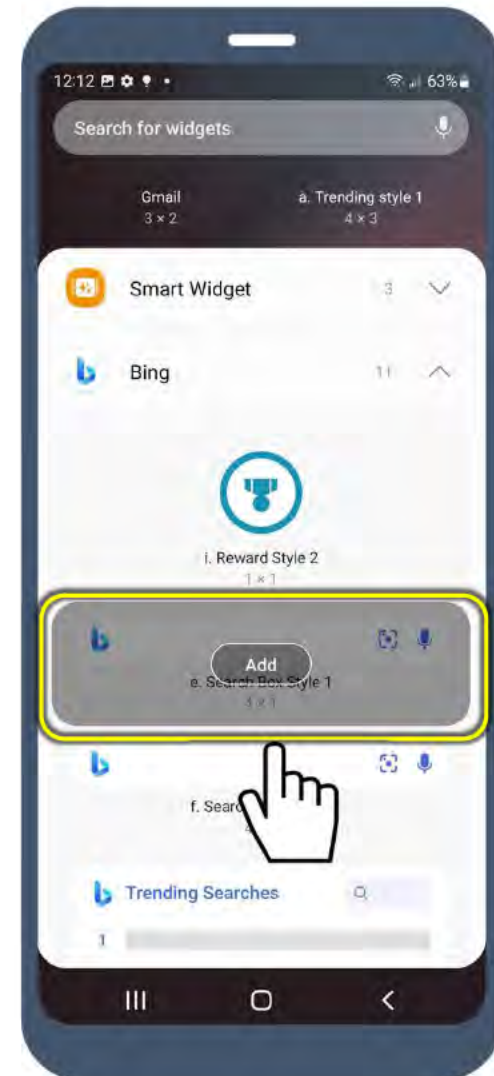
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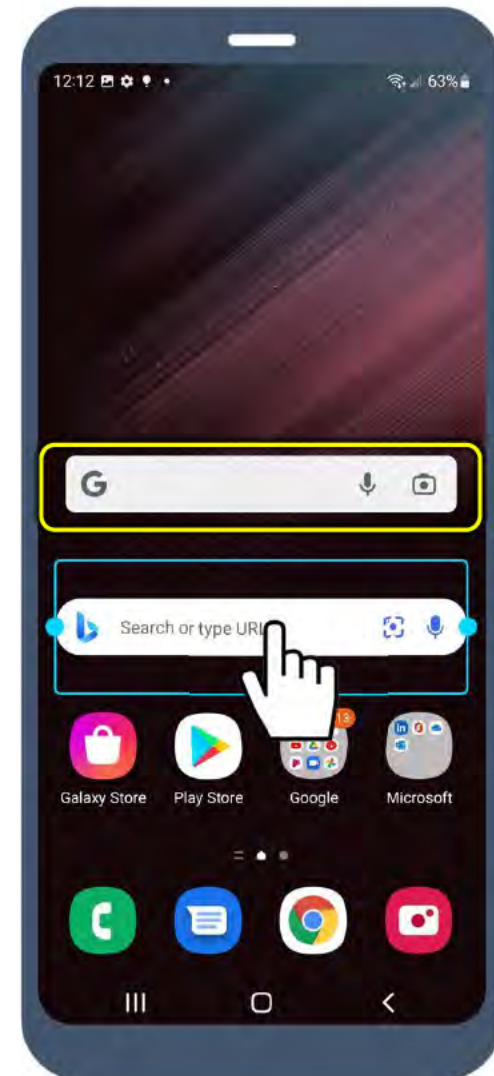
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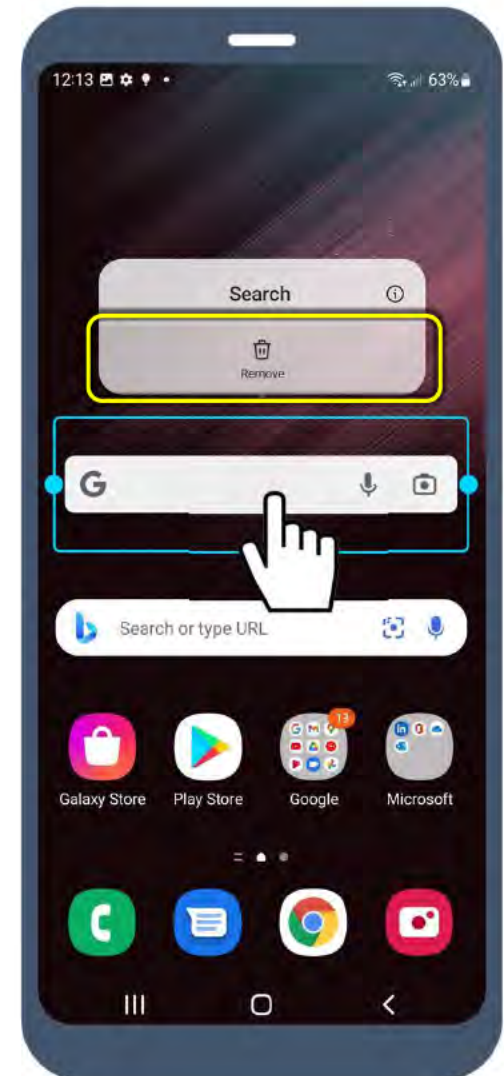
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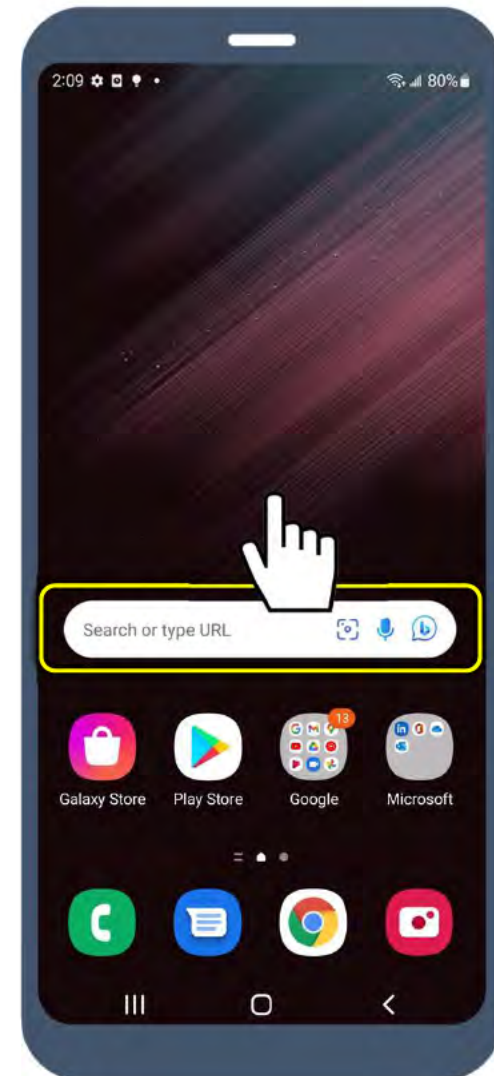
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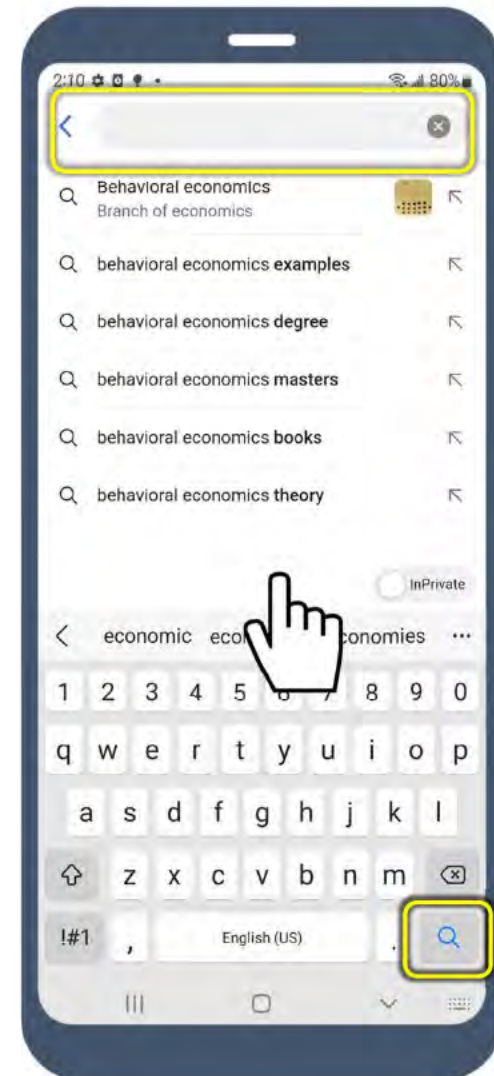
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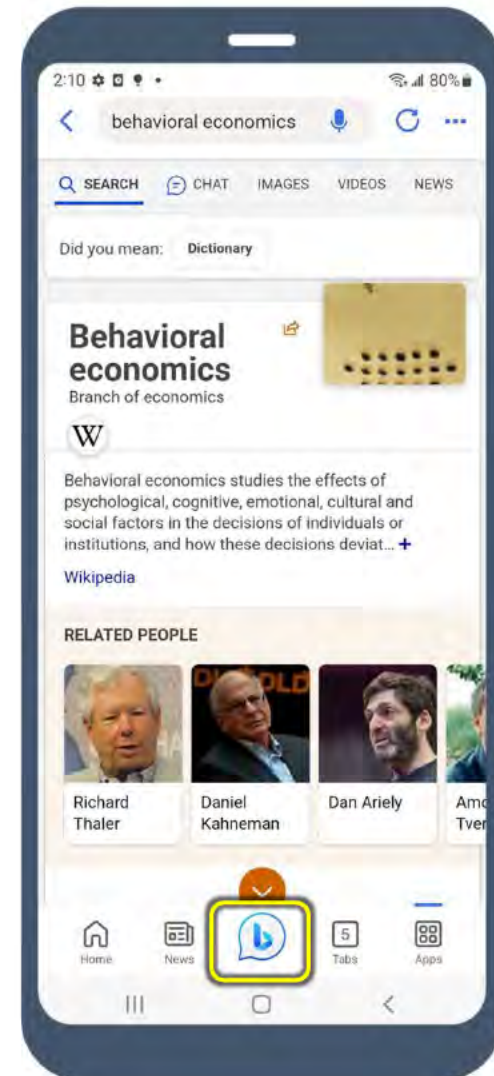
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Market Evidence: Mobile

Mobile device examples of sizeable default effects:



Apple Maps Default Switch

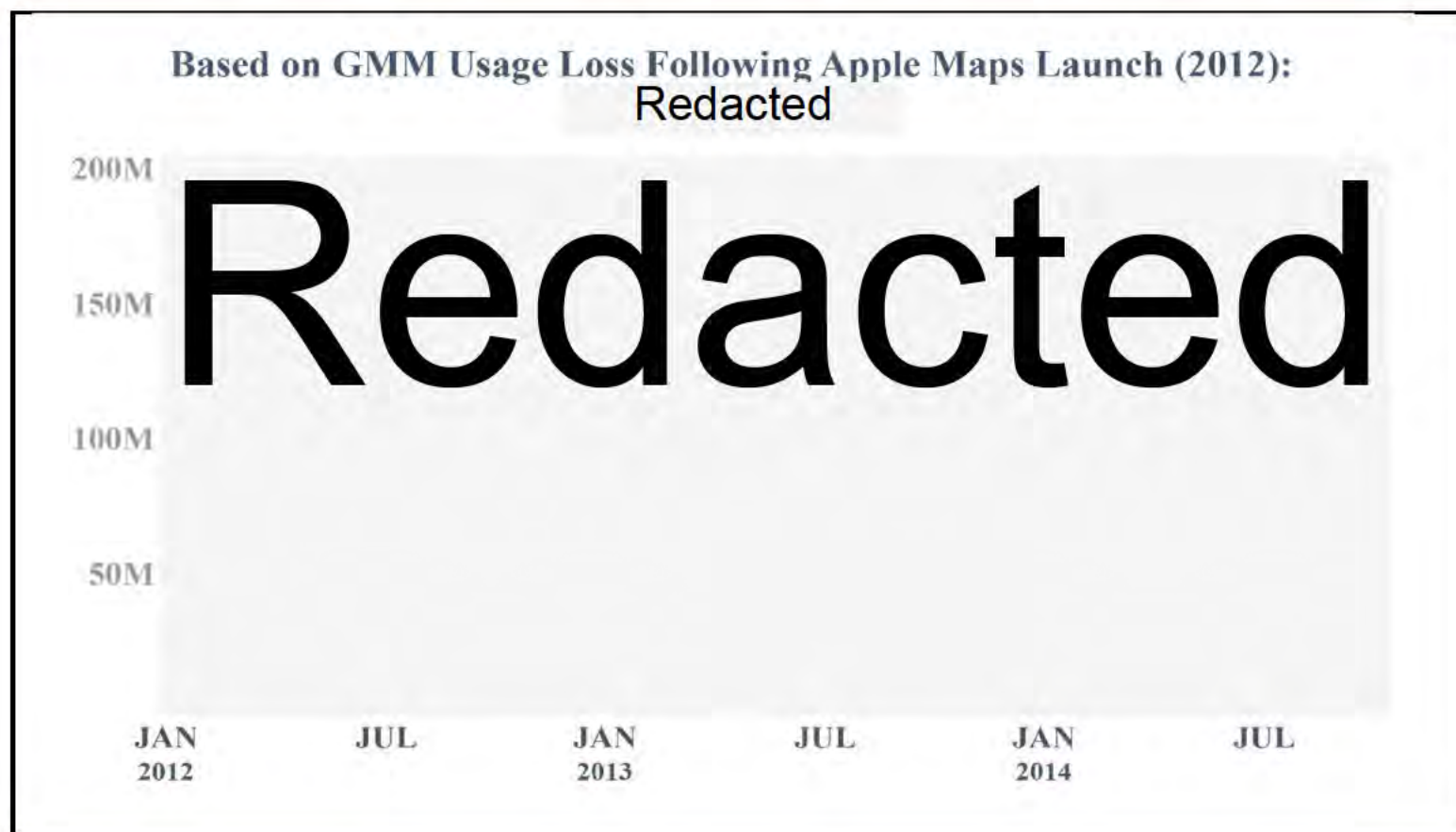


U.S. Tablet Comparison



Russian Choice Screen

Mobile (iOS): 2012 Apple Maps Default Switch



Mobile (iOS): 2012 Apple Maps Default Switch

- Apple Maps default became the dominant iPhone maps application despite quality problems.



“Google Maps illustrates how even a superior product with great brand recognition can struggle to gain market share” against default option.

- Google uses the Apple Maps episode to model expected revenue loss on iPhones and iPads, in the event Apple were to switch the Safari search default.

Mobile (iOS): Google “Code Red” Projections

Redacted




Redacted

Redacted

Mobile: U.S. Tablet Comparison

amazon fire

Default in Silk Browser:  Bing

Redacted 

Redacted 

Apple iPad

Default in Safari Browser: 

Redacted  Redacted

Redacted 

2017 Russia Choice Screen: Android Mobile Phones



2017 Russia Choice Screen: Across Devices



Behavioral Economics of Defaults

Status-quo bias



“Defaults: People tend to stick with the status quo, as it takes more effort to make changes. Given this, set the default option wisely.”

“When the decision is unclear, people go with the default.”

Loss Aversion



“When making decisions big and small, people tend to overwhelmingly pick the default option. . . . Deviating from the default induces loss aversion . . .”

App Stores – Google Documents

Dan: search is “antithetical” to how people think about apps --- people don’t necessarily want to go back and open a separate thing to search

Led by famed economist
Dan Ariely, our team of
behavior experts work to
 transform Google’s product
 & marketing strategy by
 applying the principles of
behavioral economics (BE)
 like...

Anchoring
 Building Trust
 Choice Overload
 Concreteness
 Deadlines
 Decoy
 Defaults
 Effect
 Endowment Effect
 Extrinsic Motivation
 Financial Norms
 Forced Choice
 Framing
 Free
 Fresh Start
 Fiddler
 Goal Gradient Effect
 Hyperbolic Discounting
 Identifiable Victim
 IKEA Effect
 Incentives
 Incompleteness
 Information Avoidance
 Intrinsic Motivation
 Loss Aversion
 Mental Accounting
 Negative Social Proof
 Pain of Paying
 Peak-End Rule
 Pre-Commitment
 Pricing
 Progress
 Relativity
 Social Norms
 Social Proof
 Sunk Costs



- cross-functional engineer + product marketing + business team
- fast iteration of experimentation
- search app on iOS is a priority
- general goal: grow mobile at google

Dan: search is “antithetical” to how people think about apps --- people don’t necessarily want to go back and open a separate thing to search

Matt’s experience as new iPhone user

- no google apps pre-installed
 - all apple apps, covering most needs
- many things you can do with google apps don’t require sign-in
 - gmail may be an exception to this
- 81% of safari search is coming from the safari omnibox
 - dan wants to know: from people who use safari, how many do anything except search via the safari omnibox?
 - switching away from that will be very difficult
 - 17% use the google homepage
 - possibly some of this is “bookmarking” google via an icon

Kristen: google docs forcefully sent her to the google docs app, got her to download

Approaches to promotion

- push-up banner: promote google app or chrome app on google.com
 - do it for people who use chrome on desktop, and don’t already have the app

Alex: two approaches

- content
 - loss aversion, social proof, etc.
- context
 - possibly more promising: moment of new phone, etc.

Dan

- nice to create better messages, essentially just trying to hit the value prop of the google app
 - best case, lots of people won’t want it
 - needs a different app to really work
- what is the non-mobile use that will promote the mobile use?
 - if you just fight apple on mobile, you will lose
 - what is laptop use that reinforces mobile use?
 - do things in the browser on gmail that makes you feel your mobile experience is subpar

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App Stores – Third Party Testimony



Mitchell Baker
CEO, Mozilla

“[M]erely having an app in the app store is a very difficult way to compete with the preloaded defaults Because each person who gets that phone has to make a conscious decision to go through a lot of work to get to your product.”

Mobile (Android): European Choice Screen

	Google's Pre-Choice Screen Android Market Share	Google's Choice Screen Selection Share (Sept–Dec. 2021)	Difference
 United Kingdom	Redacted	Redacted	Redacted
 France	Redacted	Redacted	Redacted
 Germany	Redacted	Redacted	Redacted
 Switzerland	Redacted	Redacted	Redacted
 Spain	Redacted	Redacted	Redacted

European Choice Screen & Brand Recognition



October 2019 email

Re: Choice Screen in Search Forecasts

Message:
From: Emily Chen [emilyc@google.com]
Sent: 10/17/2019 10:20 AM
To: Chris Rhyu [crhyu@google.com]
CC: Roman Vishay [rvishay@google.com]; Toshi [toshi@google.com]; Igor Rybakov [rybakov@google.com]; Dan
Kee [danke@google.com]; Peter [peter@stou.com]; Kari Richardson [kari@stou.com]
Subject: Re: Choice Screen in Search Forecasts

PRIVILEGED AND CONFIDENTIAL // EUC:

Hi Chris and Anna,

@Anna Vishay: For G
selected (Gonzaga was a
additional search app's
market share ranking.

@Chris Rhyu: The reason
screen is because the as
proxy) - considering the
recognition would. Then
it's easier to click from
unknowns, the current

Separately for RU, there
because Yandex has a m
Ultimately, it's a similar
not be close to EEA.

Thanks,
Emily

On Thu, Oct 17, 2019 at
PRIVILEGED AND C

Ben had just mentioned
from that, if applicable

On Thu, Oct 17, 2019 at
PRIVILEGED AND C

One more q - did Gon

On Thu, Oct 17, 2019
Thanks Emily. Could
estimated? I would be
and context you do

On Thu, Oct 17, 2019

Thank you

CONFIDENTIAL





@Chris Rhyu The reason the financial impact is not shifting based on the placement of Google in the choice screen is because the assumptions we used in the model are based on brand recognition (using queries as a proxy) - considering this is what the assumption is meant to capture, the position wouldn't matter as much as the recognition would. There could be benefits to having it show up first (first thing a user sees) or possibly last (so it's easier to click from where your thumb normally is) but we've given this a bit of thought and, given the unknowns, the current assumption is likely unchanged by position.

Separately for RU, there was a choice screen there. However, we think this would not be a good comparable because Yandex has a much higher presence in RU than Non-Google search engines have in the EEA. Ultimately, it's a similar choice screen process, but in an extremely different competitive landscape that would not be close to EEA.

Conclusion #2

Search engine defaults have stronger effects on mobile devices than on personal computers.

Google Agrees Defaults are More Powerful in Mobile

	2016	Search Finance Team	Redacted
	2016	Apple scenarios	"Mobile Defaults: Defaults have more prominence in mobile due to screen size and UI."
	2018	iOS Search Strategy	"People are much less likely to change default search engine on mobile."
	2021	What Would Apple Do?	Redacted

Third-Party Testimony: Mobile v. PCs



Rik van der Kooi
Corporate VP, Microsoft

“On a mobile platform more than anywhere else, even more than on the PC, default is the only thing that matters.”

Market Evidence: Personal Computers

Personal computer examples of sizeable default effects:

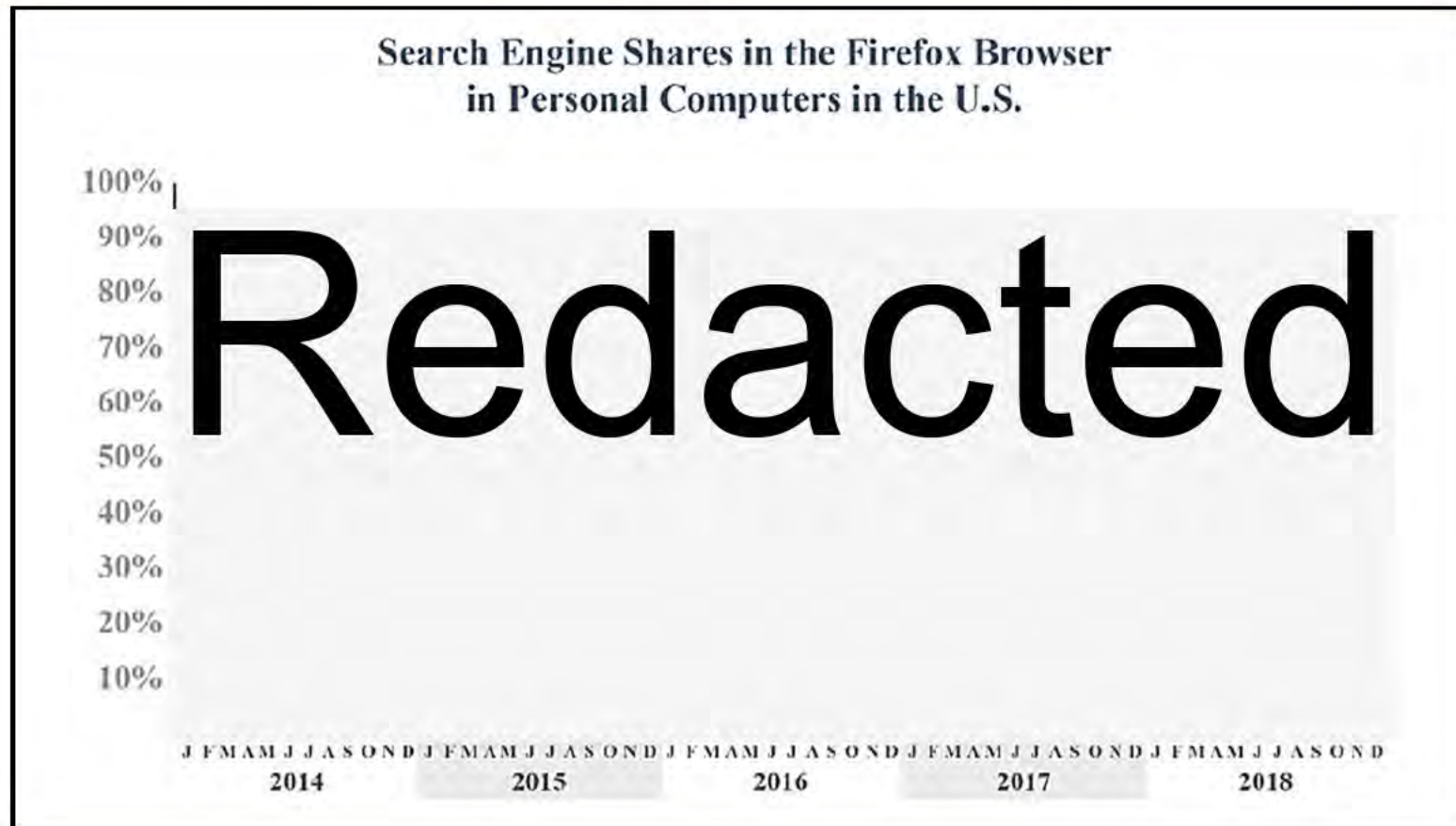


Firefox Browser Default Switch

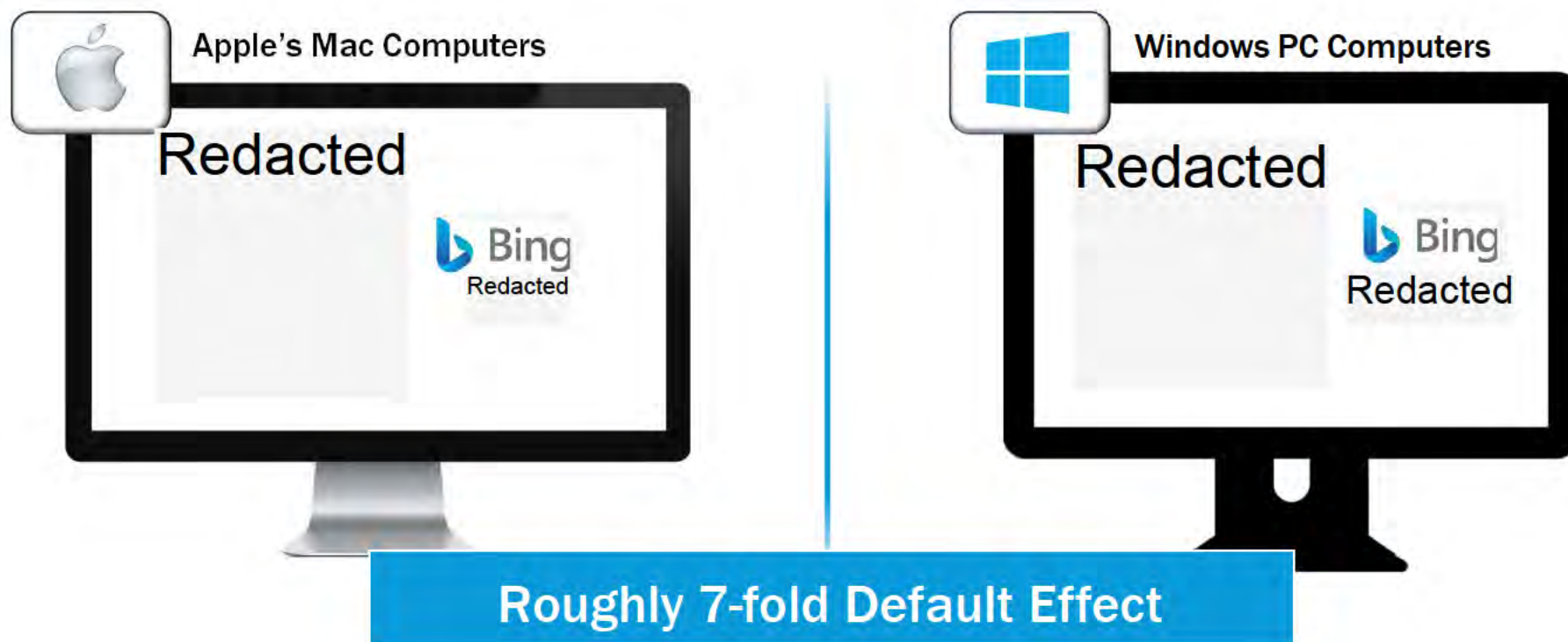


Windows PC Search Shares

PCs: 2014 & 2017 Firefox Default Switches



PCs: Default Effects Across Operating Systems



Conclusion #3

- Defaults bias consumers' privacy decisions in search.
- Google's default privacy settings present significant choice friction for users who may prefer less data collection.

Privacy-Focused Search Engines & Defaults

Redacted



July 2020 email from Brave Browser VP (Jan Piotrowski) to Yahoo Search VP (Nate Weinstein):

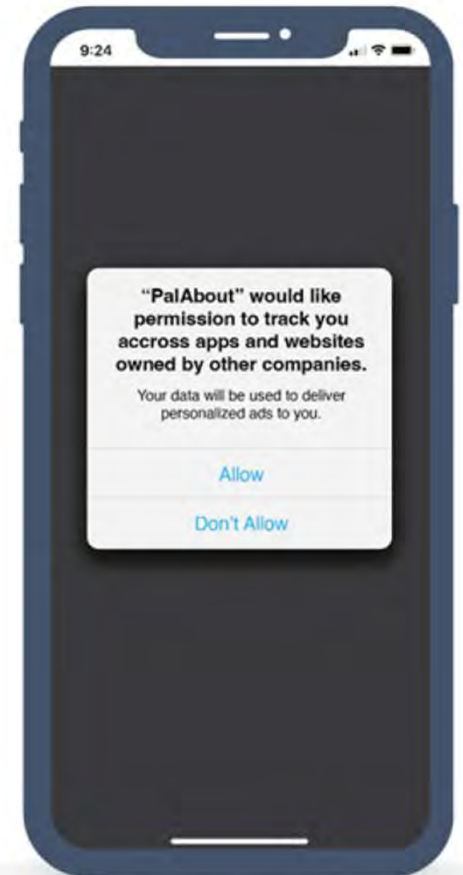
As for DDG, it's currently default in 4 geos: Germany, Ireland, Australia, and New Zealand. Although we don't track/identify our users, we have recently started anonymously sampling browsers so that we have some limited aggregated data to analyze. The data is very clear: default is sticky and very powerful. From these anonymous data sets, we see that the default (DDG in these geos) remains default on at least ^{Redacted} of machines (in some of those geos, significantly higher). This data is corroborated by what we're seeing with Qwant, which we have set as default in France and is seeing similarly high usage. We'd love to go to market with a strong message of partnership between Yahoo/OneSearch & Brave with Yahoo/OneSearch as default and see what we can do.

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YAH!LT-0036774

Apple App-Tracking Prompts

- In April 2021, Apple introduced choice screen for data tracking by applications.
- “Don’t Allow” selected by 80%+ after one year.
- Removal of tracking default cost Facebook roughly \$10 billion.



Choice Friction & Google Privacy Settings

Privacy
Search Trust Summit 2019

Google

Goals

Empower users to feel like (a) data is collected for principled reasons that benefit them, (b) they have a high level understanding of the data collected / how it's used, and (c) they are satisfied with their level of control. Do so in a way that meets users where they are.

Data Collection	Transparency	Control
<p>Current perception: Google collects too much data - puts me at risk, makes money, I see little benefits.</p> <p>User goals:</p> <ul style="list-style-type: none">• Reduce perception that Google hoards data• Reduce likelihood of a security breach of user data• Reduce ability to join data inappropriately	<p>Current perception: I feel in the dark, but also don't want to seek out information myself.</p> <p>User goals:</p> <ul style="list-style-type: none">• Increase perception and understanding of user-centric benefits of data• Articulated in approachable, succinct language that normal people can understand• Transparency offered to users at the moments they need it	<p>Current perception: I have no choice if I want to use the product. Controls are purposely hidden.</p> <p>User goals:</p> <ul style="list-style-type: none">• Increase awareness and accessibility of existing data controls• Increase feelings of control and agency, especially in the moment• Controls are easily accessible and offered at the right moments of need

Google

Control

Current perception:

I have no choice if I want to use the product. Controls are purposely hidden.

User goals:

- Increase awareness and accessibility of existing data controls
- Increase feelings of control and agency, especially in the moment
- Controls are easily accessible and offered at the right moments of need

Choice Friction & Google Privacy Settings

Private Searching on
Google

Prep for product council, June 2018

Redacted

Redacted

Key Conclusions

Conclusion 1: Search engine defaults generate a sizable and robust bias towards the default.

Conclusion 2: Search engine default effects have stronger effects on mobile devices than on personal computers.

Conclusion 3: Power of defaults also affects consumers' privacy decisions in search.
