

IN4MATX 133: User Interface Software

Lecture 19:
Interaction & Society

Professor Daniel A. Epstein
TA Goda Addanki
TA Seolha Lee

Today's goals

By the end of today, you should be able to...

- Critically examine choices made by interface designers and developers
- Consider the implications, positive or negative, of those choices
- Describe ways in which interfaces can exclude people, with the aim of avoiding those
- Articulate what makes a design choice “dark”

Question



Including 133, how many Informatics (IN4MATX) classes have you taken? ICS classes do not count

- A IN4MATX 133 has been my only Informatics class thus far
- B I've taken 2 Informatics classes, including 133
- C I've taken 3 Informatics classes, including 133
- D I've taken 4 Informatics classes, including 133
- E I've taken 5 or more Informatics classes, including 133

**Every interface you implement is
encoding a set of design choices.**

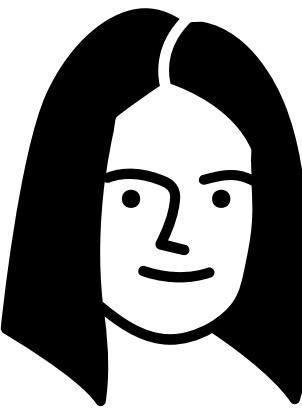
**These choices then influence not only
how people use your interface,
but also how they experience
and perceive the world.**

Your choices can exclude people

Common impairments

- Vision
 - Blind, low vision, colorblind
- Motor impairments
 - Arthritis, cerebral palsy, tremors, paralysis
- Cognitive impairments
 - Autism, dyslexia, language barriers
- Much more

Meet Tracy

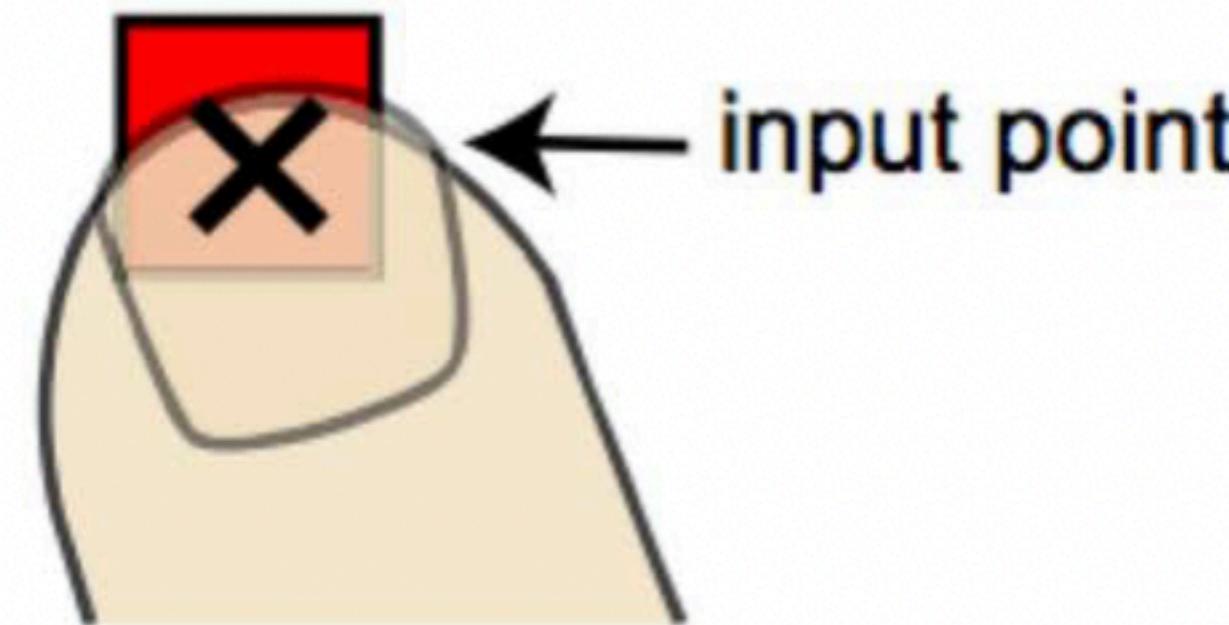


Tracy Young is 28 years old and was born blind. She did well in school, getting support from audio tapes and books and the support of tutors. She never bothered really to learn Braille. She holds a college degree in English literature and is very fond of writing poems and short stories. When using her computer for work, she uses the JAWS software, which reads out aloud the content of the computer screen in an artificial voice (screen reader). JAWS runs only on Internet Explorer, which is the standard browser in Tracy's company.

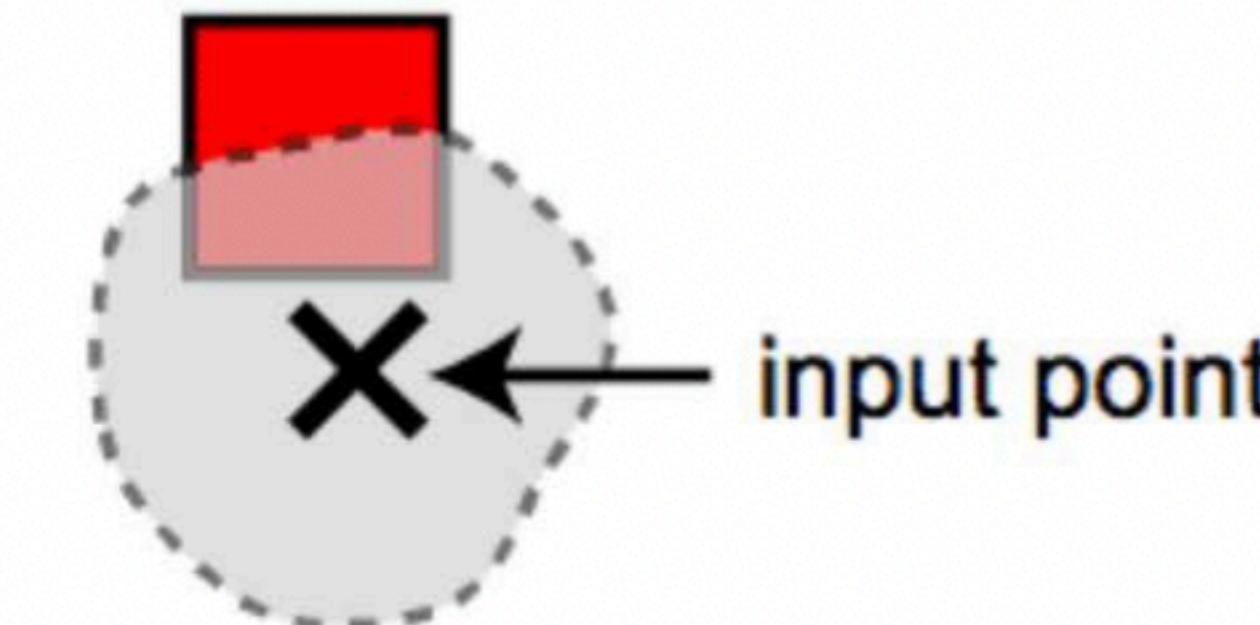
- Adapted from https://publikationen.sulb.uni-saarland.de/bitstream/20.500.11880/25641/1/personas_access.pdf

Modeling touch position

(a) user view



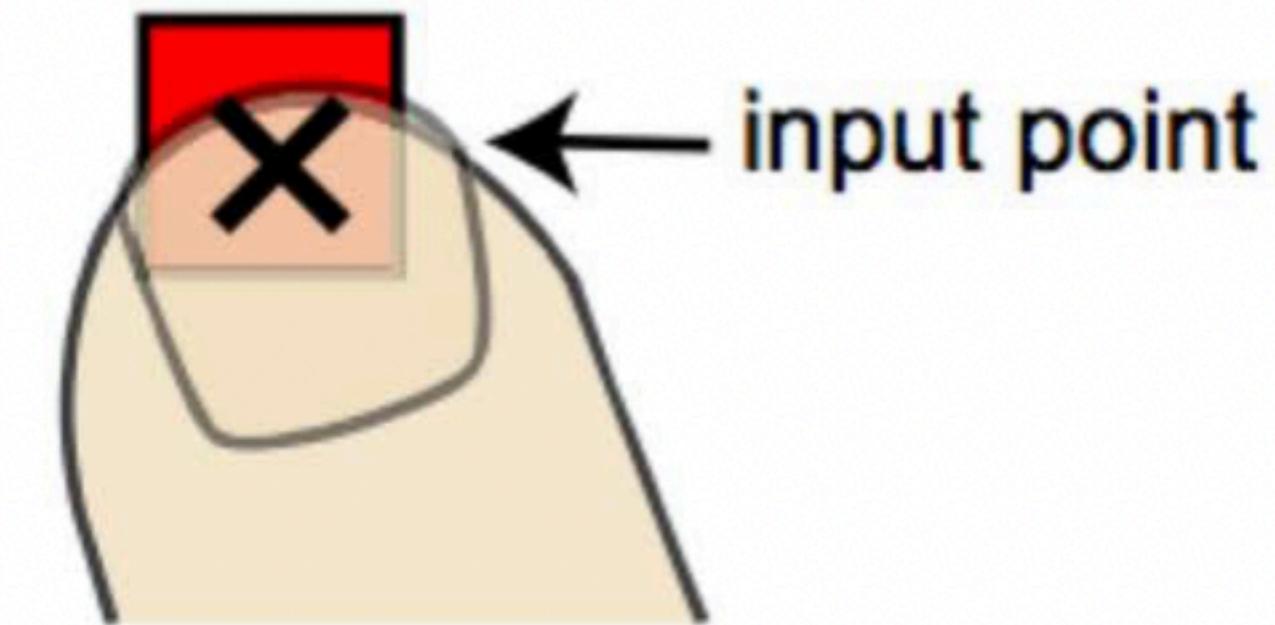
(b) hardware view



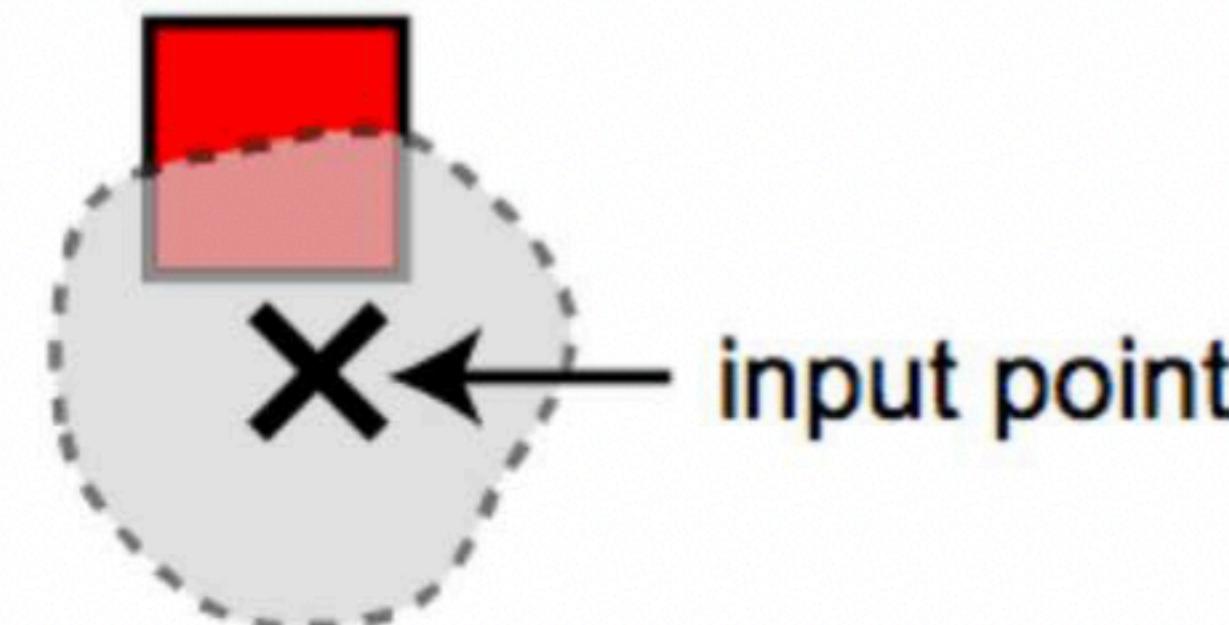
Modeling touch position

- You can choose to space buttons out or make larger buttons to help someone with motor impairments interact with your interface
- In fact, regulatory agencies require some aspects of accessibility

(a) user view



(b) hardware view

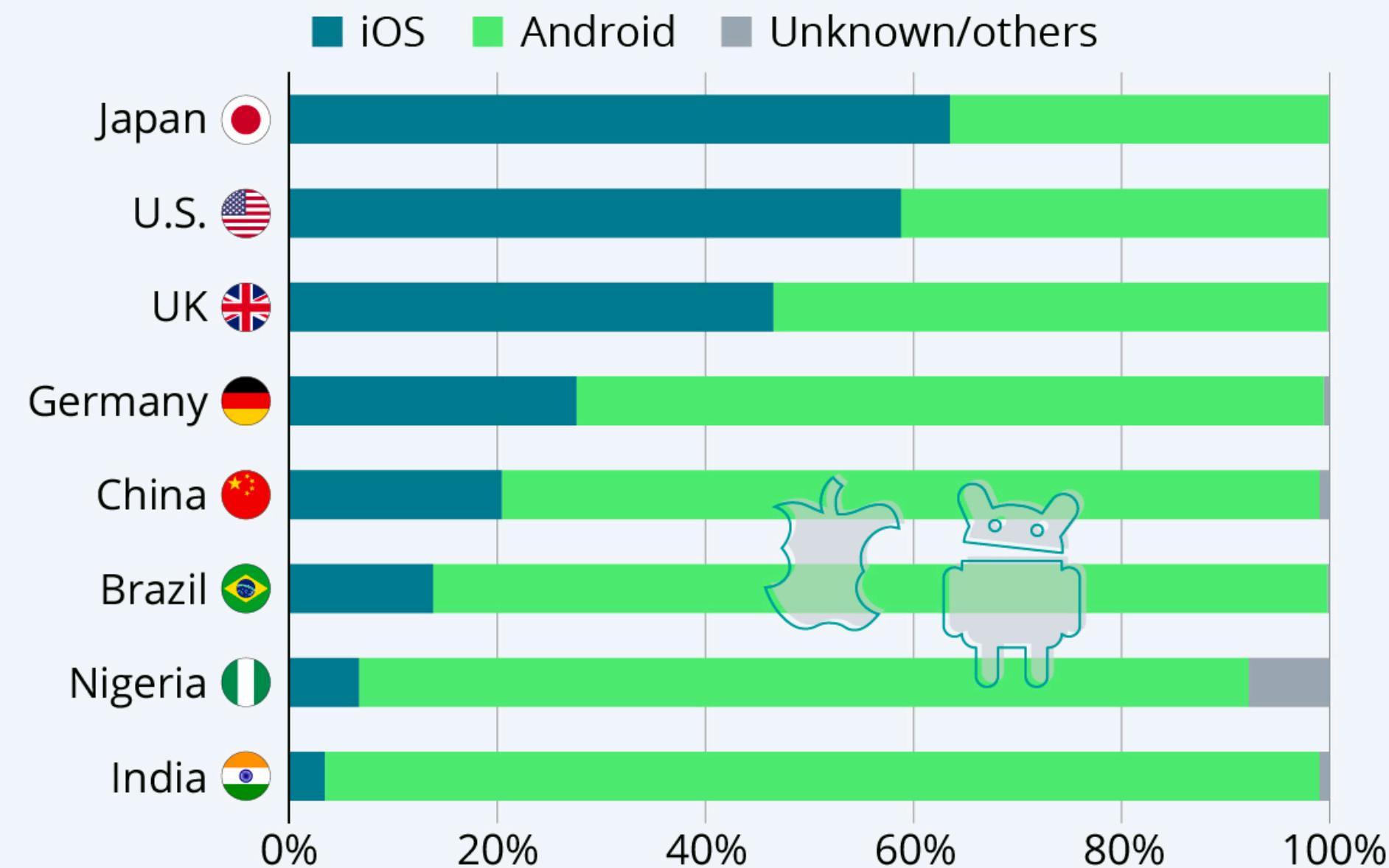


Platform choice

- Phone operating system preference varies significantly by country
- Designing apps or features for one platform excludes much of the world

Apple or Android Nation?

Mobile operating systems market share in selected countries (as of July 2020)



Source: StatCounter

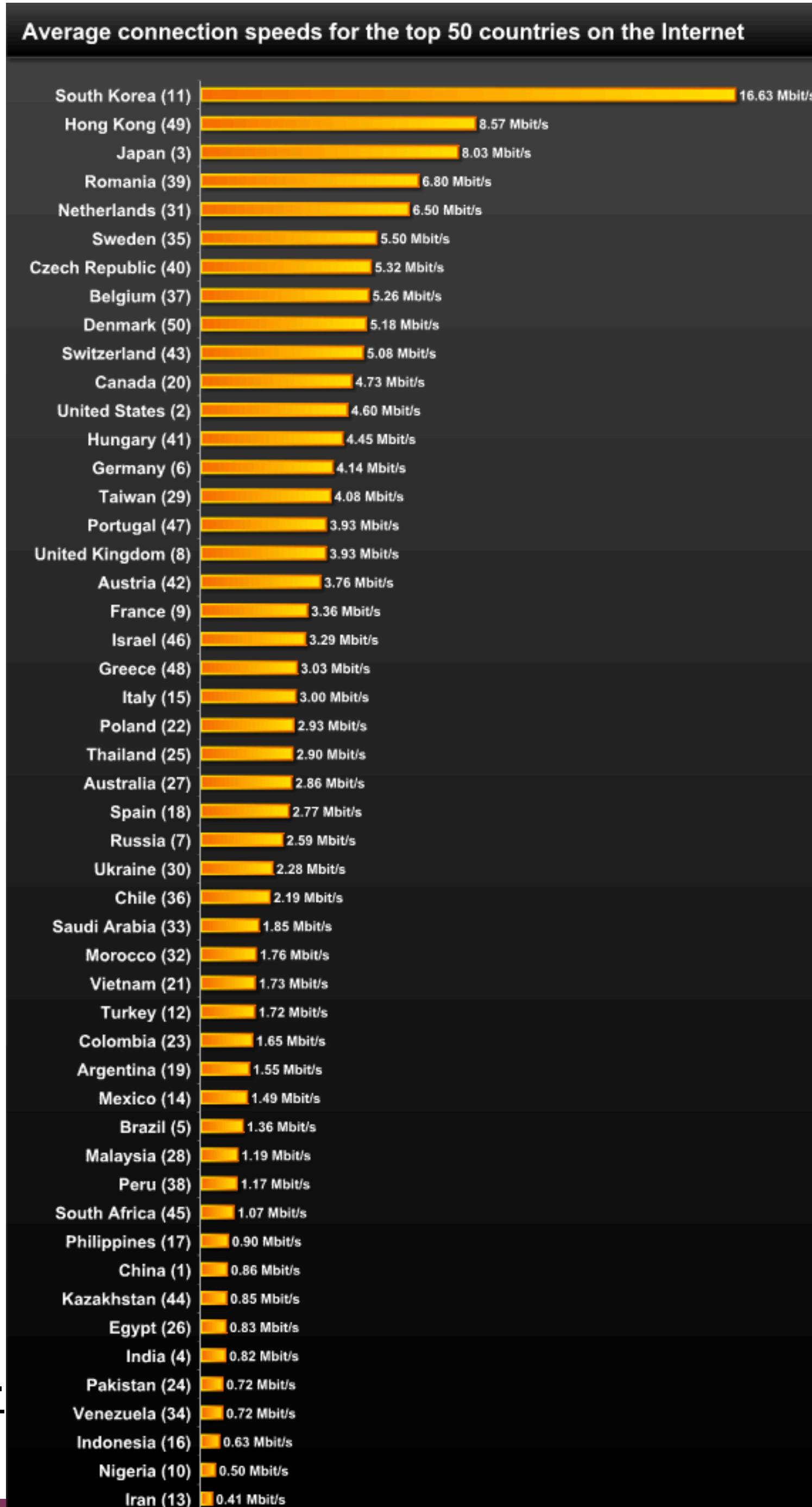


<https://www.statista.com/chart/22702/android-ios-market-share-selected-countries/>

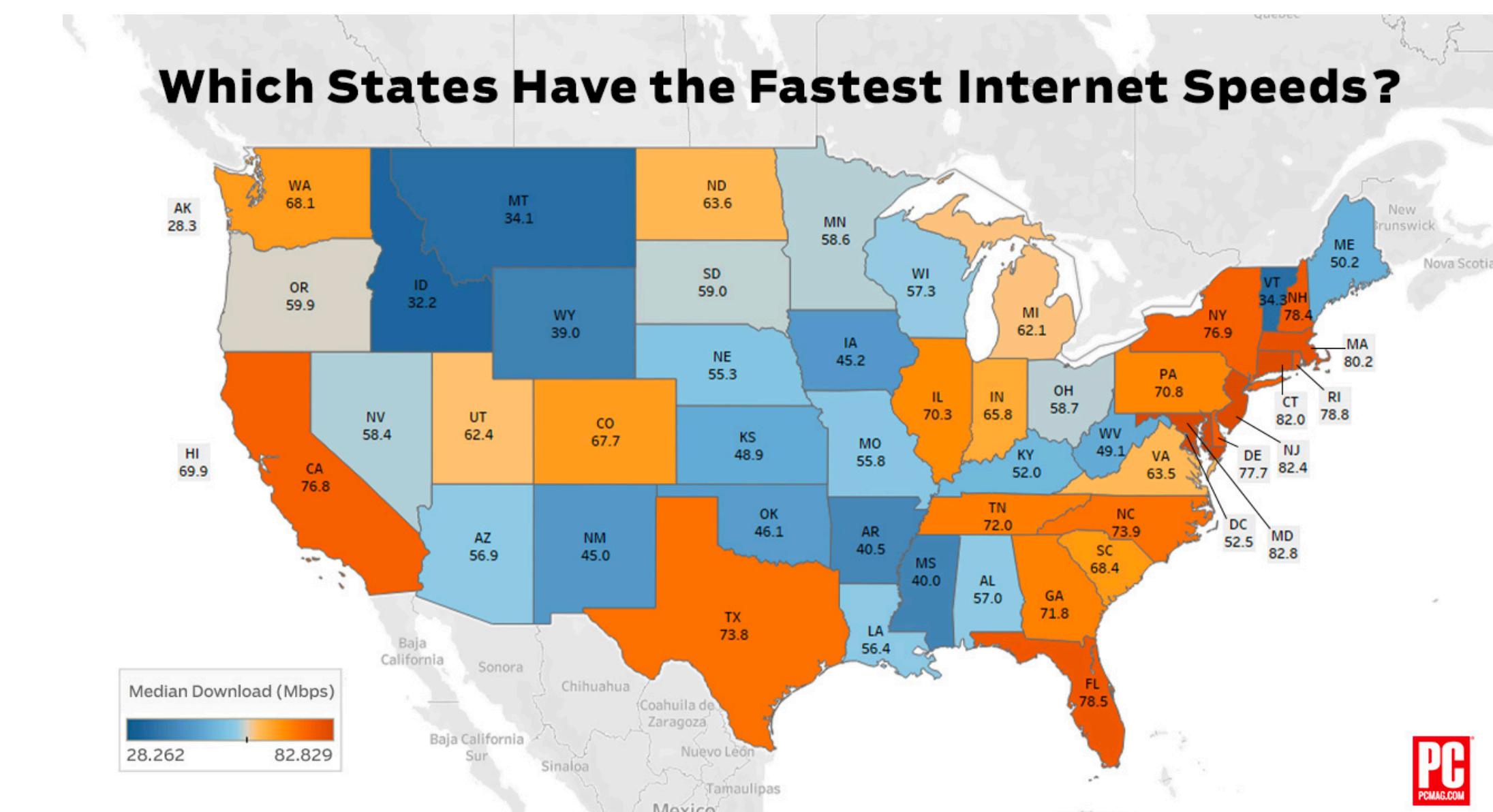
Internet speed

- Internet speed also varies significantly by country
- It's not as correlated with level of development as you might think
- Applications reliant on large internet traffic similarly exclude different people

<https://www.pingdom.com/blog/real-connection-speeds-for-internet-users-across-the-world/>



Platform choice



<https://www.pcmag.com/news/mapping-state-by-state-tech-trends-android-vs-ios>
<https://www.pcmag.com/news/state-by-state-the-fastest-and-slowest-us-internet>

One example: menstrual tracking apps

“With [Apple] Health, you can monitor
all of your metrics that you’re most interested in.”

Craig Federighi

WWDC Keynote, 2014

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Apple HealthKit (2014)

The Atlantic: "How Self-Tracking Apps Exclude Women" by Jessica Pixel (@liftedpixel) - Am I missing it, or does the new iOS 8 Health app not have a period tracker? Seems like a no-brainer addition to me.

TC: "Apple Stops Ignoring Women: HealthKit Update, Now Features Period Tracker" by Sarah Perez (@sarahintampa) - "Self-knowledge through numbers" seems like a genderless goal, yet the actual products out there are anything but.

THE VERGE: "Apple promised an expansive health app, so why can't I track menstruation?" by Arielle Duhaime-Ross - "ClueΔ" would like to access and update your Health data in Health.

Natalie Podrazik (@nataliepo) - Wait, wait, wait -- HealthKit doesn't have a period tracker?

sara mchenry (@yellowcardigan) - What's fucked up about Apple's Health Kit not containing a period tracker is that I NEVER NOTICED HOW FUCKED UP THAT IS UNTIL TODAY

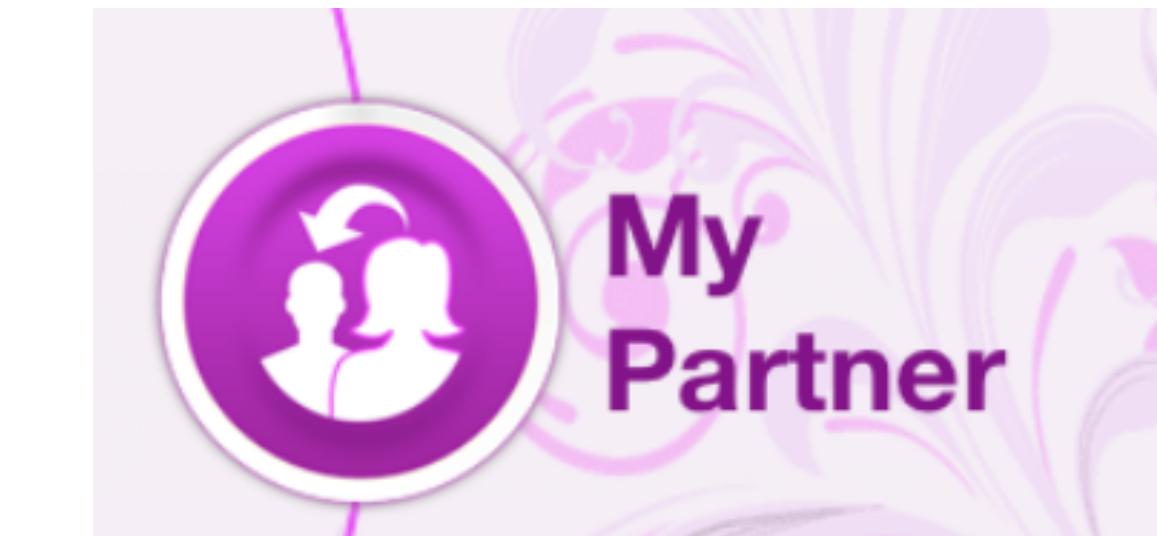
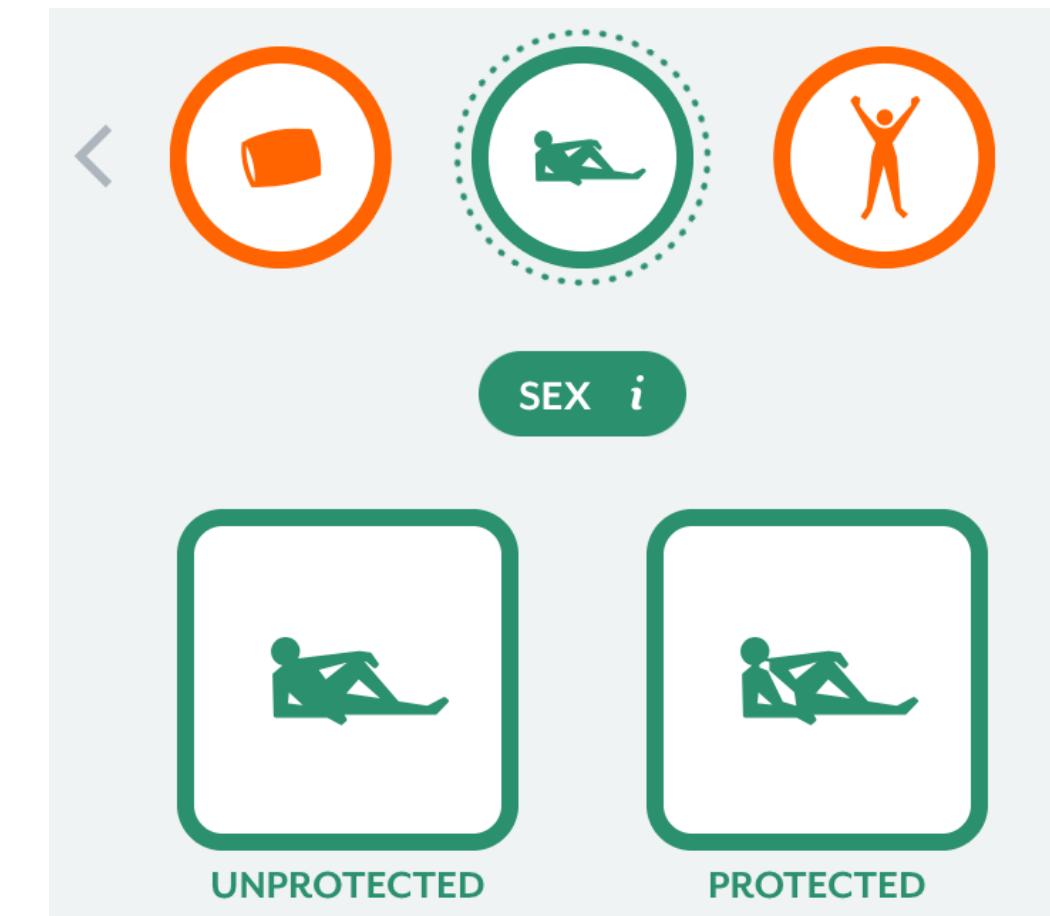
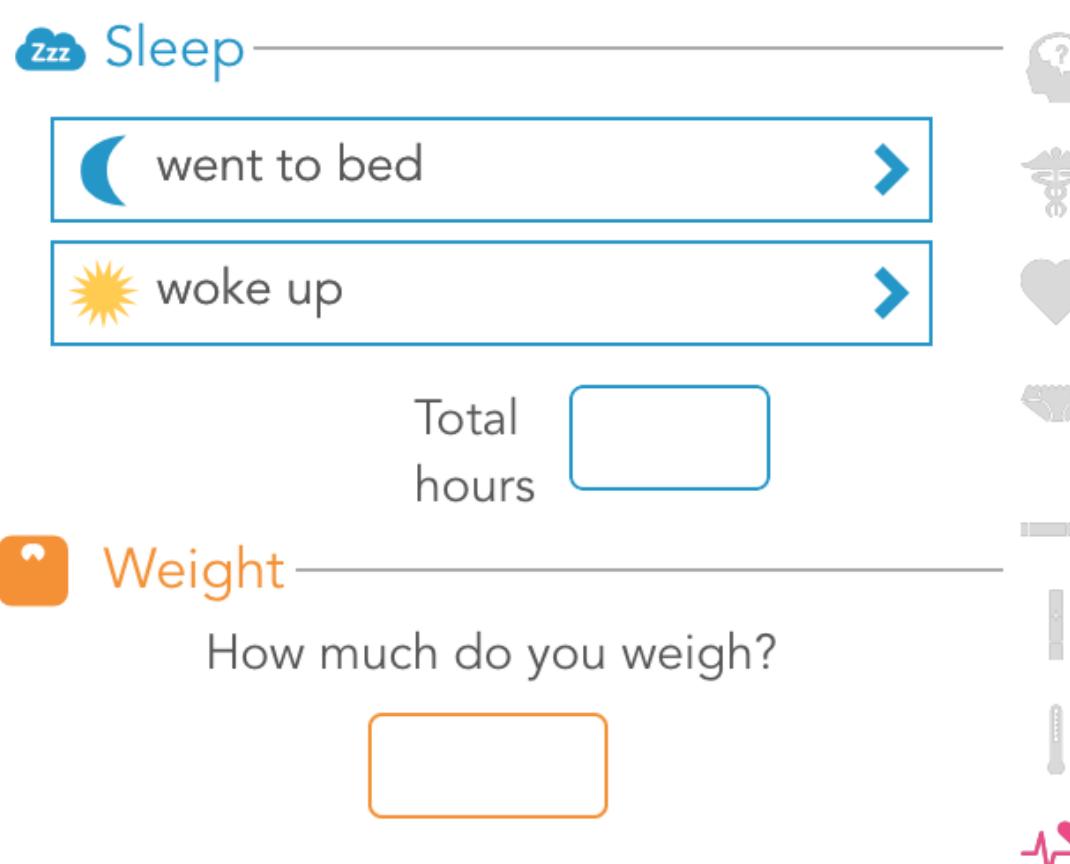
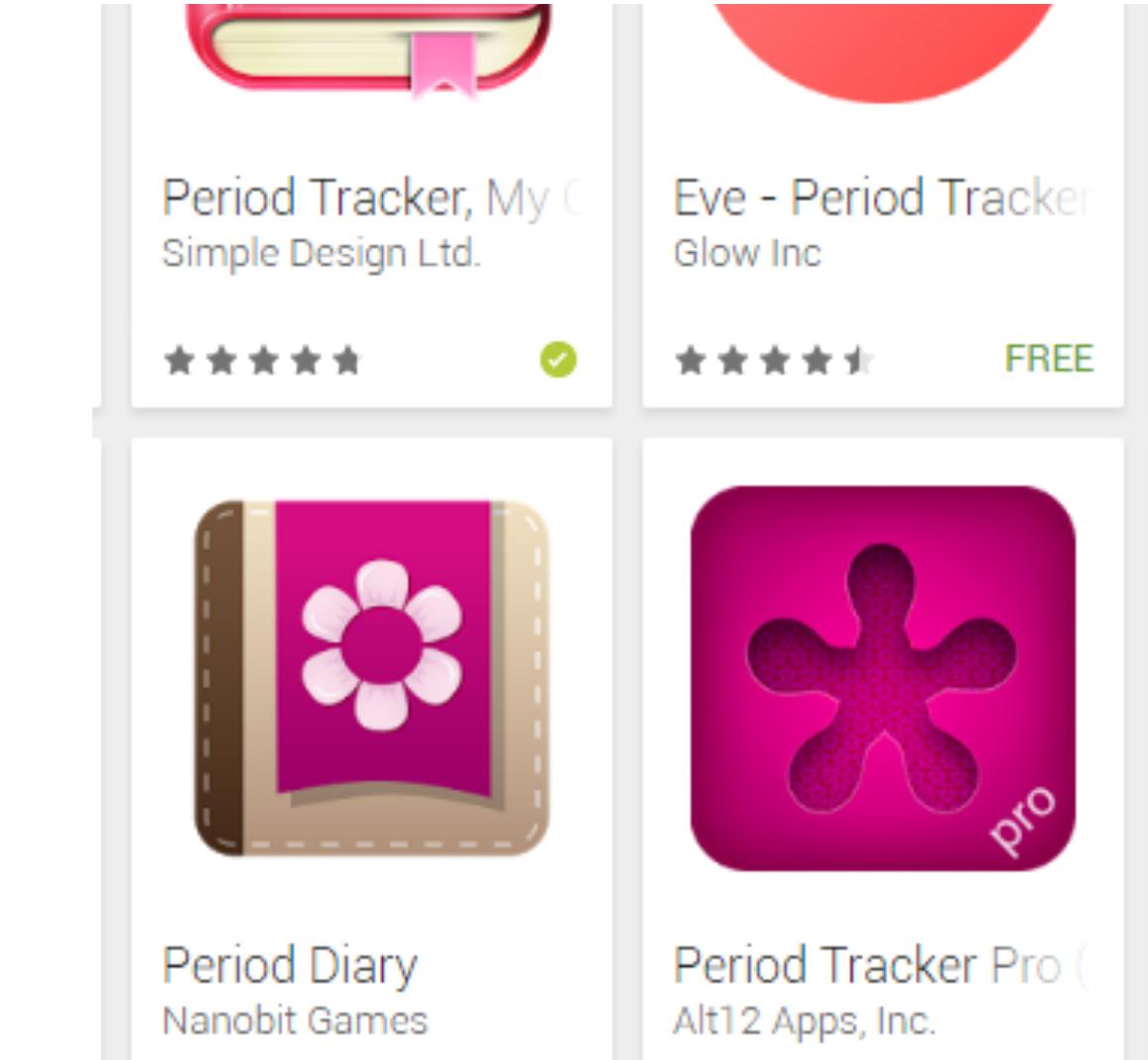
Tony Webster (@webster) - HealthKit period tracker – it's almost as if Apple just realized that women exist. #WWDC15

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

What are the design challenges and concerns in digital tools for menstrual tracking?

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

How are apps designed now?



Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

- Prediction Accuracy
- Aesthetics
- Gender Identity
- Sex and Ovulation

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

Prediction accuracy

“The whole reason I need a period app is due to my extremely irregular periods... For someone whose days vary it’s hard to use.”

(A1638)

Assumption: a regular cycle

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

Prediction accuracy

“I was very faithful at keeping track of my periods up until I got pregnant. A pregnancy, baby, and a year and a half of breastfeeding later, the app thinks my normal length is about every 700 days!”

(A81)

Assumption: no cycle disruption

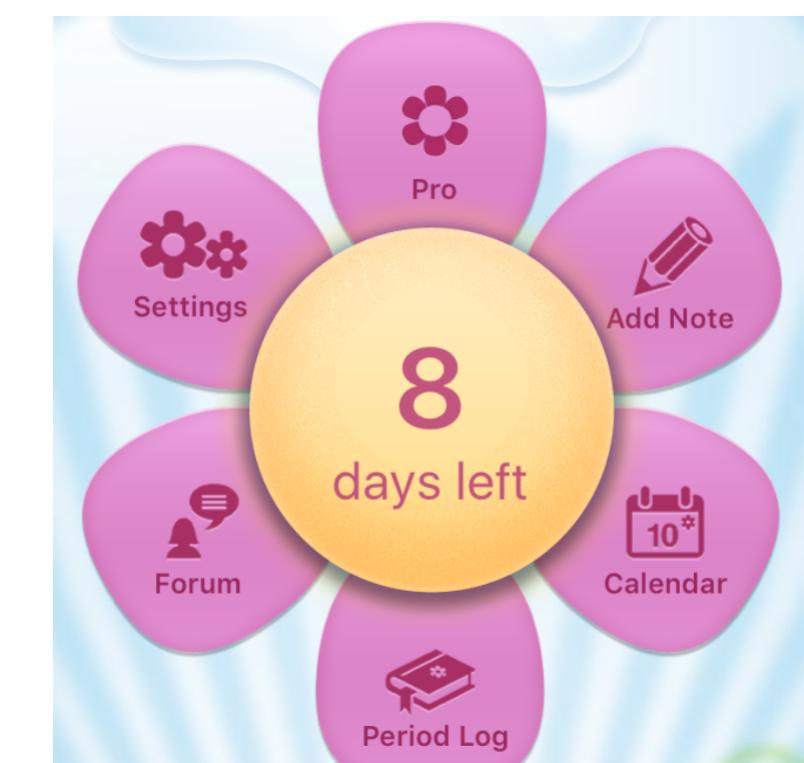
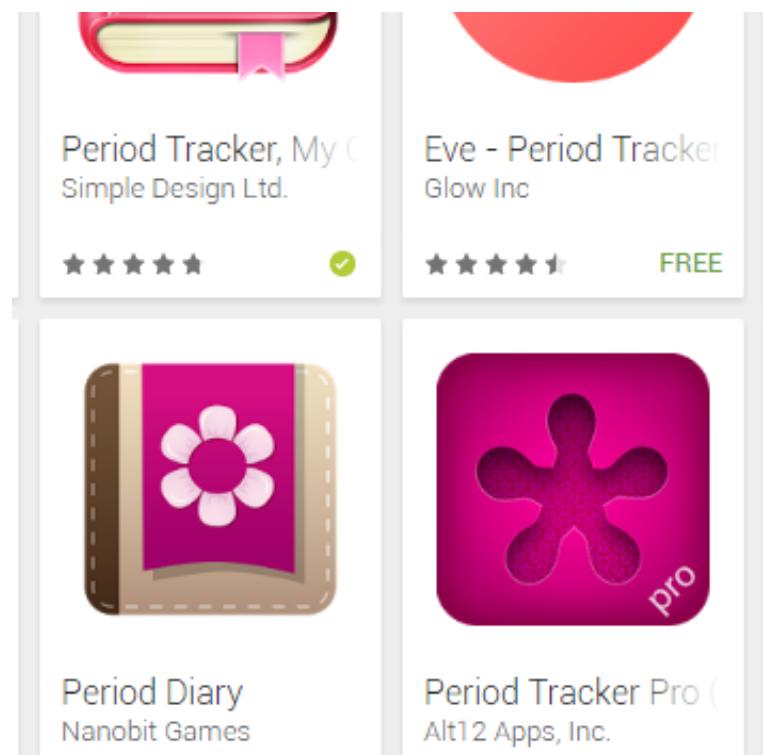
Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

Aesthetics

“I love the way it includes necessary info in a fashionably girly way. :-)”

(A914)



Period Diary
app

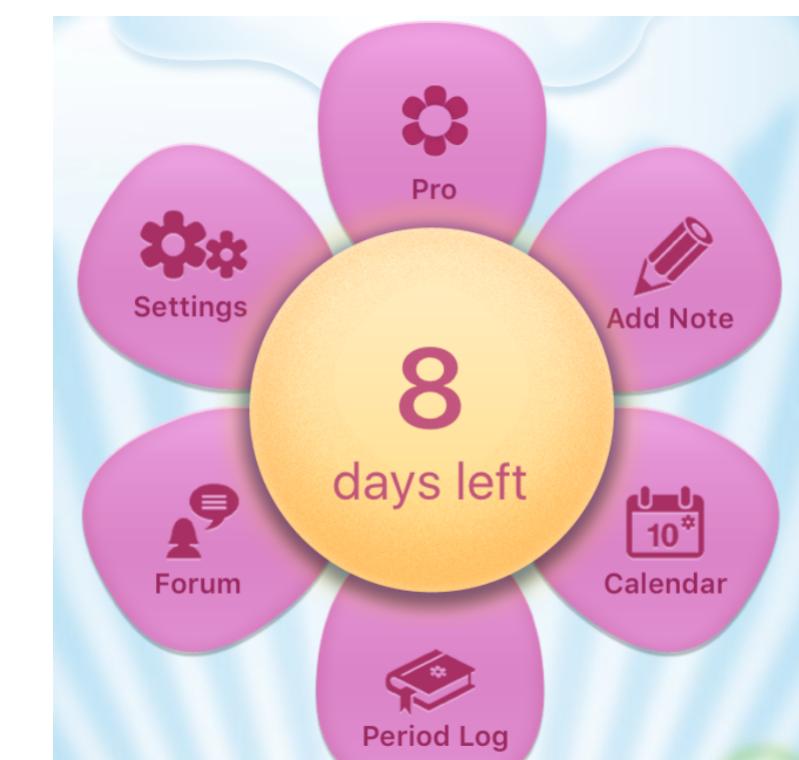
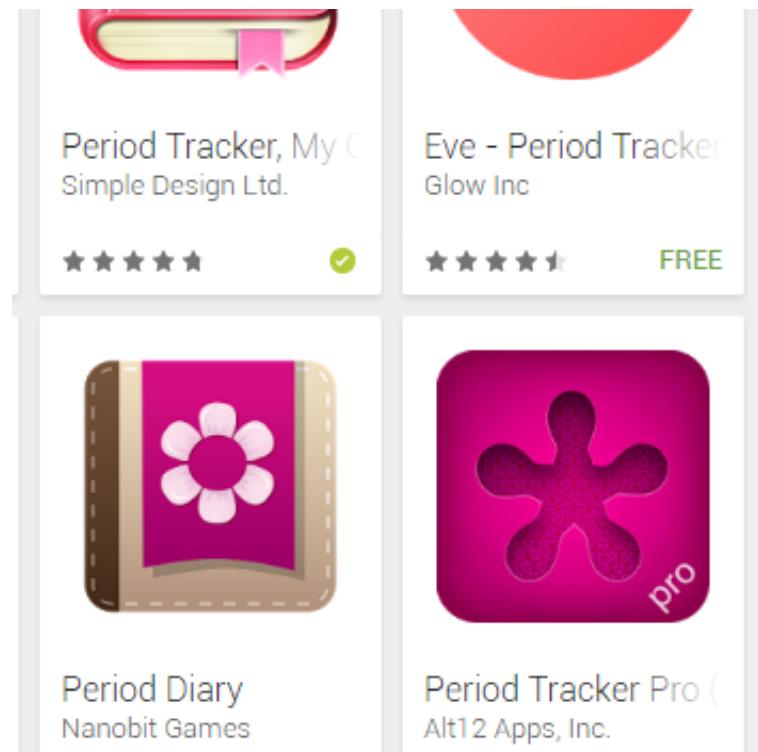
Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

Aesthetics

*“They have tried to make it ‘feminine’ by adding flowers...
It makes me feel like you are trying to ‘dumb it down’ for me.
Why can’t keeping track of my menstruation be a professional
and organized task?”*

(S98)



Period Diary
app

Assumption: aesthetic preference

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Design challenges and concerns

Gender identity

*“Had to find a period tracker that
didn’t misgender me. Only found two”*

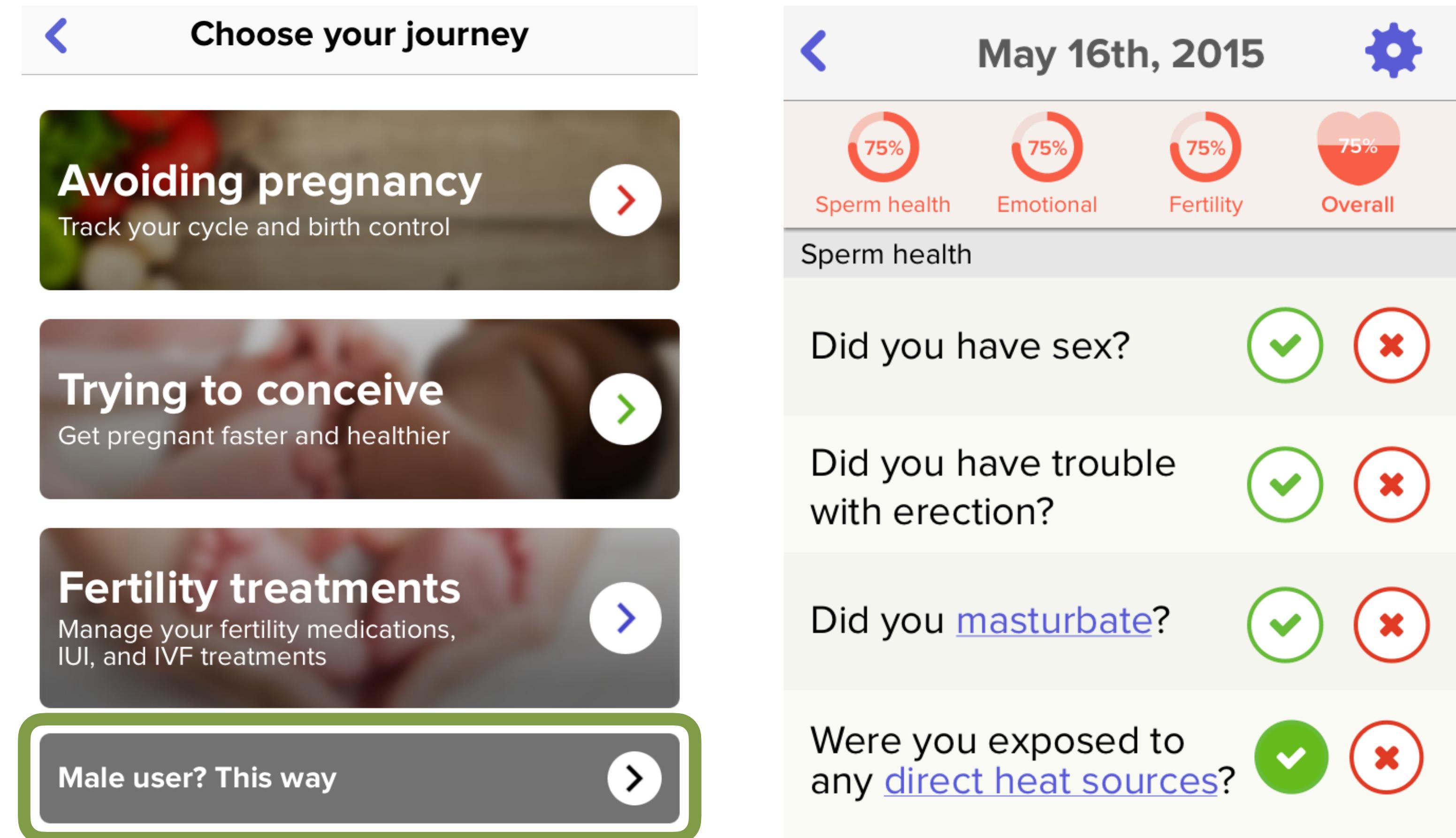
(A841)

Assumption: female identity

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Design challenges and concerns

Gender identity



Glow app

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Design challenges and concerns

Sex and ovulation

“[My app is] clearly trying to support my getting pregnant (which is not my intent) and not just agnostically for tracking”

(S467)

Assumption: trying to conceive

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Design challenges and concerns

Sex and ovulation

*“I would like if if they made a kid’s version because
idc [I don’t care] about fertile!! I’m too young!!”*

(A1936)

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

Sex and ovulation

*“I wish it were less catered to birth
and family planning... I suppose
I’m in the minority since I’m asexual.”*

(A1086)

Assumption: sexually active

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

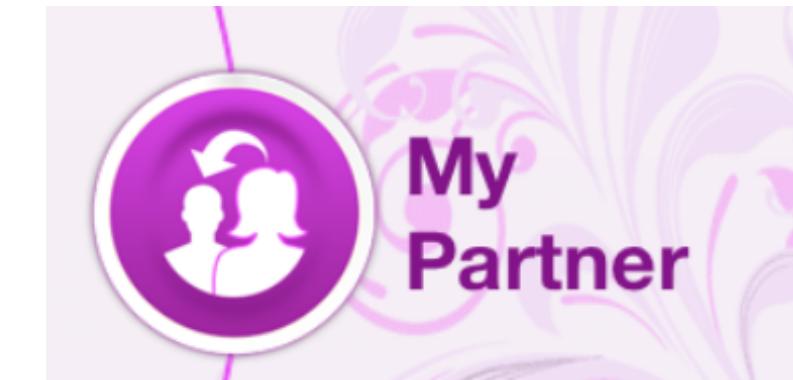
Sex and ovulation

*“Sex options assume sex with a man...
[it] reminds me I am not a ‘normal’ woman
whenever I use the app.”*

(S240)



Clue app



My Period Tracker
app

Assumption: male partner

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Design challenges and concerns

Sex and ovulation

*“My app shows predicted ovulation. I wish it didn’t.
We dealt with infertility and extensive treatments for 6 years.
I am no longer trying to get pregnant and I don’t like the reminder
of TTC [trying to conceive] or the tiny glimmer of hope that
maybe by magic this will be the month when a miracle happens.”*

(S104)

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Inclusive design

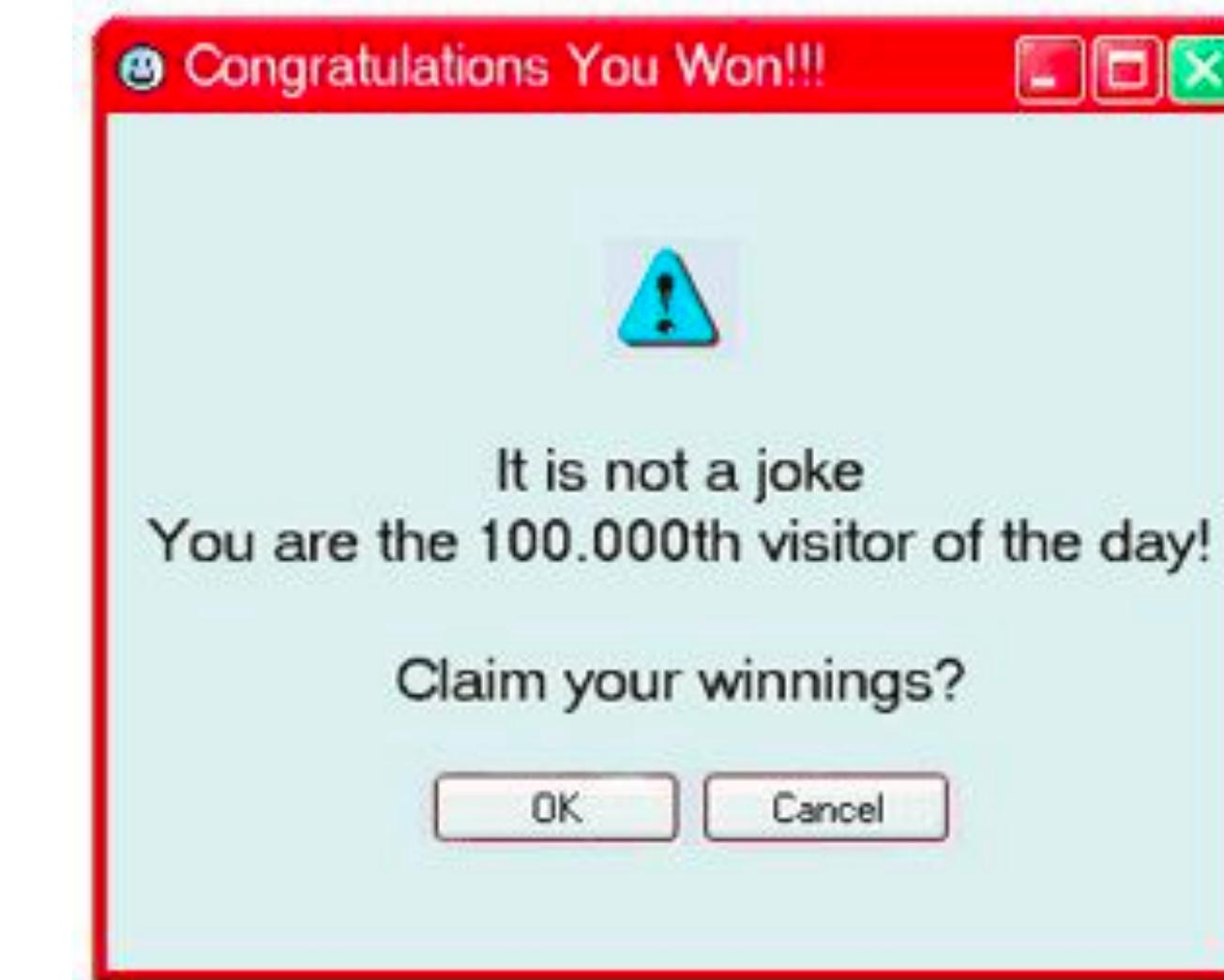
- Use terms, icons, etc. which are inclusive whenever possible
 - Representations of sex and gender
- Support customization when neutral terminology is not possible
 - What information is included in homepages
 - Data people enter
- People will customize when it's important to their identities & emotions

Epstein, Lee, Kang, Agapie, Schroeder, Pina, Fogarty, Kientz, Munson. Examining Menstrual Tracking to Inform the Design of Personal Informatics Tools. CHI 2015

Your choices can deceive people

“Dark” interface design patterns

- Patterns designed to mislead or trick people into doing something they don't want to do
- They have been around forever
- They have become more subtle and complex over time

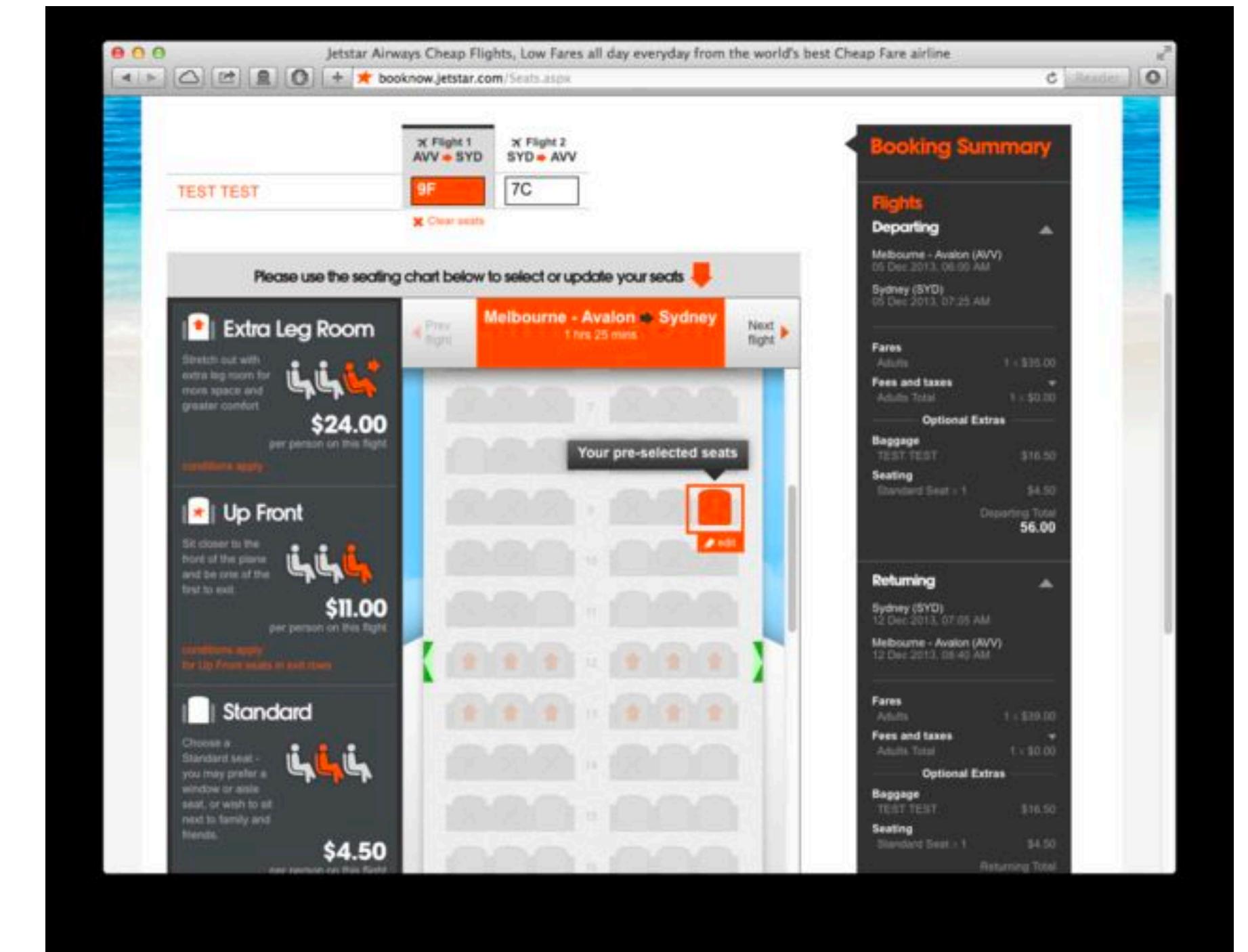


<https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c>

“Dark” interface design patterns

Misdirection

- Interface focuses your attention on one thing to distract you from another
 - Making more expensive options larger or more colorful
- Generalizable technique used in a lot of other dark patterns



<https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c>

“Dark” interface design patterns

Bait and switch

- Take a design pattern people know, and reverse the effect
 - The “X” button scheduled a Windows 10 upgrade anyways



<https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c>

“Dark” interface design patterns

Trick questions

- Use unusual wording in questions to promote unintended actions
- “Required opt-out” (unchecked a box) is a more benign alternative

Please enter your details to reserve your item(s)

Title : Mr. ▾

First name * : First name

Last name * : Last name

Email * : Email

Phone number * : Phone number

Please do not send me details of products and offers from Currys.co.uk

Please send me details of products and offers from third party organisations recommended by Currys.co.uk

Reserve items

<https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c>

“Dark” interface design patterns

Confirmshaming

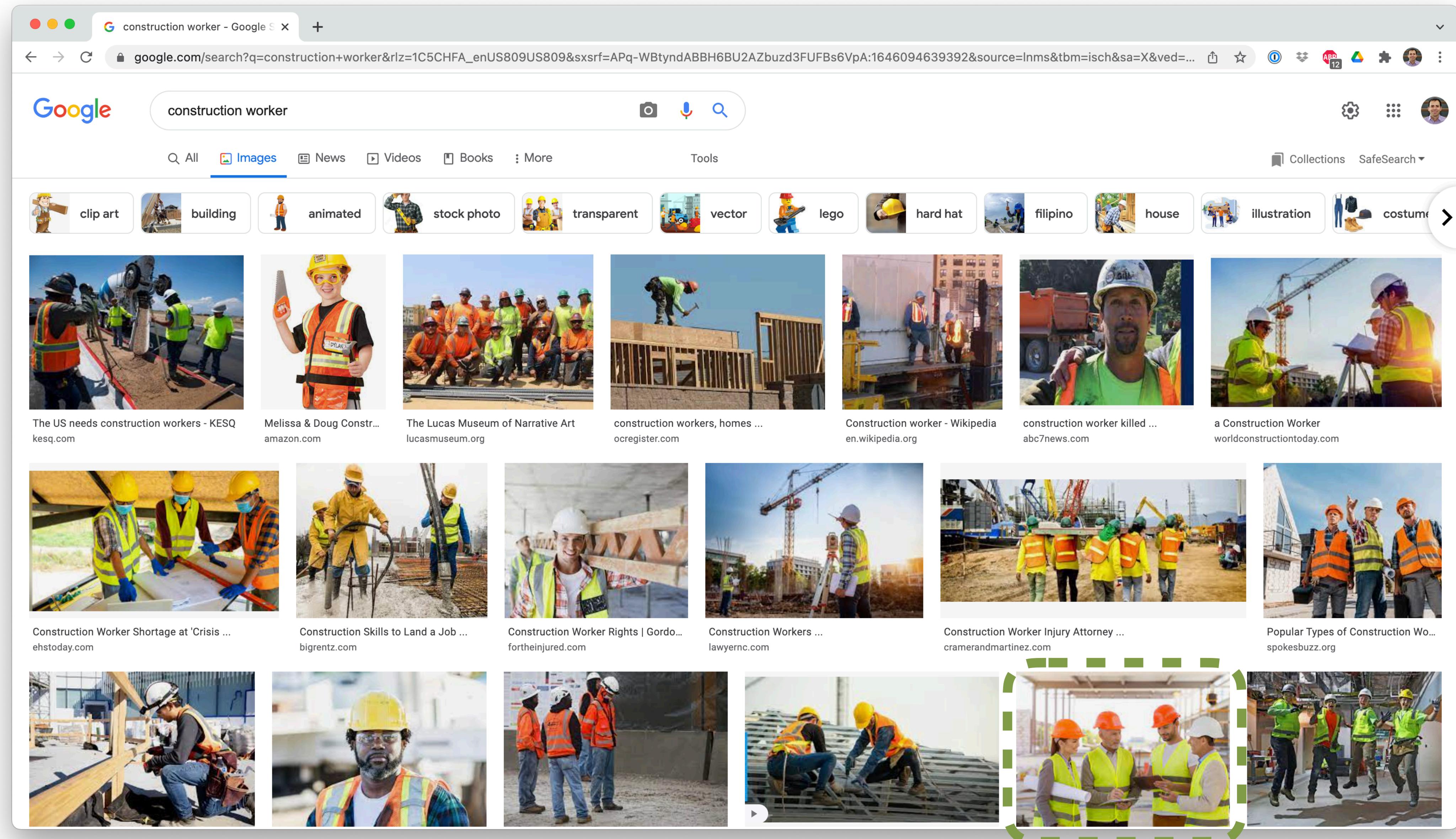
- Guilt a person into opting in to something
- Usually done through wording



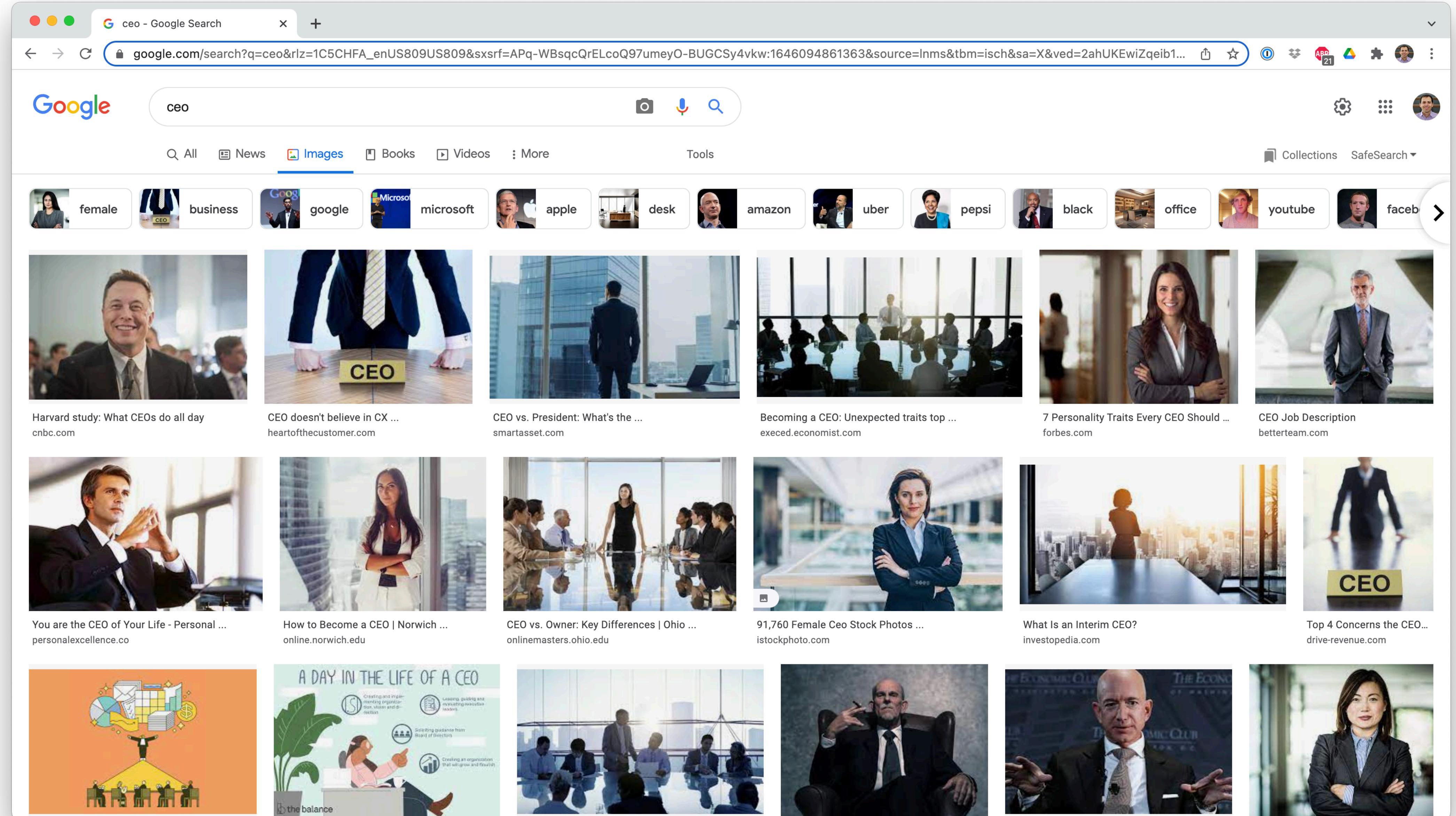
“Dark” interface design patterns

- In these cases, the person implementing the interface usually knows exactly what they are doing
- Intent is to mislead or persuade in order to profit, increase reach, etc.
- But more often, design choices are more subtle

Your choices can influence people



Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015



Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015

NEWS

The first woman CEO to appear in a Google Images search is ... CEO Barbie



By Zach Miners

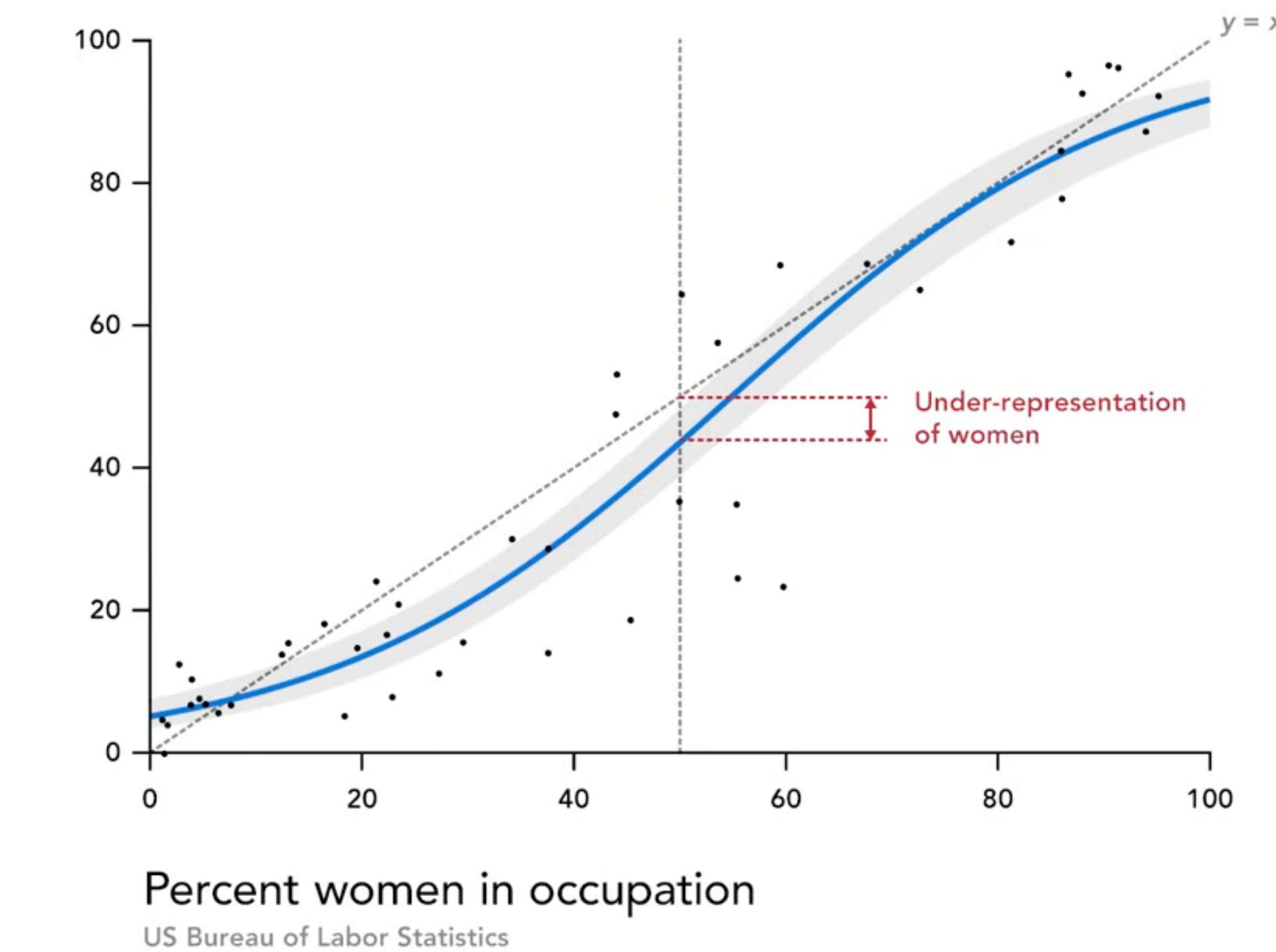
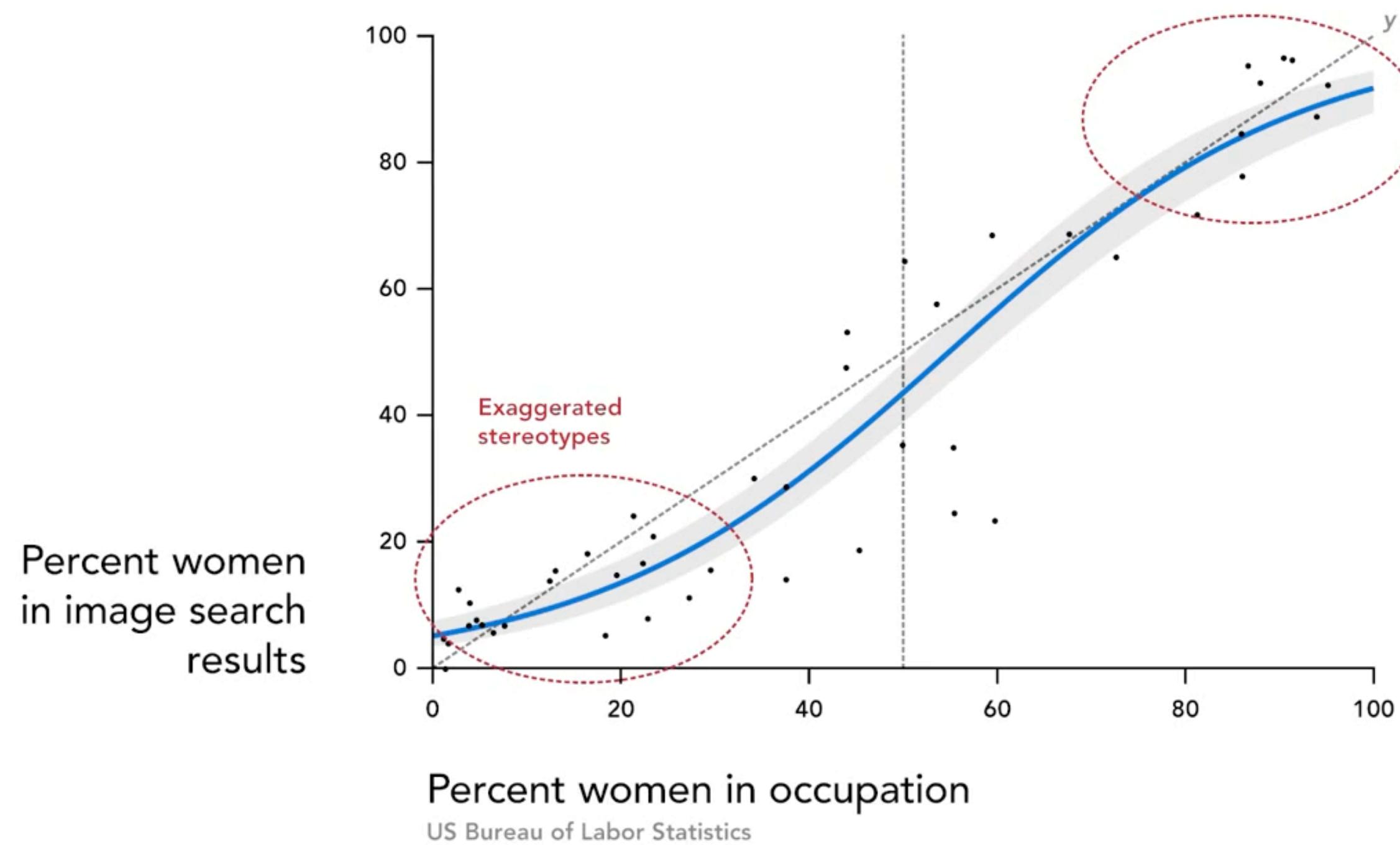
PCWorld | APR 9, 2015 3:00 PM PDT

The [Ellen Pao-Kleiner Perkins trial](#) shone a light on discrimination in the tech industry, but for a more immediate look at the challenges women face in corporate America, look no further than a Google Images search.

Doing a search at the site for "CEO" reveals just one female face in the top results: CEO Barbie. The doll (which [may not even be](#) a real Barbie product) appears way down in the results, under a sea of male, mostly white faces.

It's not really the fault of Google, whose algorithms in many ways reflect the pervasive culture: Most of the top images labeled CEO at popular sites apparently are men. But it's an indication of how under-represented women are at the top of the corporate ladder.

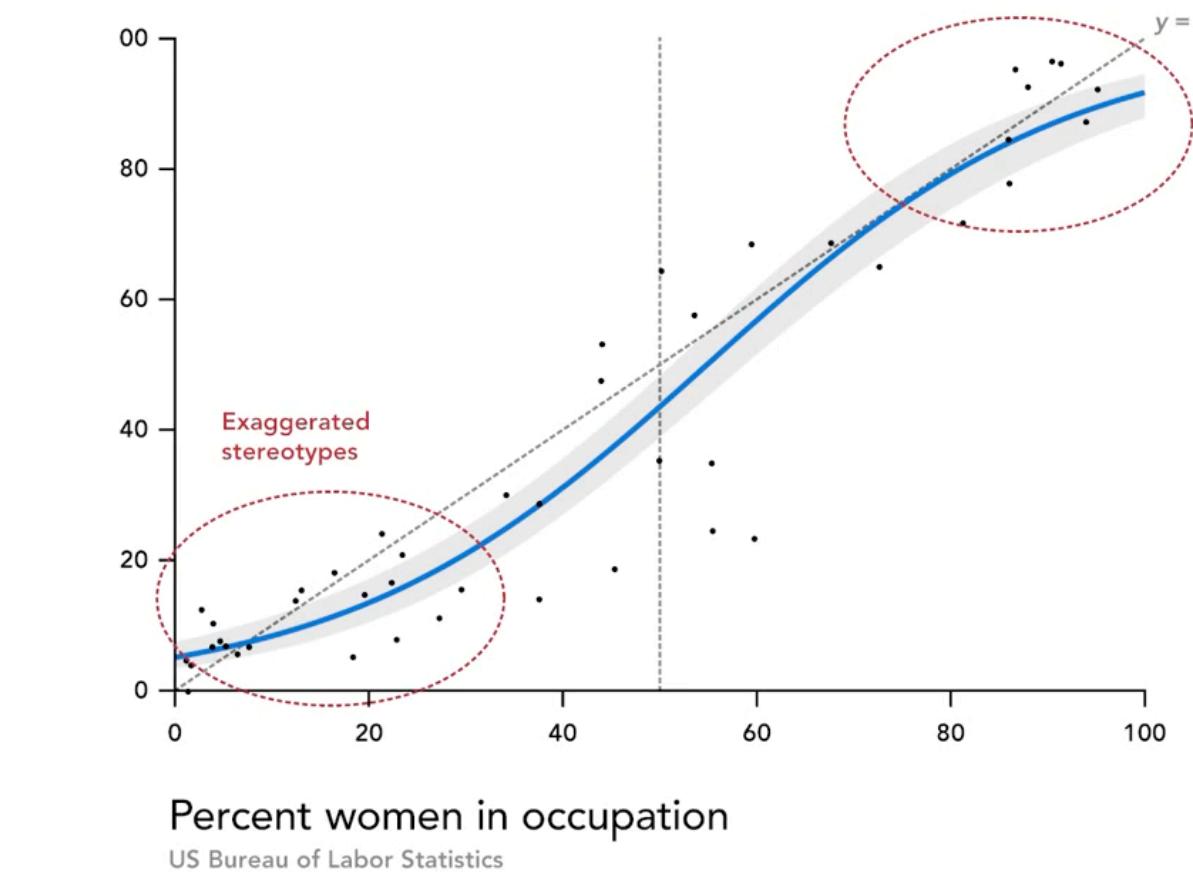
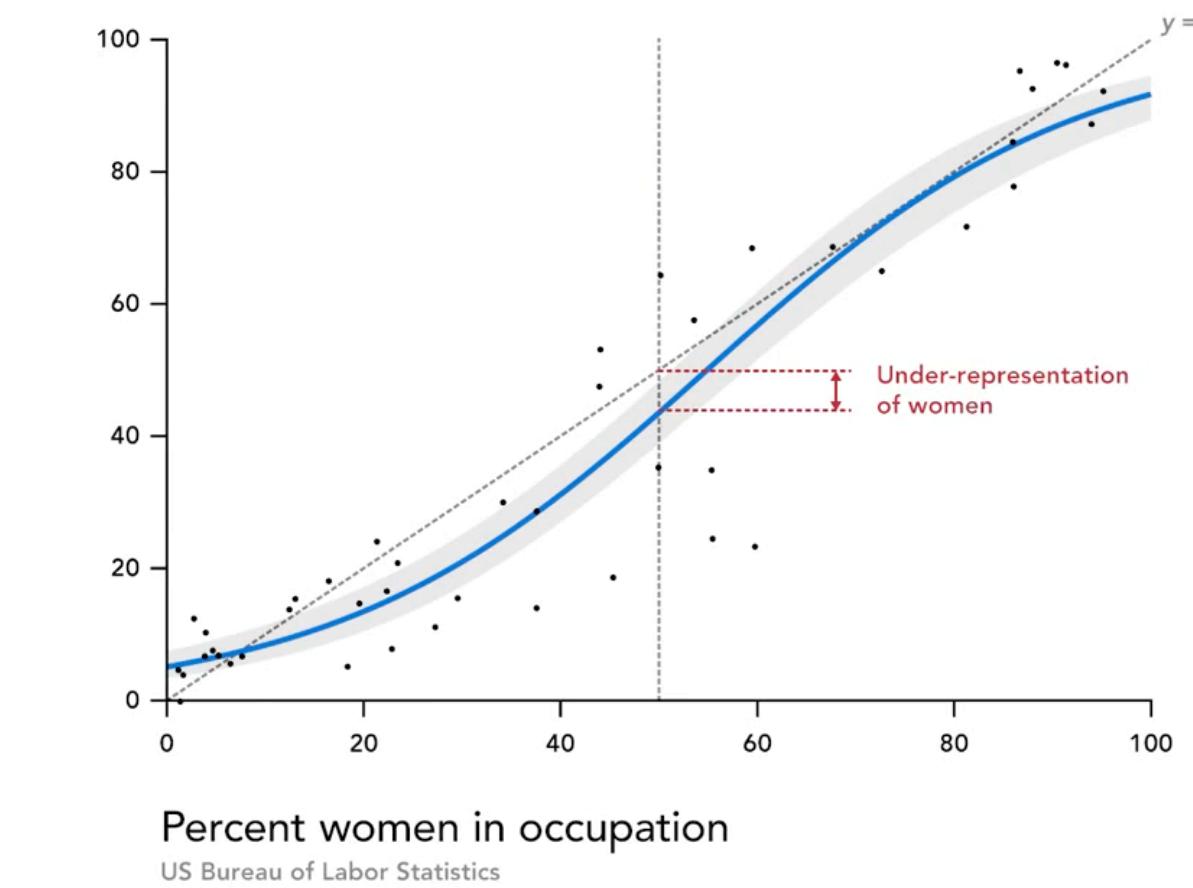
Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015



Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015

Stereotypes

- Why might the stereotypes be exaggerated?
- Why might women be underrepresented?



Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015

Question



Which search result will people prefer for “software developer”?

A



a software engineer
theladders.com



Software Engineering Jobs Dominat...
spectrum.ieee.org



Senior Software Engineer ...
elearnerresources.com



Hiring Software Engineers ...
addthis.com



Famous Software Engineers & Their ...
allengineeringschools.com



Software engineer stock photo. Image ...
dreamstime.com

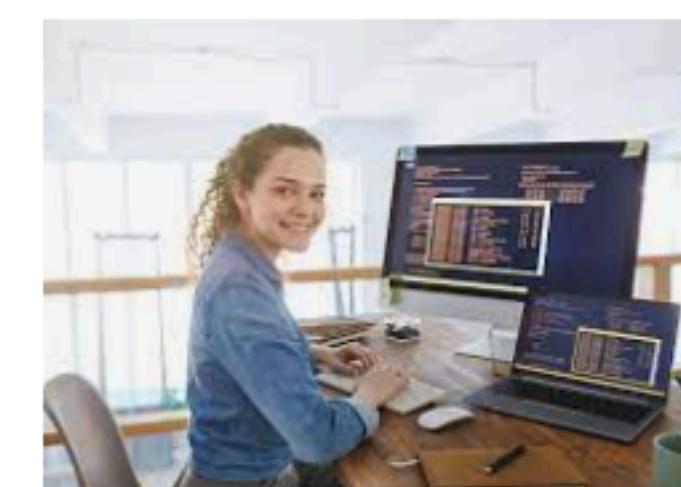


Softw...
medi...

B



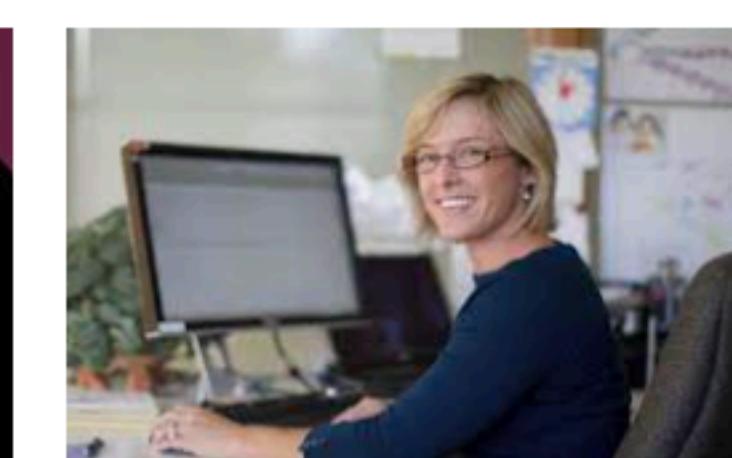
Software Engineer? - TryEngineering.org ...
tryengineering.org



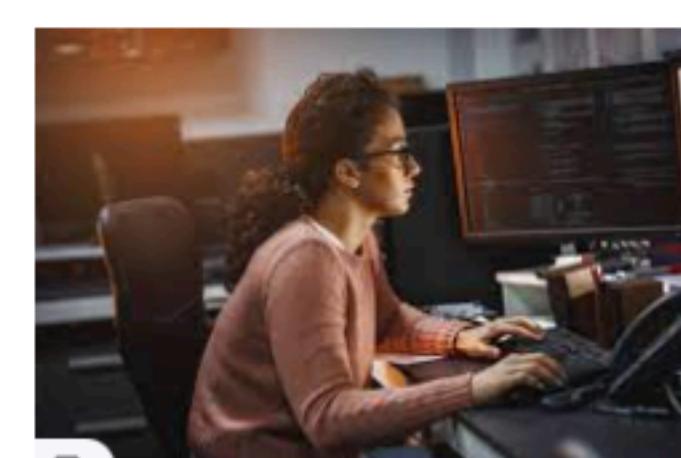
Female Software Engineer Pictures ...
unsplash.com



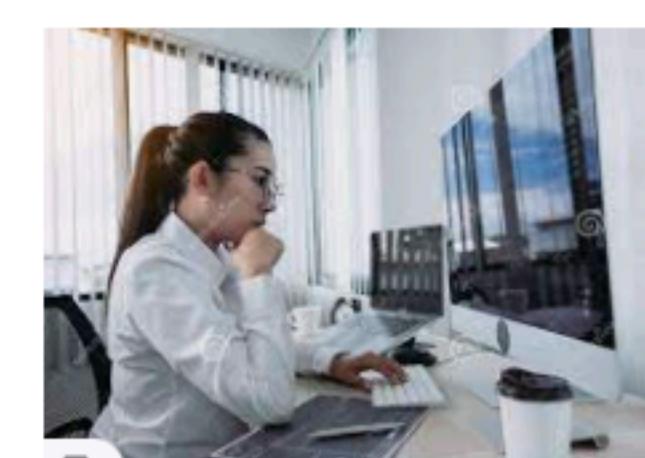
Software Engineering is the Hottest Job ...
blog.hackbrightacademy.com



work for if you're a woman in tech ...
geekwire.com

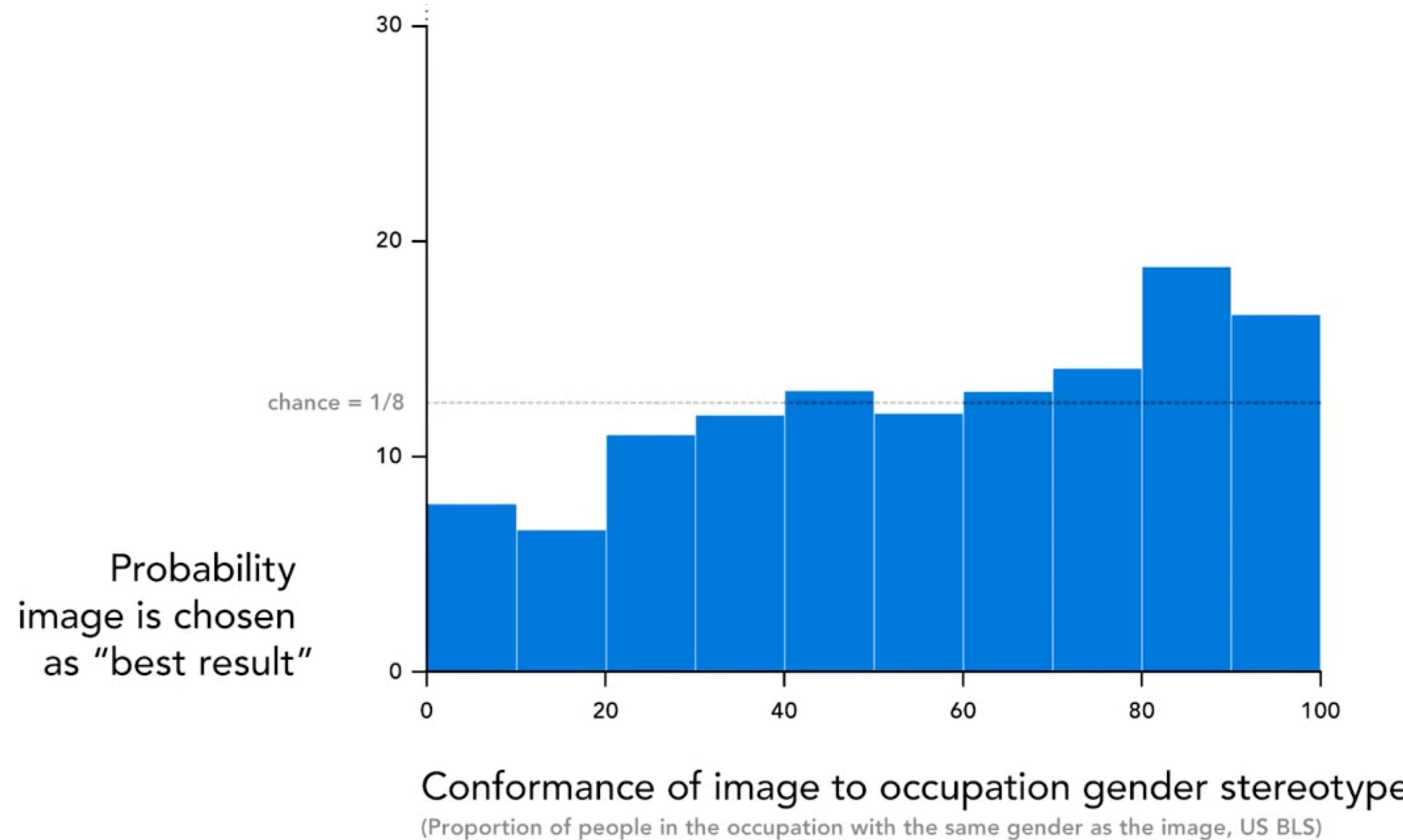


114,153 Software Engineer Stock Photos ...
istockphoto.com



1,112 Female Software Engineer Photo...
dreamstime.com

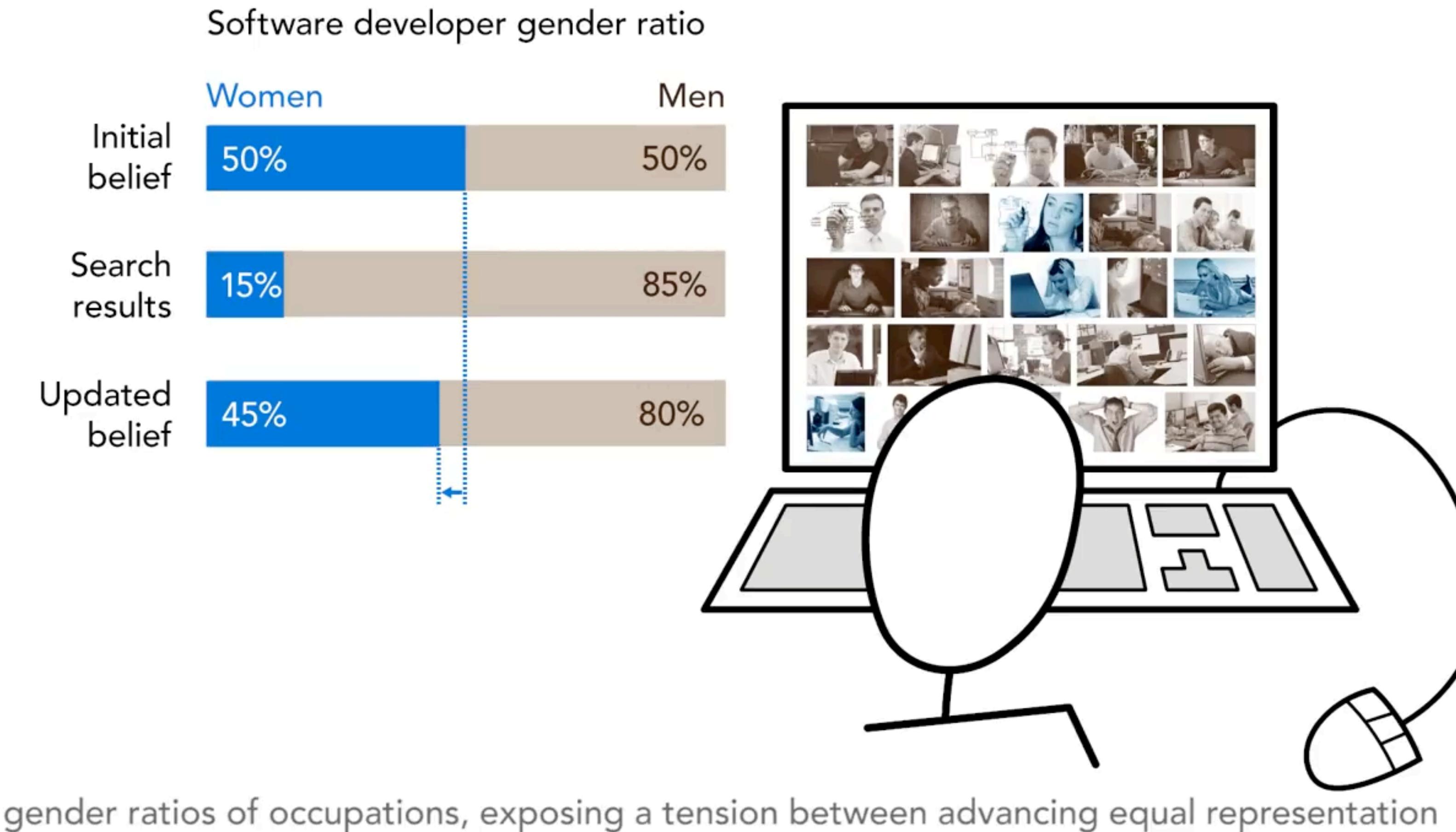
Giving people what they want



We found that people tend to prefer results matching occupational gender stereotypes

Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015

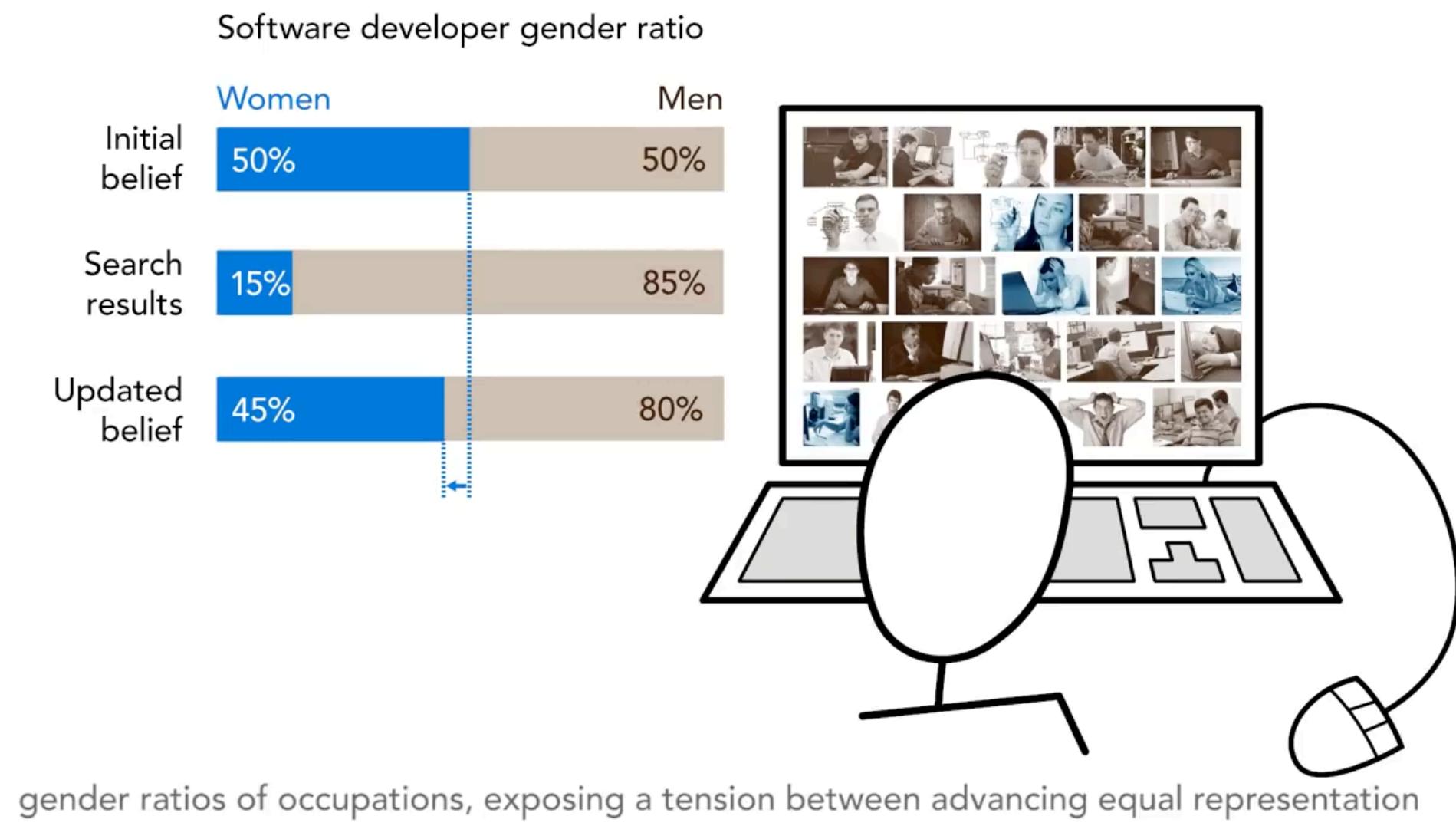
Design tension



Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015

Design tension

- Search result choices influence people's perceptions
- As a designer, you have a choice:
 - Do you give people what they want?
 - Do you try to influence what they find acceptable?
- Saying “the algorithm” decided is weak; we know what traits algorithms are reinforcing



Matthew Kay, Cynthia Matuszek, Sean A. Munson. Unequal Representation and Gender Stereotypes in Image Search Results for Occupations. CHI 2015

Home

Search

Your Library

Create Playlist

Liked Songs

Retro Running

00s Pop Run

Energy Booster: Pop

Pumped Pop

10s Pop Run

2000s-2010s bangers

Born To Run 150 BPM

Throwback Workout

2000s Mix

iTunes

Good afternoon

Dinner Lounge

Retro Running

Energy Booster: Pop

2000s-2010s bangers

00s Pop Run

Pumped Pop

Chill Instrumental Beats

Mega Hit Mix

Episodes for you

SEE ALL

THE JOE ROGAN EXPERIENCE #1785 - EARTHQUAKE

Office Ladies

Distractable

The Always Sunny Podcast

MISFITS PODCAST

STORM BEFORE THE STORM

#1785 - Earthquake

FEB 26 · 126 MIN

Mafia

FEB 23 · 68 MIN

Criminally Subliminal

FEB 28 · 63 MIN

The Gang Gets Inv...

FEB 28 · 53 MIN

Spotify Exclusive: Dro...

JAN 22 · 66 MIN

The Storm Before The...

JUL 2017 · 55 MIN

The screenshot shows a dark-themed article from The New York Times. At the top left is the 'Popcast' logo. In the center, the title 'Spotify's Ongoing Joe Rogan Problem' is displayed in large white text, with a date 'Feb. 9, 2022' above it. Below the title is a subtitle: 'The controversy over the star podcaster and misinformation raised thorny questions about the streaming service's role as a platform, and exacerbated its conflicts with musicians.' The text is attributed to 'Hosted by Jon Caramanica. Produced by Pedro Rosado.' At the bottom, there are two circular icons with the number '10' and a play button icon, followed by the word 'Listen' and the duration '58:52'. The background features abstract diagonal lines in red, blue, and yellow.

Feb. 9, 2022



Subscribe to Popcast!

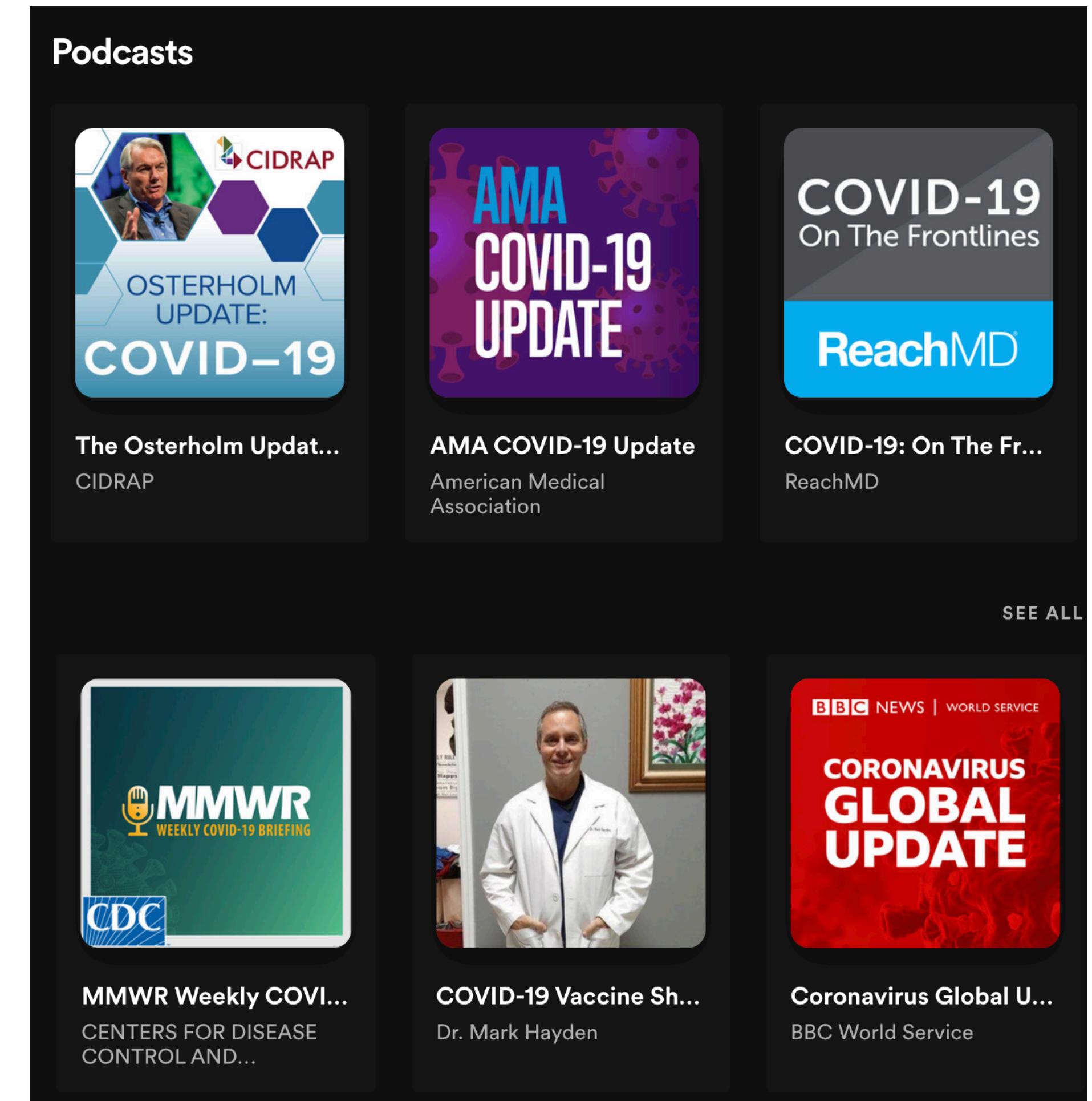
[Apple Podcasts](#) | [Spotify](#) | [Stitcher](#)

Over the last few weeks, Spotify has found itself in the cross hairs of critics because of its relationship with the comedian turned podcaster Joe Rogan. Rogan's show, "The Joe Rogan Experience," has been [criticized for promoting Covid-19 misinformation](#) — Neil Young and Joni Mitchell had their music removed from the service in protest — and a compilation of video clips of Rogan using a racial slur on past episodes resurfaced online, drawing more ire.

[Rogan apologized](#), and he worked with Spotify to [remove approximately 70 episodes](#) of his show from the streaming service, with which he has an exclusive partnership. But the incident raised thorny questions about Spotify's role in vetting the content it distributes, especially from partners it is in exclusive business with. And it also exacerbated issues it has with musicians and songwriters who believe [it systematically underpays them](#).

<https://www.nytimes.com/2022/02/09/arts/music/rogan-spotify-popcast.html>

- Come for entertainment, but get misinformation alongside
- The ordering of Spotify's interface leads to information spread
- Plenty of other podcasts are giving more reliable COVID-19 news
- There are also questions around how platforms should vet their content, but that's for another time



Concluding thoughts

- As people who implement interfaces, we need to be thinking about what people and values we are promoting
- We can't expect that other people will

**IN4MATX 161 reflects on
interfaces in society in more depth**

Today's goals

By the end of today, you should be able to...

- Critically examine choices made by interface designers and developers
- Consider the implications, positive or negative, of those choices
- Describe ways in which interfaces can exclude people, with the aim of avoiding those
- Articulate what makes a design choice “dark”

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Interaction & Society

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