



# Fitts' Law

The time to acquire a target is a function of the distance to and size of the target.

## OVERVIEW

In 1954, psychologist Paul Fitts showed that the time required to move to a target depends on the distance to it, yet relates inversely to its size.\* By his law, fast movements and small targets result in greater error rates, due to the speed-accuracy trade-off. Fitts' law influenced the convention of making interactive buttons large because smaller buttons are more difficult and time-consuming to click. Likewise, the distance between a user's pointer and interactive elements should be kept as short as possible (e.g., right-click pop-up menus and short drop-downs reduce travel time and thereby improve ease-of-use).

## TAKEAWAYS

- If you want something to be tapped or clicked, make it big.
- For mobile, place interactive elements near the bottom of screens where thumbs can easily reach them.
- For desktop, position newly revealed interactive elements near the last element the user interacted with.

## SOURCE

\* Interaction-Design.org, Fitts' Law



# Hick's Law

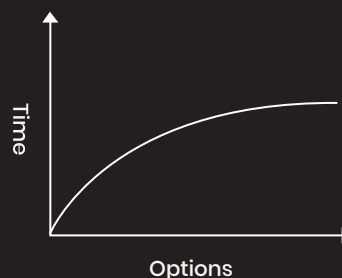
Increasing the number of options increases the time needed to make a decision, but categorizing can dampen the effect.

## OVERVIEW

Hick's Law explains how the number of possible choices impacts the time it takes for a person to make a decision. Increasing the number of uncategorized choices increases decision time linearly, while categorizing choices causes the time needed to make decisions to show a logarithmic pattern. Hick's Law has a logarithmic form because people subdivide the total collection of choices into categories, eliminating about half of the remaining choices at each step, rather than considering each and every choice one-by-one, which would require linear time.\* Hence, as the number of choices increases, categorizing options improves user experience.

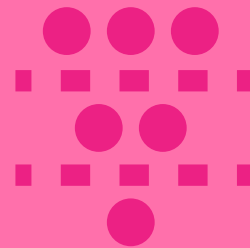
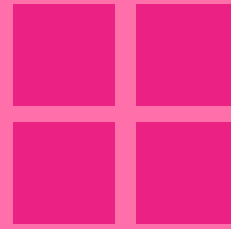
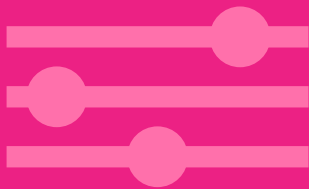
## TAKEAWAYS

- Fewer options leads to faster decisions.
- As options increase, categorizing decreases decision time.



## SOURCE

\* Wikipedia.org, Hick's law



# Jakob's Law

Users spend most of their time on other sites.\* Therefore, users prefer your website to work the same as others.

## OVERVIEW

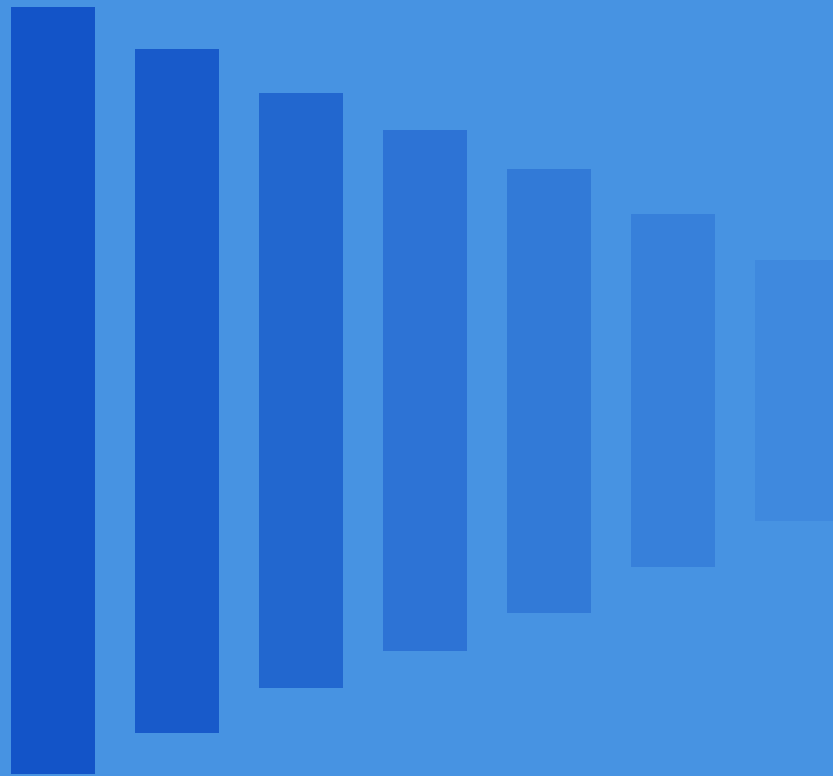
Jakob Nielsen, Ph.D. and principal of the Nielsen Norman Group, coined the term Jakob's Law. He says, "Consistency is one of the most powerful usability principles: when things always behave the same, users don't have to worry about what will happen. Instead, they know what will happen based on earlier experience. ... The more users' expectations prove right, the more they will feel in control of the system and the more they will like it. And the more the system breaks users' expectations, the more they will feel insecure. ... Users form their expectations for your site based on what's commonly done on most other sites. If you deviate, your site will be harder to use and users will leave."

## TAKEAWAYS

Don't reinvent the wheel. Your website should behave as users expect based on their interactions with other sites.

## SOURCE

\* NNGroup.com, Top 10 Mistakes in Web Design



# Miller's Law

The number of objects an average human can hold in working memory is  $7 \pm 2$ .\*

## OVERVIEW

*The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information* is one of the most highly cited papers in psychology. It was published in 1956 in *Psychological Review* by the cognitive psychologist George A. Miller of Princeton University's Department of Psychology. It is often interpreted to argue that the number of objects an average human can hold in working memory is  $7 \pm 2$ . This is frequently referred to as "Miller's Law."

## TAKEAWAYS

- Simplify. People can remember 7 objects, but that doesn't mean you should max out their memory.
- Chunk content into groups of 7 objects or fewer.
- Lists in your navigation should be 7 items or fewer.

## SOURCE

\* Wikipedia.org, The Magical Number Seven, Plus or Minus Two



# Occam's Razor

Among equally good solutions, choose the one that makes the fewest assumptions.

## OVERVIEW

William of Occam was an English friar, scholastic philosopher, and theologian; and his “razor” is a problem-solving principle that reduces the possibility of error. He originally wrote, “Plurality should not be posited without necessity.”\* Over time, his original definition has been refined and is now more specific: among equally good solutions to a problem, choose the one that makes the fewest assumptions because the more assumptions you make, the greater possibility there is for error. Choosing solutions that make fewer assumptions leads to greater simplicity.

## TAKEAWAYS

- Make as few assumptions as possible.
- Remove unnecessary elements and steps from designs.
- The simplest solution is often the best one.

## SOURCE

\* Britannica.com, Occam's razor