Case Study

Difference between groups
“Stents and stroke”

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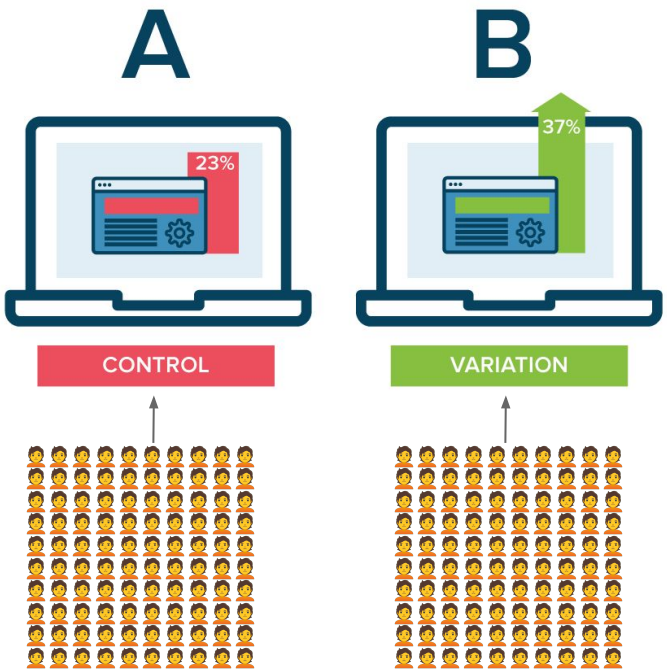
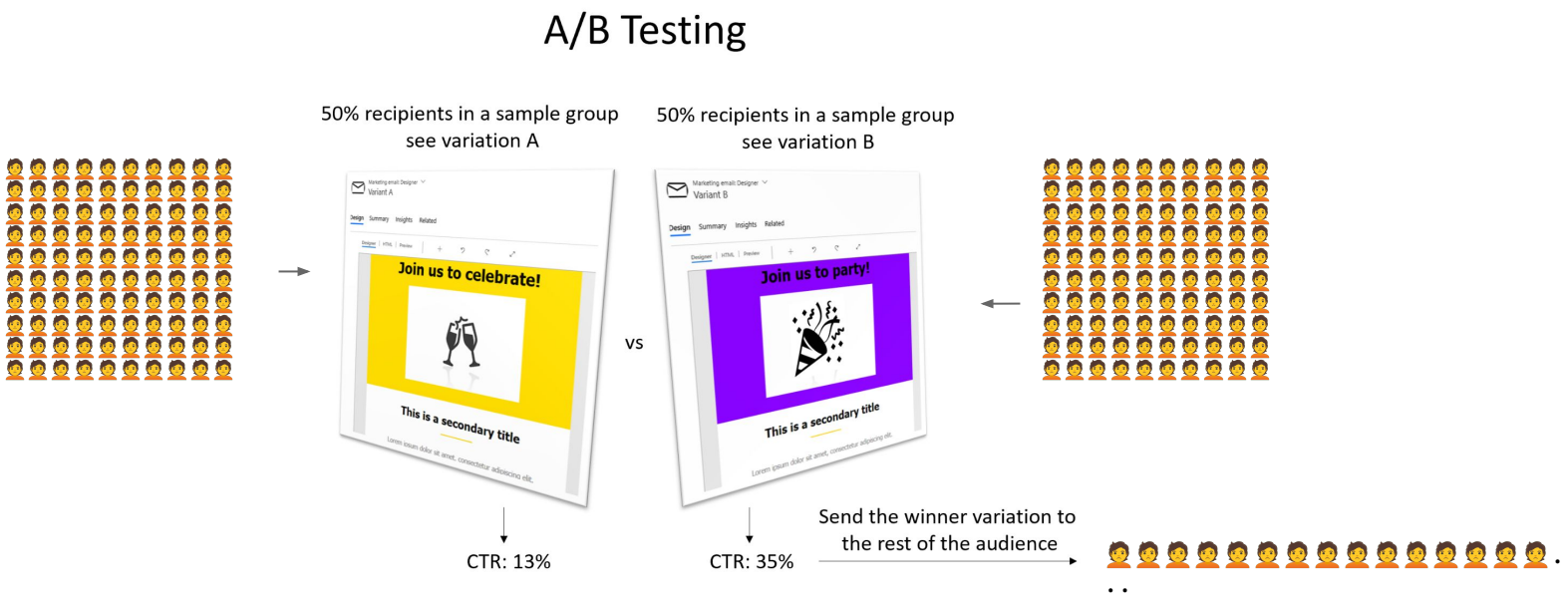
Du users purchase more when we change the color of a button?



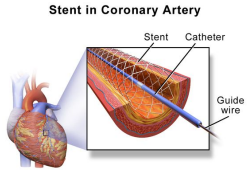
Source: Optimizely (2019) https://www.optimizely.com/optimization-glossary/ab-testing/

Do users click more often on a certain image?

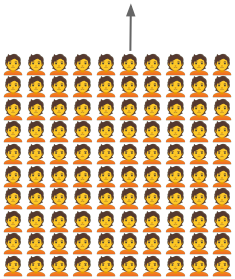


Source: Microsoft (2019) https://docs.microsoft.com/de-de/dynamics365-release-plan/2019wave2/dynamics365-marketing/email-ab-testing

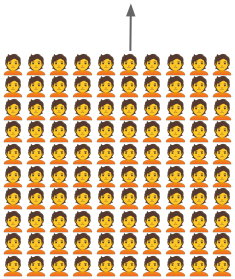
Does the use of stents reduce the risk of stroke?



Control



Treatment



Picture source: Wikipedia

Results for five patients from a stent study

	group	outcome	time
0	treatment	stroke	30 days
1	treatment	stroke	30 days
2	treatment	stroke	30 days
3	treatment	stroke	30 days
4	treatment	stroke	30 days

An experiment was designed to study the effectiveness of stents in treating patients at risk of stroke (Chimowitz et al. 2011).

Descriptive statistics for the stent study

time	30 days		365 days		All
outcome	no event	stroke	no event	stroke	
group					
control	214	13	199	28	454
treatment	191	33	179	45	448
All	405	46	378	73	902

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Practice: Compute the proportion of patients in the

a. treatment group who had a stroke by the end of their first year.
b. control group who had a stroke by the end of their first year.

Source: Çetinkaya-Rundel & Hardin (2021)

Does the data
show a “real”
difference between
the groups?

Do not generalize the results of this study to all patients and all stents.

- The study looked at patients with very specific characteristics.
- Patients volunteered to be a part of this study and may not be representative of all stroke patients.
- There are many types of stents and this study only considered one.

Source: Çetinkaya-Rundel & Hardin (2021)

Resources

The slides are based on the excellent book “Introduction to Modern Statistics” by Mine Çetinkaya-Rundel and Johanna Hardin.

The online version can be **accessed for free**:

https://openintro-ims.netlify.app/data-hello.html