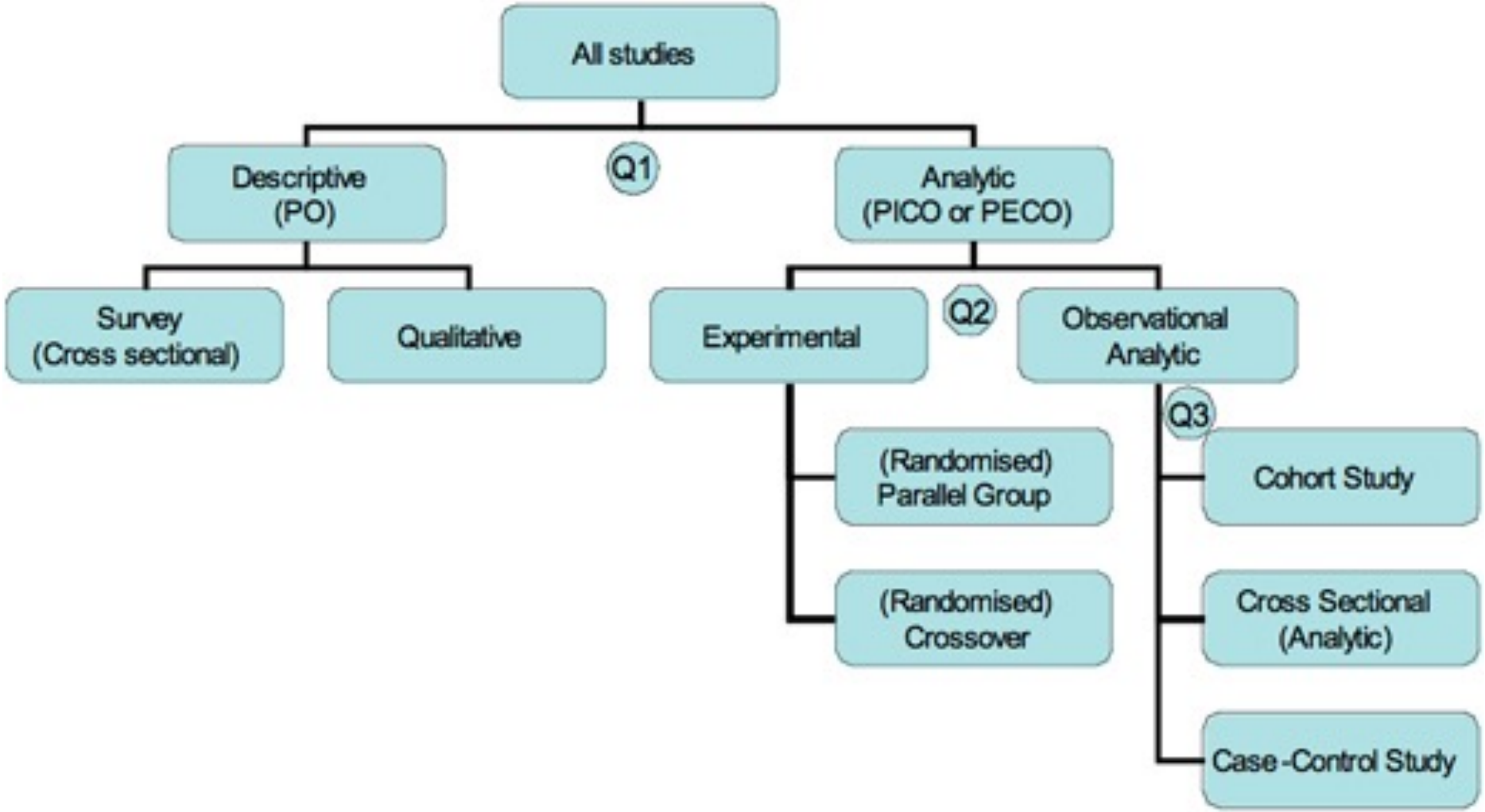
Study Design

ICS 491

Types of Study Designs

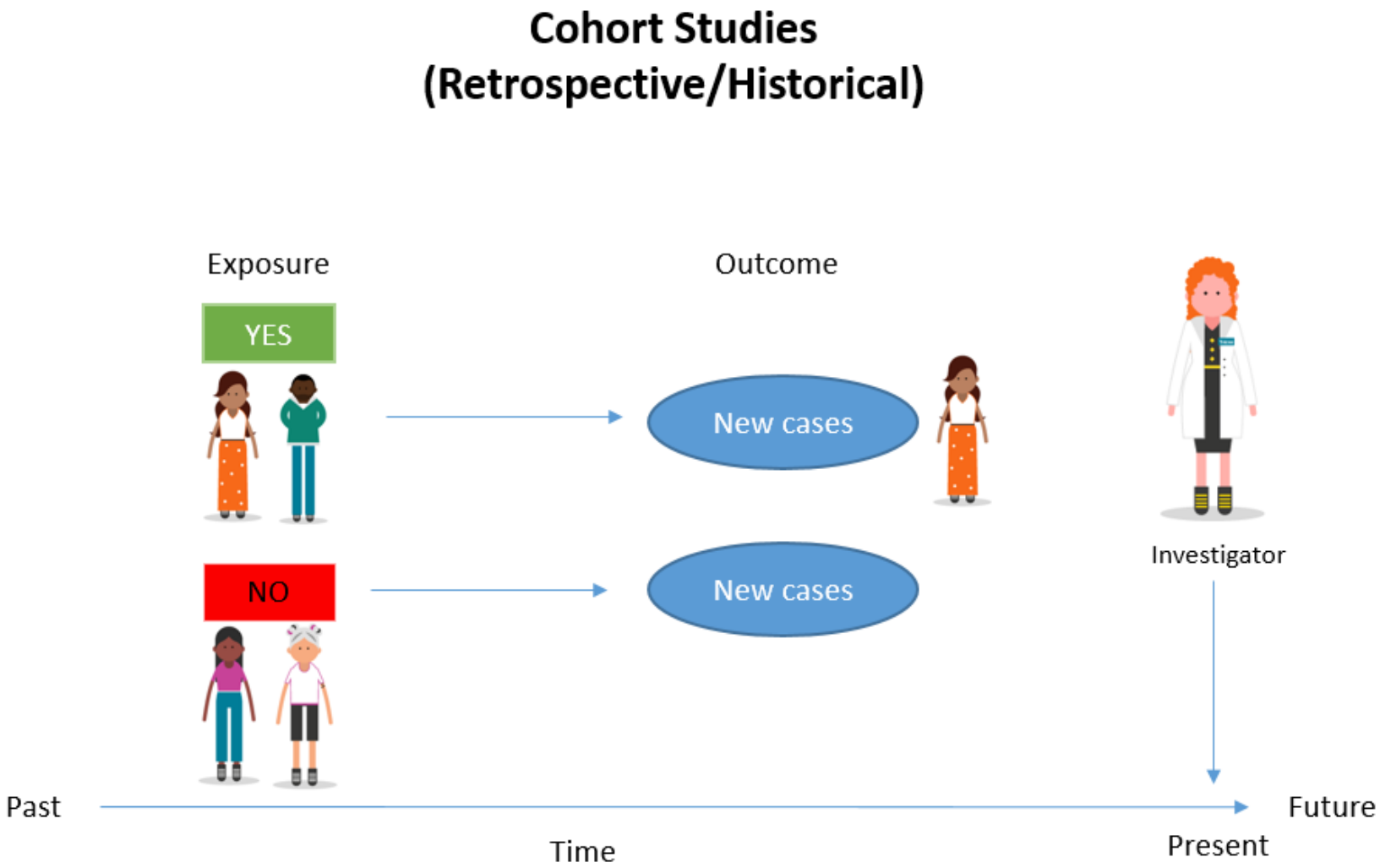


Analytical Studies: Observational

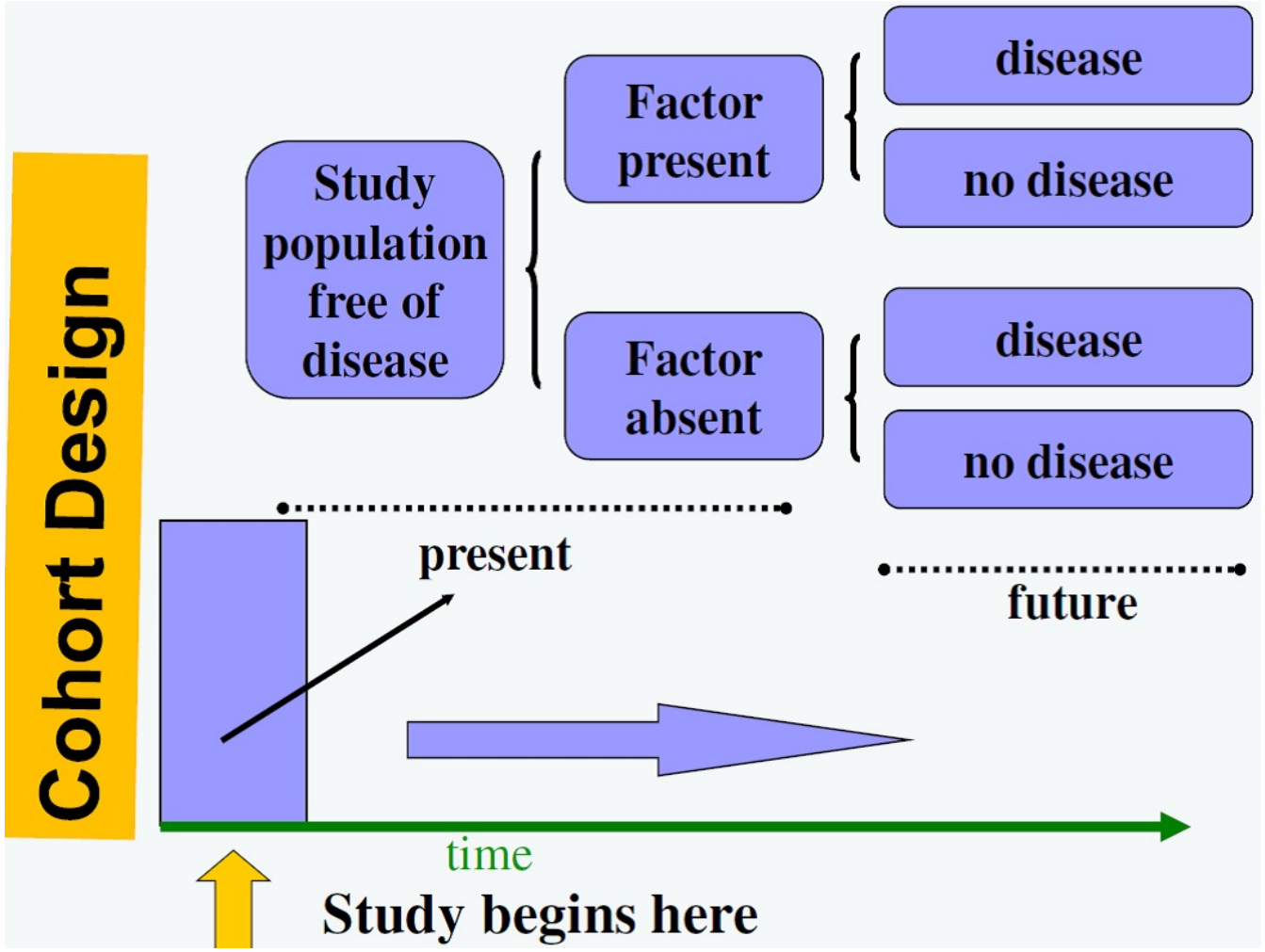
Cohort Study

Cohort design is a type of nonexperimental or observational study design. In a cohort study, the participants do not have the outcome of interest to begin with. They are selected based on the exposure status of the individual. They are then followed over time to evaluate for the occurrence of the outcome of interest.

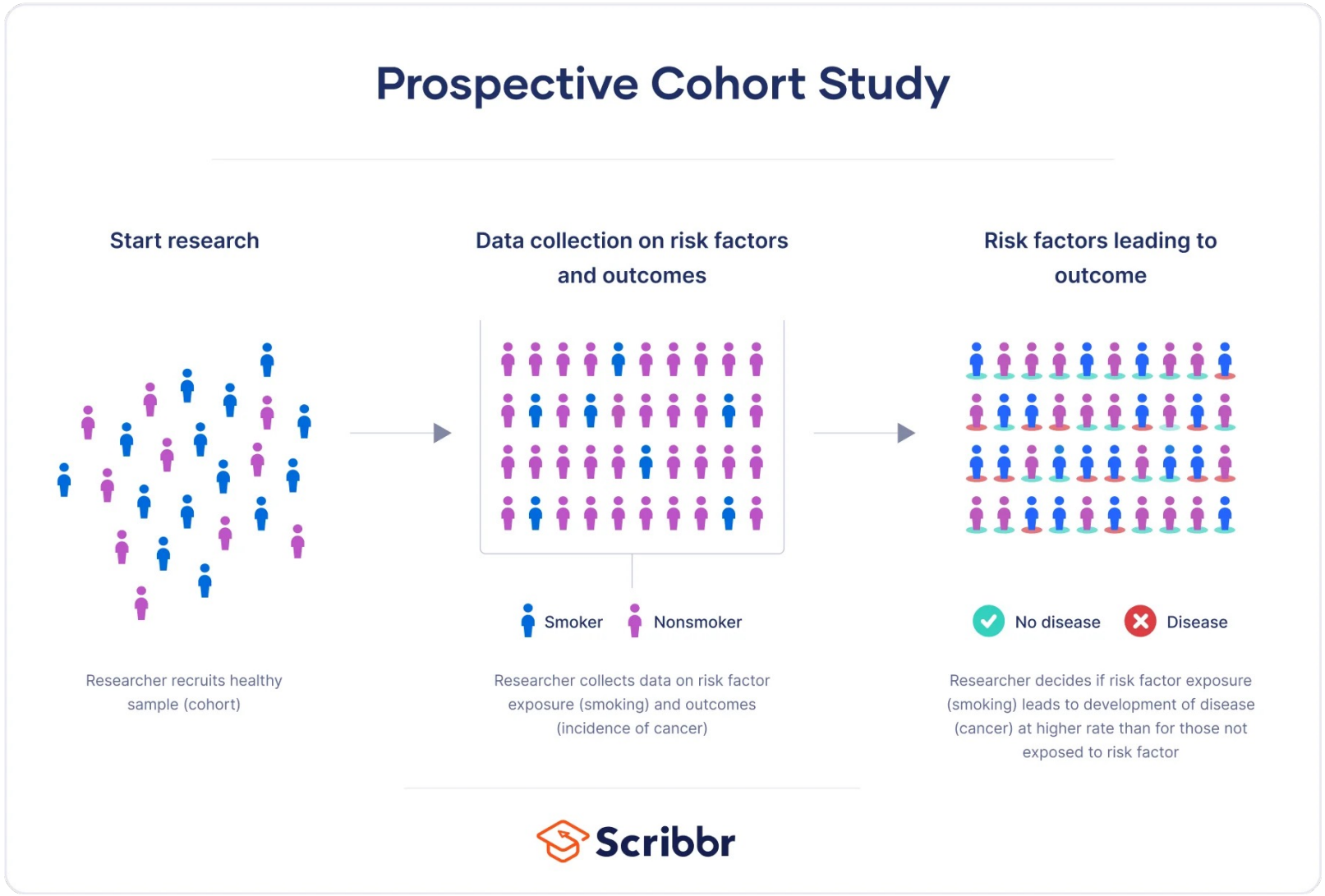
Cohort Study



Cohort Study



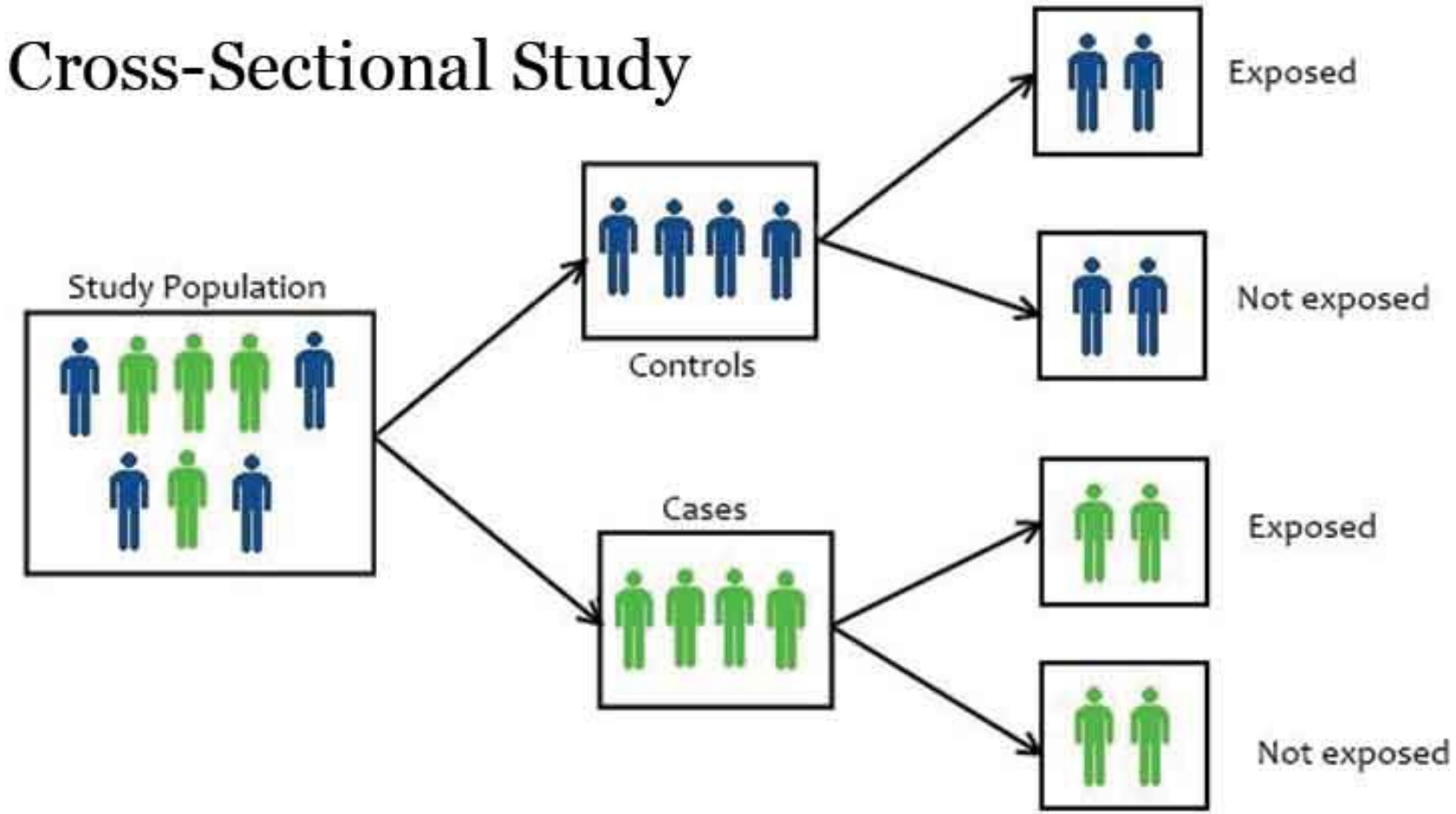
Cohort Study Example



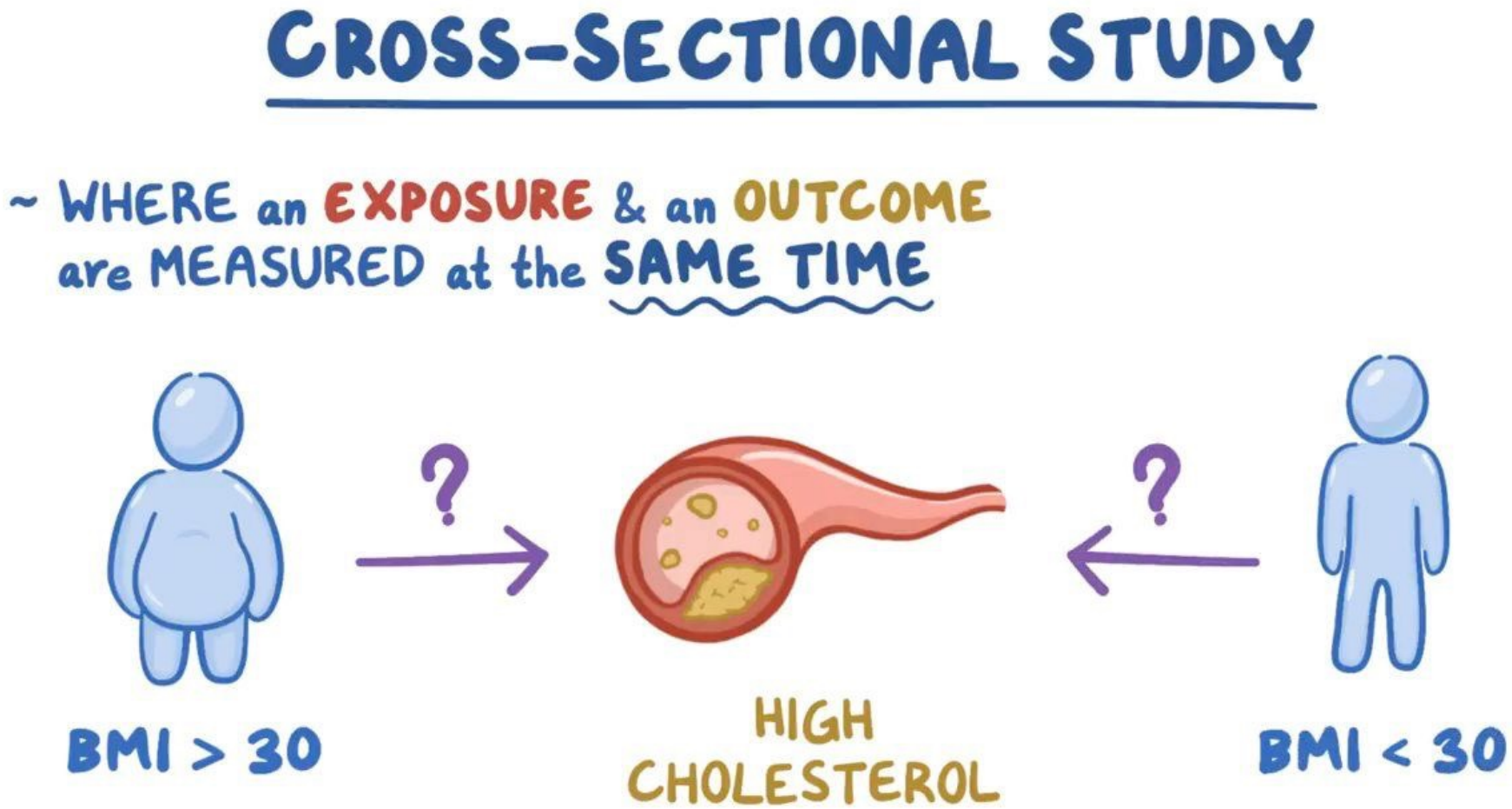
Cross-Sectional Study

A cross-sectional study is a type of research design in which you collect data from many different individuals at a single point in time. In cross-sectional research, you observe variables without influencing them.

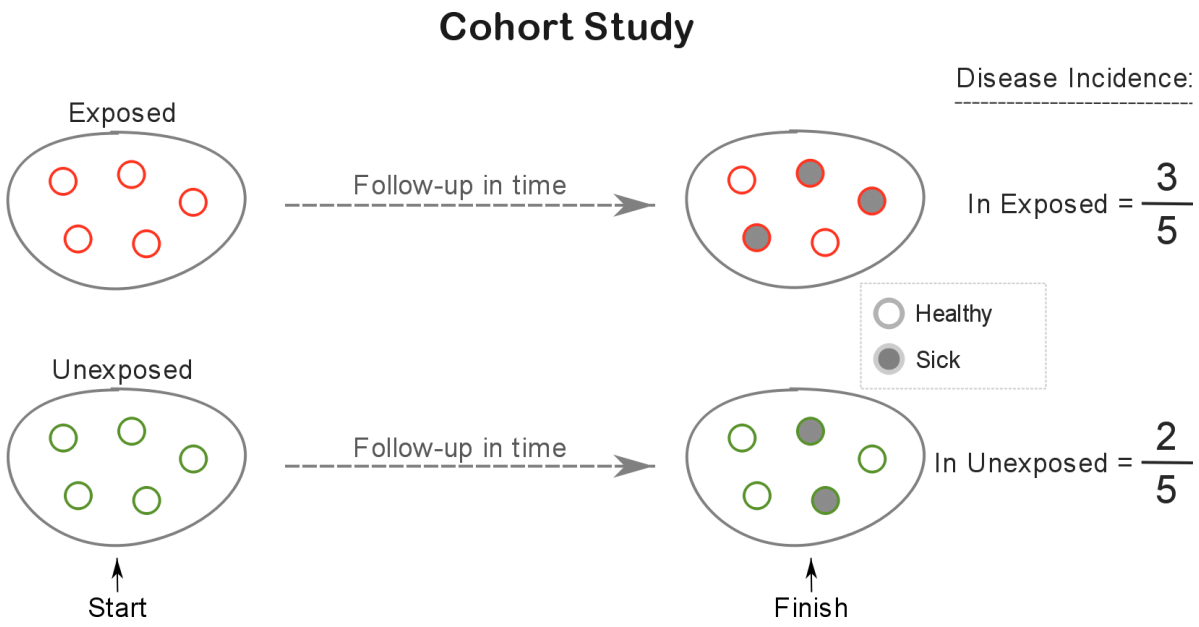
Cross-Sectional Study

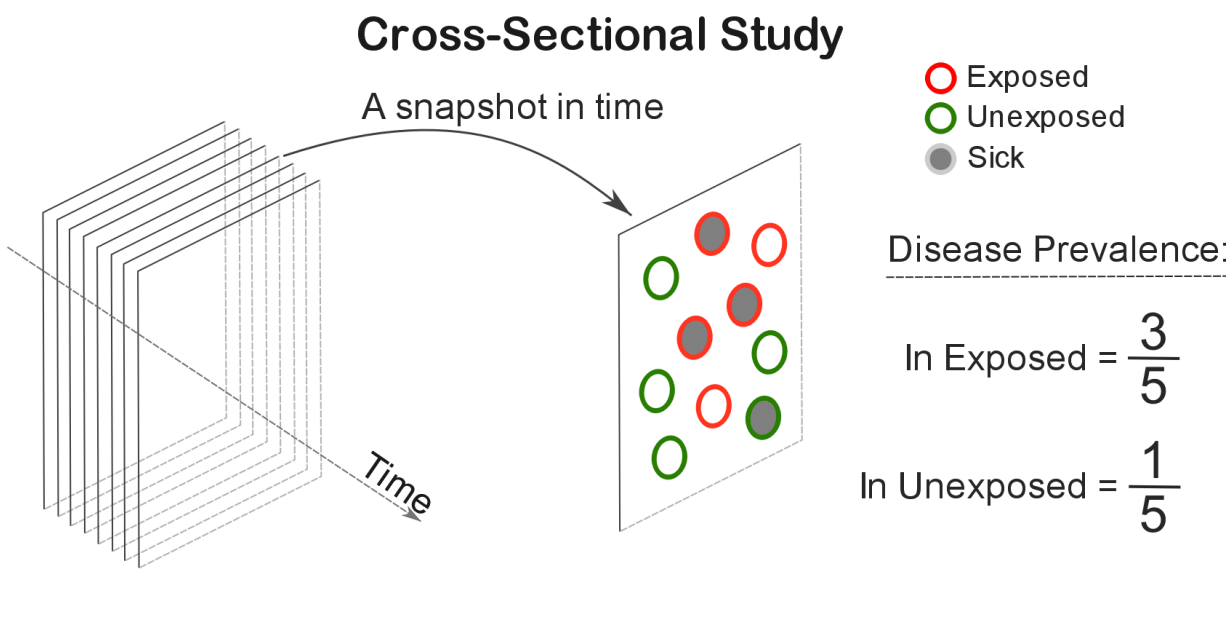


Cross-Sectional Study Example



Cohort vs. Cross-Sectional Study

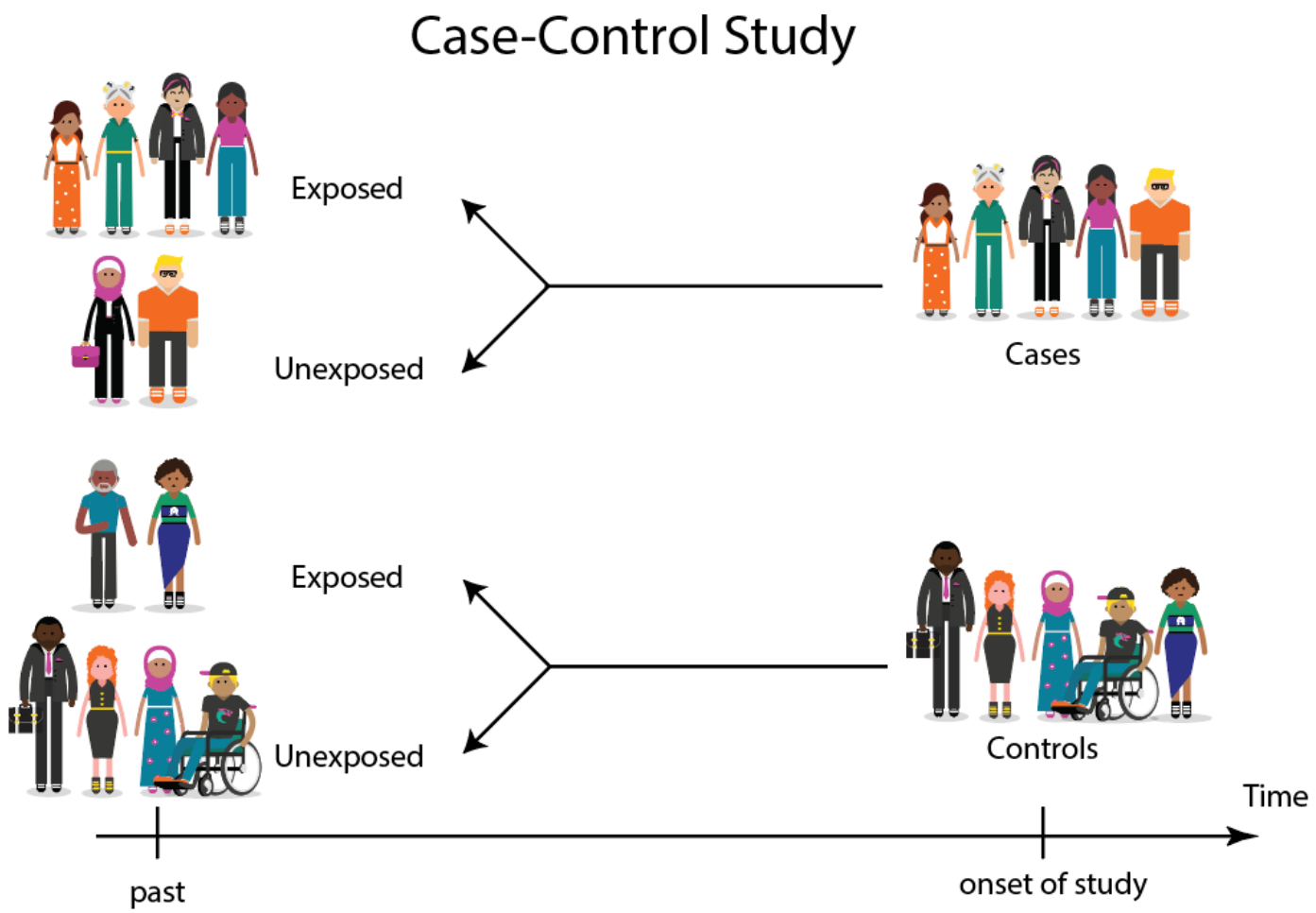




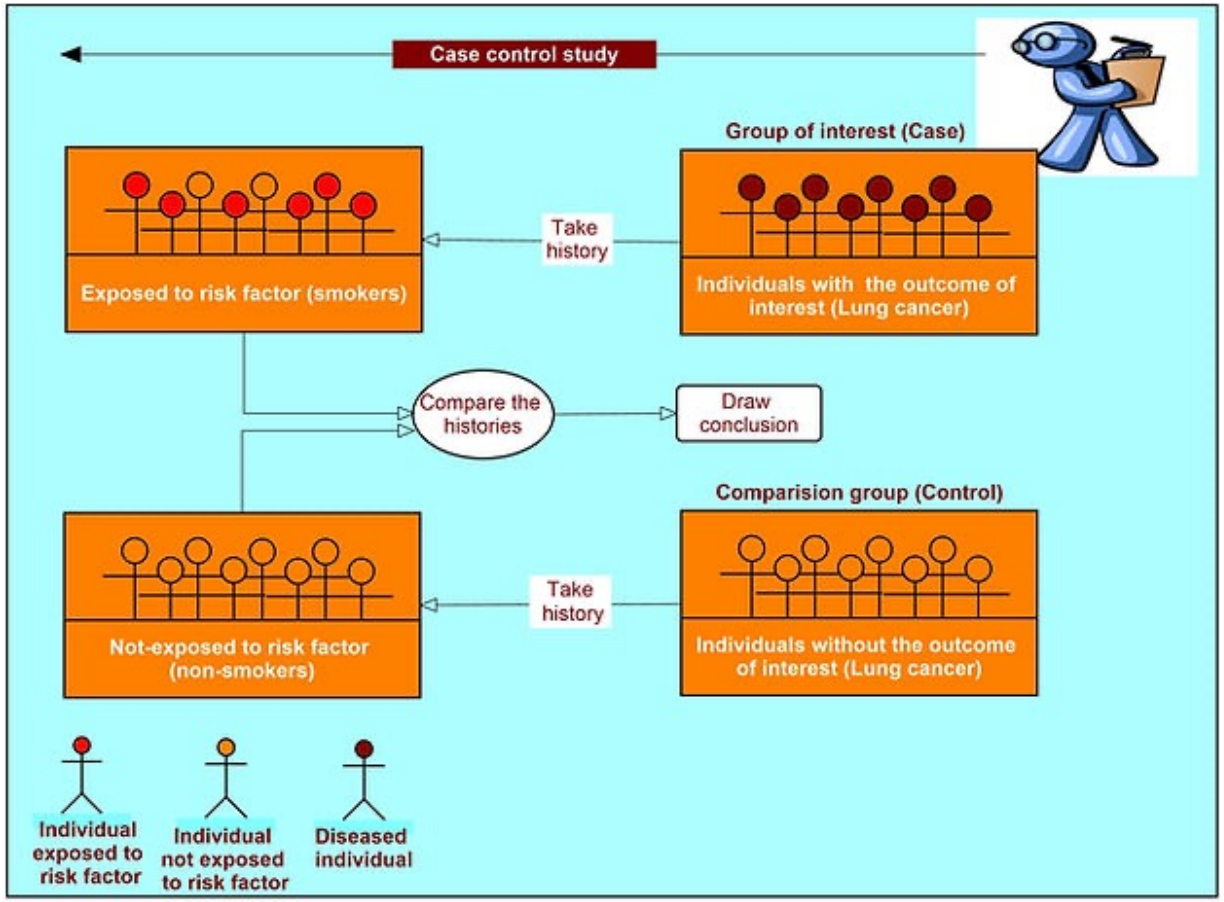
Case-Control Study

A case–control study is a type of observational study in which two existing groups differing in outcome are identified and compared on the basis of some supposed causal attribute.

Case-Control Study

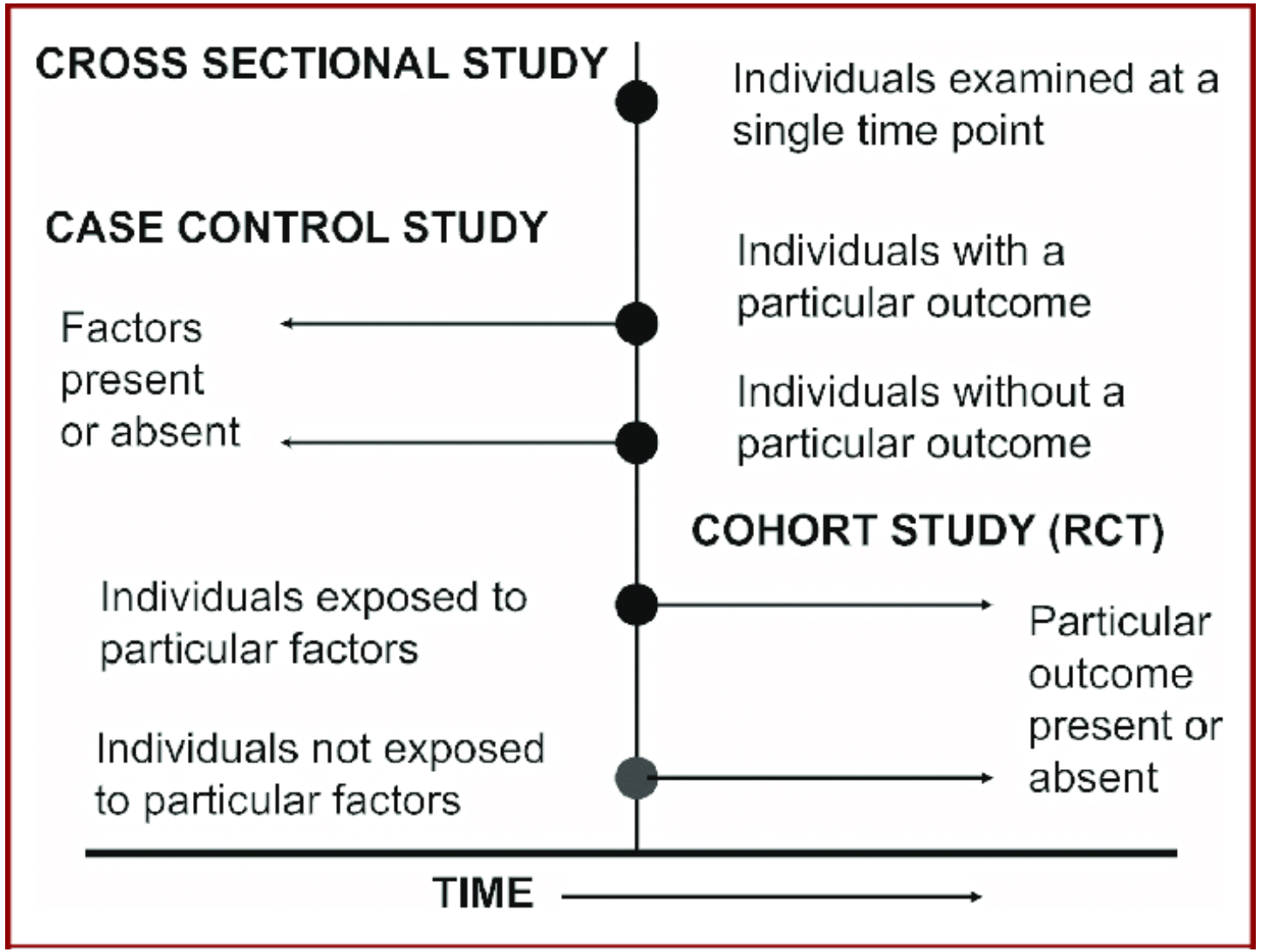


Case-Control Study Example



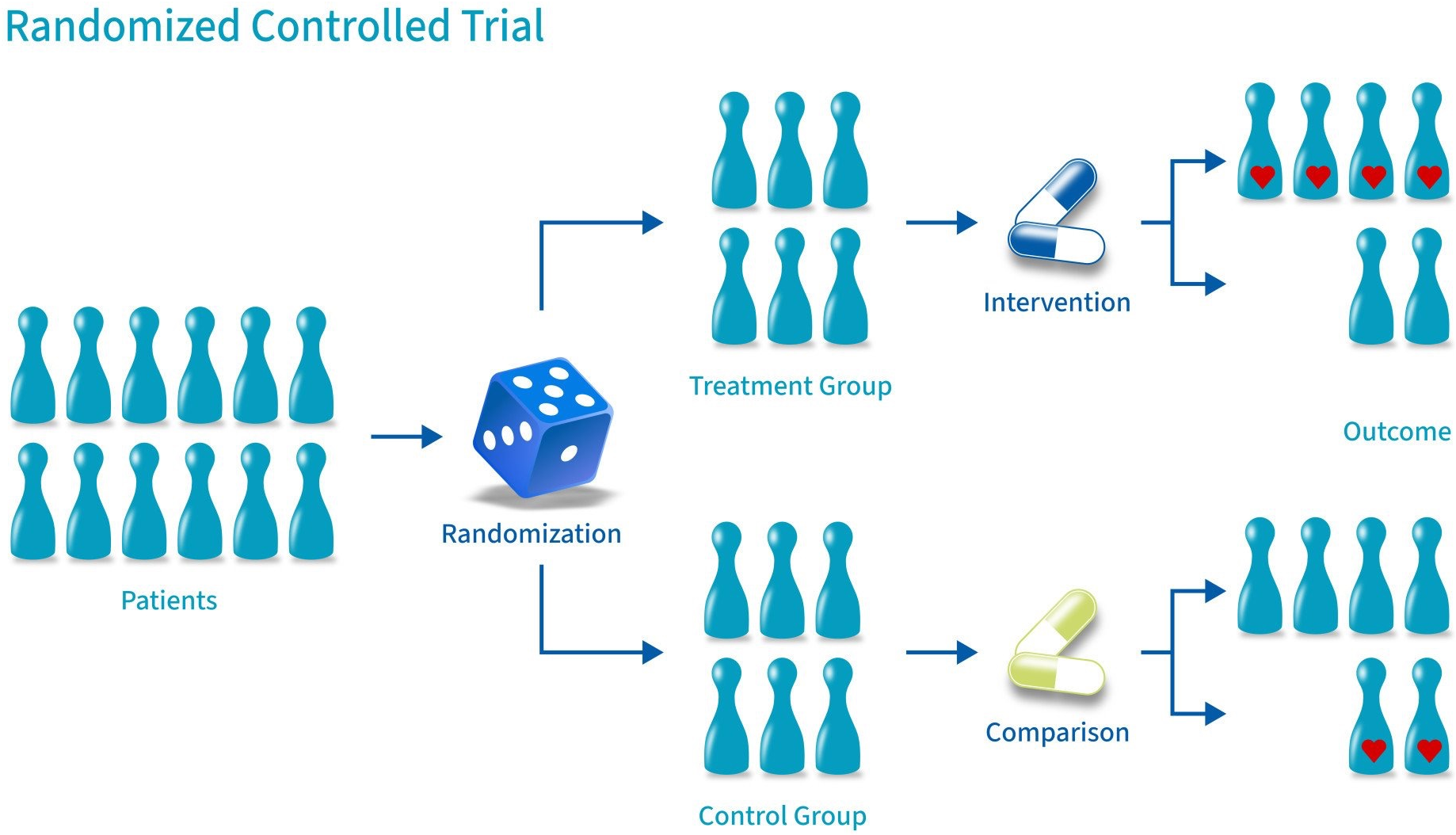
In a case-control study, researcher identifies the cases (presence of outcome of interest) and controls (absence of outcome of interest) and studies the histories to compare the frequency of exposure to a risk factor to understand the association between the exposure to risk factor (smoking) and occurence of outcome (lung cancer) in the selected sample i.e., cohort.

Summarization of Observational Studies

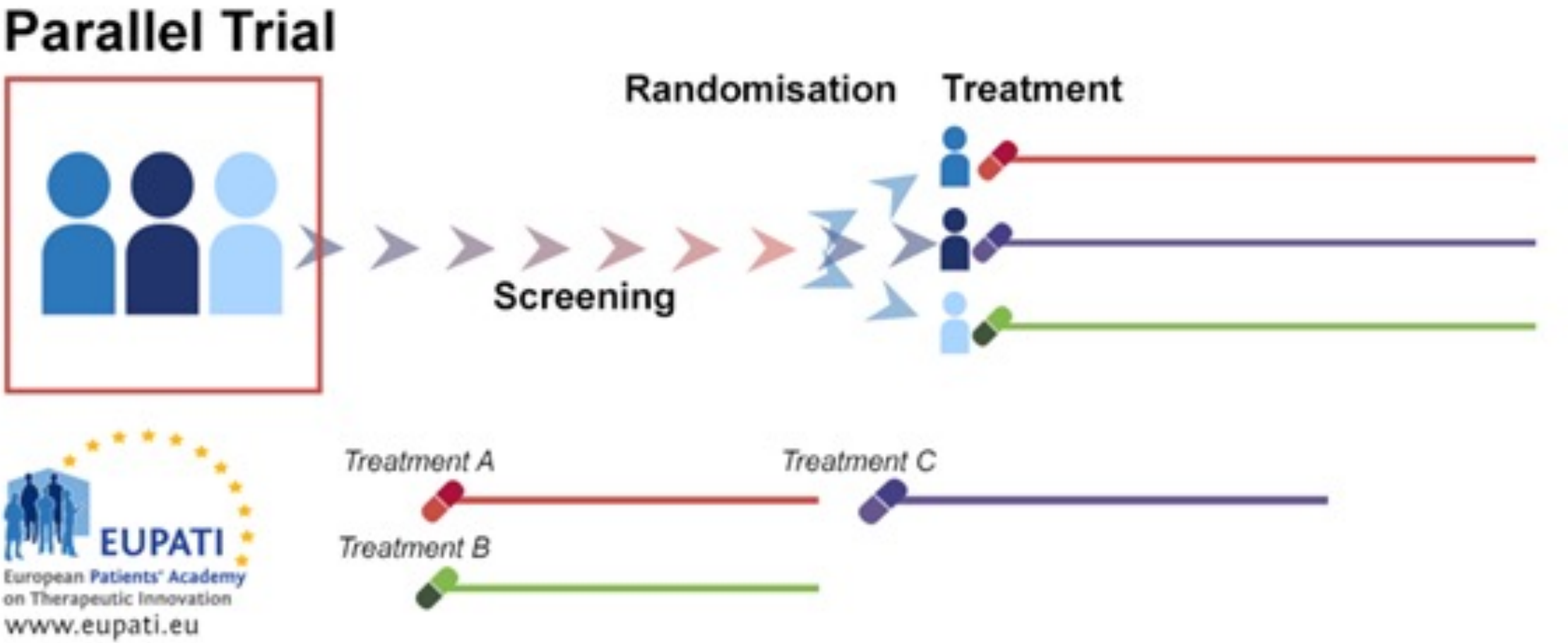


Analytical Studies: Experimental

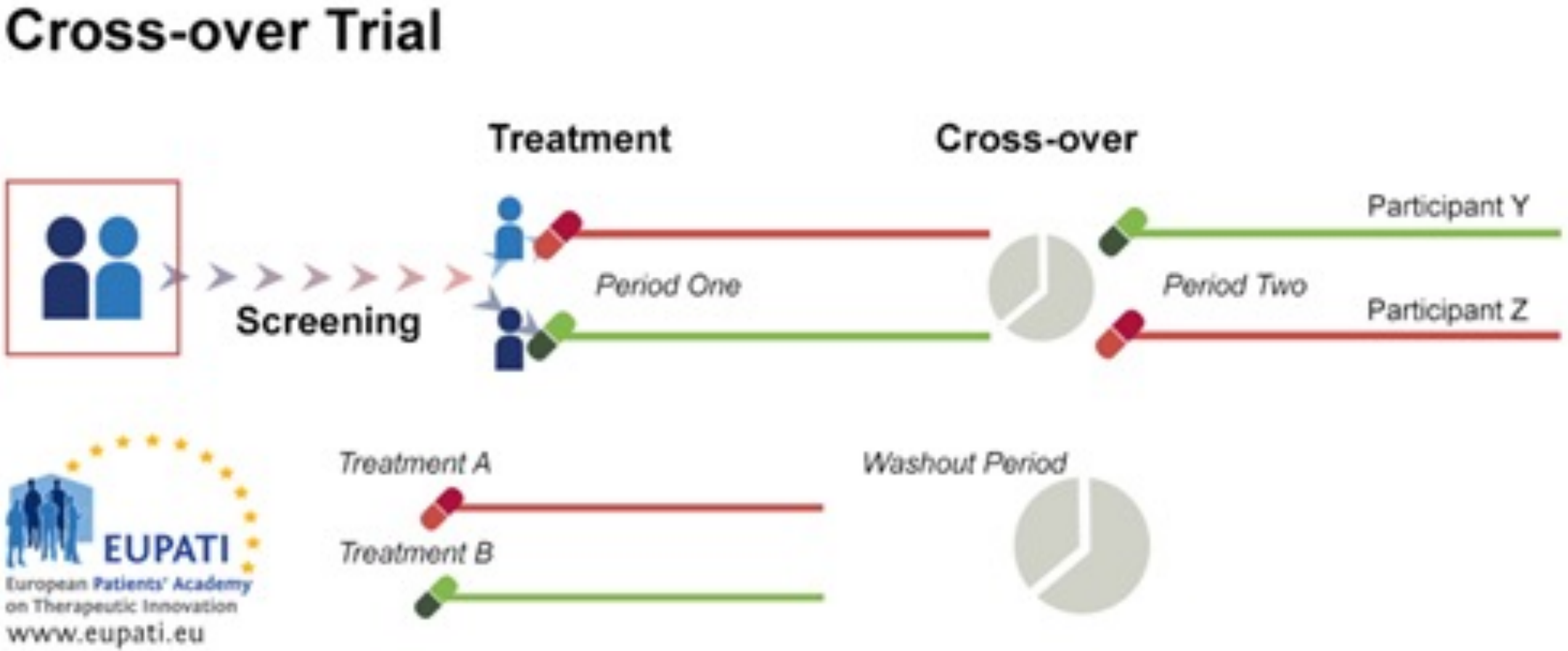
Randomized Controlled Trial (RCT)



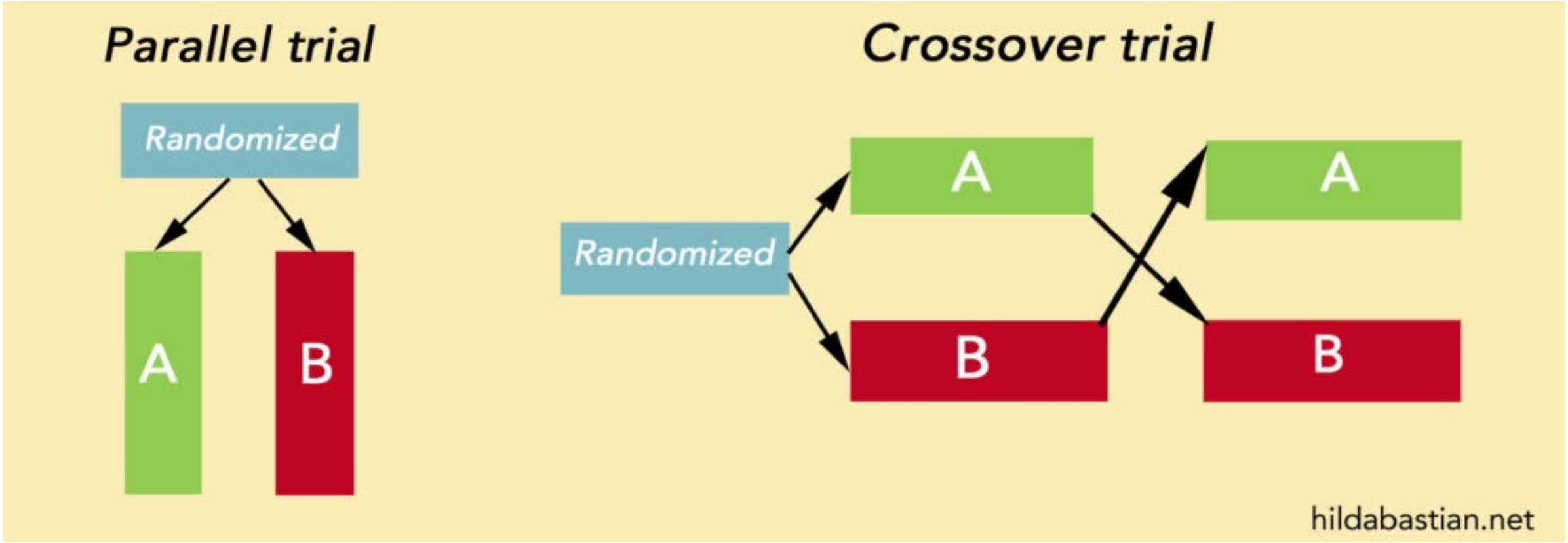
Parallel Group Trial



Crossover Trial

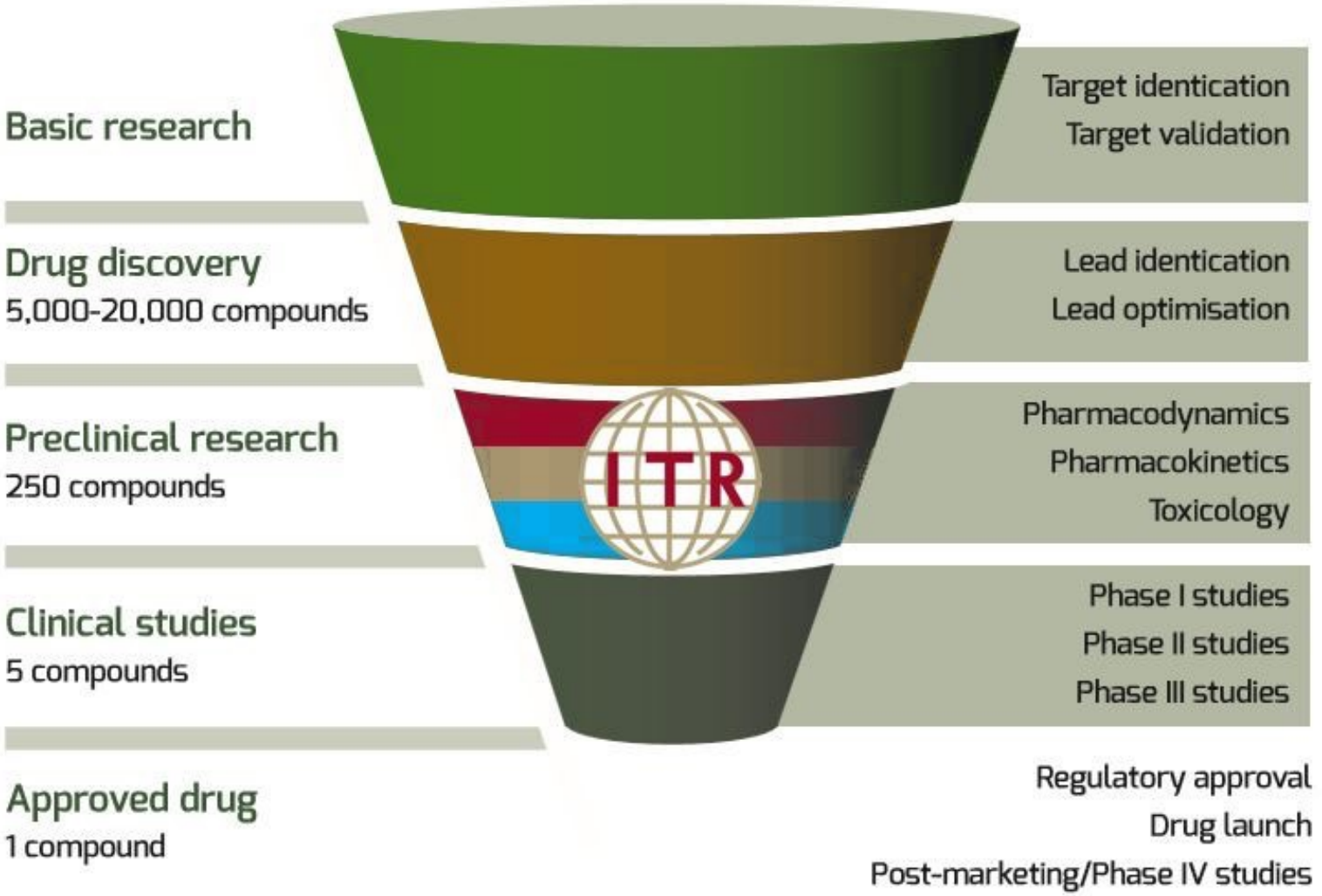


Parallel vs Crossover Trial

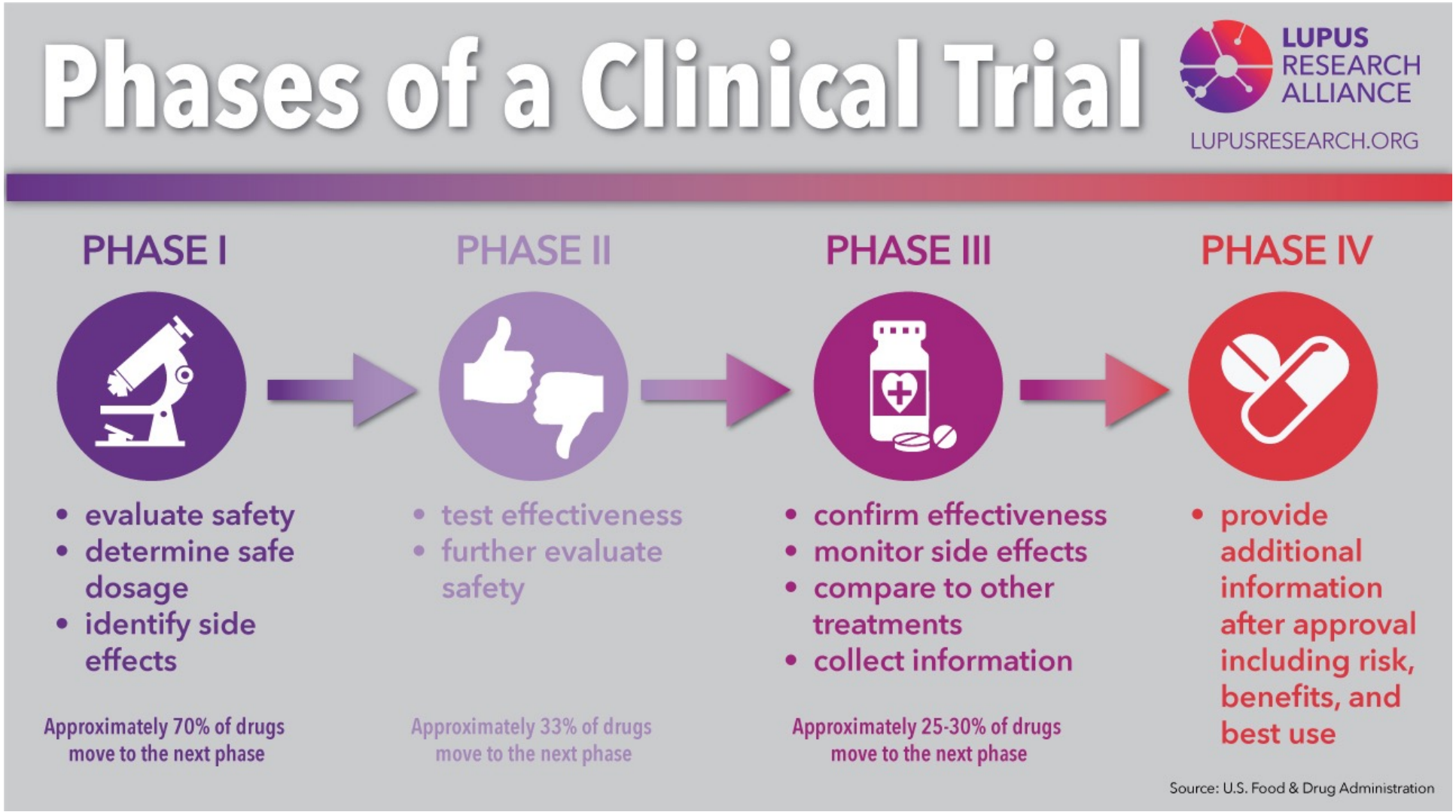


Real-World Trials

Drug R&D Progress



Clinical Trial Phases



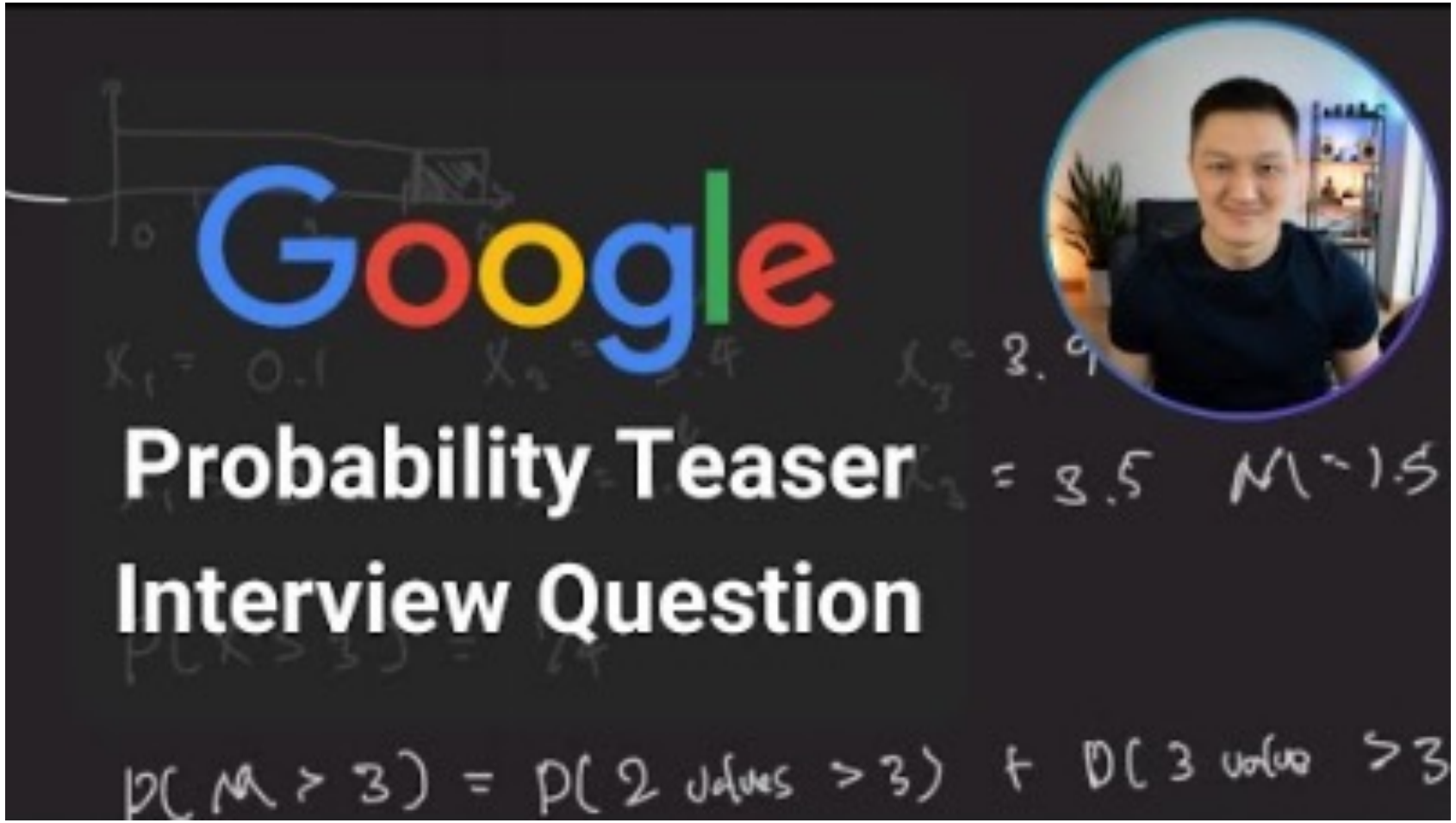
FDA Approval

What about industry?

Google Data Scientist Interview Question on Study Design

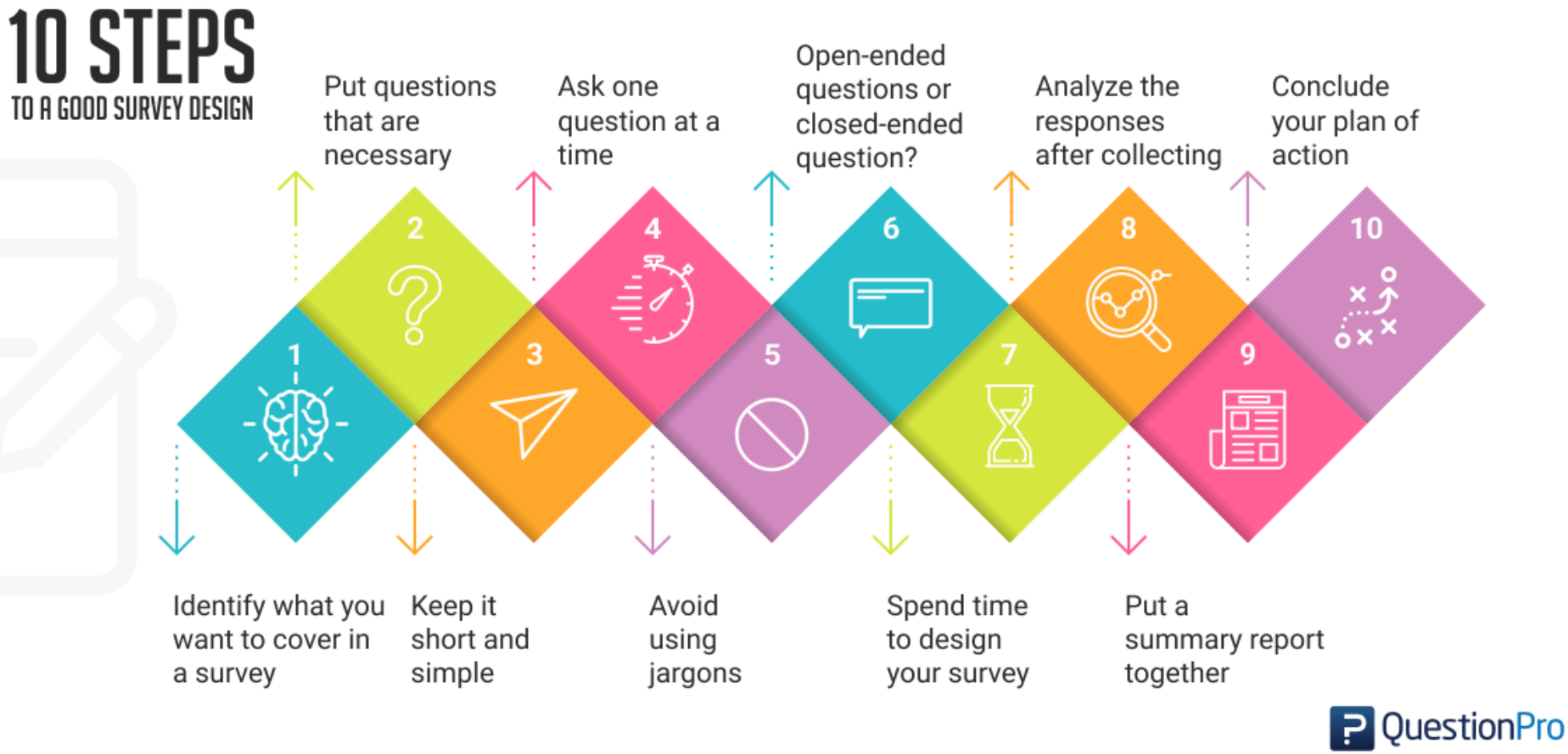
Facebook Data Scientist Interview Question on Study Design

By the way, all the probability and statistics we covered are also asked in Data Science interview questions



Descriptive Studies

Survey


10 STEPS
TO A GOOD SURVEY DESIGN
1
Identify what you want to cover in a survey
2
Put questions that are necessary
3
Keep it short and simple
4
Ask one question at a time
5
Avoid using jargons
6
Open-ended questions or closed-ended question?
7
Spend time to design your survey
8
Analyze the responses after collecting
9
Put a summary report together
10
Conclude your plan of action
QuestionPro

Qualitative

Example of Qualitative Studies at Google