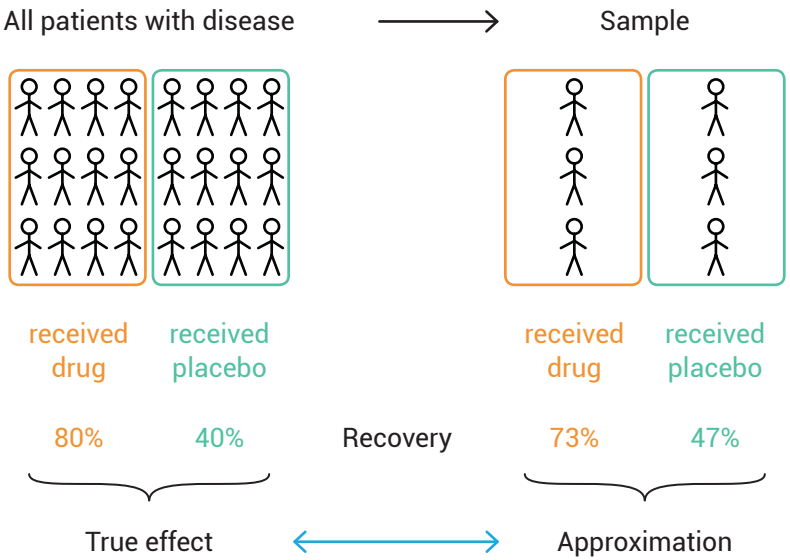
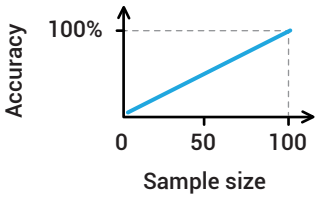
Power and errors

When introducing a new drug we want to know how many patients would be cured if the entire population of patients with the disease received the drug.

Since a trial of the entire population is usually impossible a sample is drawn that is as large and representative as possible.



The approximation of the recovery rates gets better as the sample size increases. However the more patients are recruited the more money and time has to be invested.



Real life

Study results	Treatments are not different	Treatments are different
Treatments are not different	True	Type II Error Probability = β
Treatments are different	Type I Error Probability = α	Power True

20% (0.2)

80% (0.8)

0.05 = 5%

100%

α
= Probability of concluding that the treatments differ when they really don't.

β
= Probability of concluding that the treatments don't differ when they really do.

Power (1-β)
= Probability of concluding that the treatments differ when they really do.