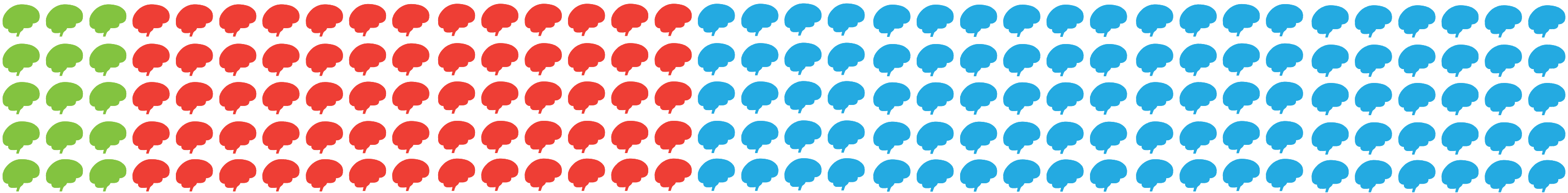# USE OF HCP DATA

DATA AT HAND:
activation maps of 180 independent subjects

PROCEDURE:
HELD IN PILOT DATA: take subsamples (pilot study) to perform power estimation procedure, n=15
HELD IN STUDY DATA: take subsamples (study) to perform model estimation procedure, n=15...65
HELD OUT REFERENCE DATA: use remaining data to obtain high powered (population) results, n = 100

B HELD IN PILOT DATA:
PEAKWISE GROUP ANALYSIS
(not used for inference!)

METHOD:
list of local maximum voxels
- estimate prevalence of activation (π_1)
- estimate standardized effect size (Δ)
- predict power

N=15

USE PILOT DATA TO PREDICT POWER
IN SUBSEQUENT STUDY

C HELD IN STUDY DATA:
PEAKWISE GROUP ANALYSIS

RESULT:
list of local maximum voxels
■ non-significant
● significant

REPEAT THIS FOR N=15...65

A HELD OUT DATA:
VOXELWISE GROUP ANALYSIS
(high powered results)

RESULT:
voxelwise activation map
■ active
■ non-active

N=100

D VALIDATE ESTIMATION OF π_1 AND δ
PILOT DATA (n=15) + HELD OUT DATA

■ non-active peak
■ active peak

Compare for each subsample estimates to:

Empirically derived π_1 = $\dfrac{\#\{\ \blacksquare\ \}}{\#\{\ \blacksquare\ \blacksquare\ \}}$

Empirically derived E(effect size) = average height of $\{\ \blacksquare\ \}$

E VALIDATE PREDICTION OF POWER
STUDY DATA (n=15...65) + HELD OUT DATA

	active	**non-active**
significant	● true positive	● false positive
non-significant	■ false negative	■ true negative

REPEAT THIS FOR N=15...65

Compare for each subsample estimates to:

Empirically derived power = $\dfrac{\#\{\ \bullet\ \}}{\#\{\ \bullet\ \blacksquare\ \}}$