

# P-Value

Hypothesis: More than 75% of class 2025 at Bryant have siblings.

$$H_0: p \leq .75$$

$$H_1: p > .75$$

Data:

ID	have siblings
1	Yes
2	Yes
3	No
4	No
...	...
35	Yes

Number of students: 35

# have siblings: 26

OR

p-value: we will calculate the p-value.

p-value is the probability / chance that the data exist if  $H_0$  is true.

① what happens if p-value is 0?

p-value = 0 means: If  $H_0$  is true, there is NO chance the data exist.

If  $H_0$  is true, you don't observe this data.

$\Rightarrow$   $H_0$  should not be true b/c you **Do** observe the data

$H_0$  is not true  $\Rightarrow$   $H_1$  is true

② If p-value is extremely small (p-value  $\leq .05$ )

Say p-value : .01 . This means :

If  $H_0$  is true, then there is 1% chance the data exists

(or you observe the data)

99% chance you observe different data.

almost  
no chance

$\Rightarrow H_0$  is almost certainly not true. We say:

The data support your hypothesis ( $H_1$ )

③ If p-value is not small (p-value  $> .05$ )

If  $H_0$  is true, there is a "good" chance that you observe the data.

$H_0$  may be true or not.  $H_1$  may be true or not

The data does not support  $H_1$ . There is NO conclusion reached

