

Lab 4 Practice Problems

1) a) TO: $\frac{180+40}{200+120} = \frac{220}{320} = 68.75\%$ OA: $\frac{72+144}{80+200} = \frac{216}{280} = 77.1\%$

77.1% > 68.75% so Oral antibiotics had a higher success rate

b) mild: $\frac{180+72}{200+80} = \frac{252}{280} = 90\%$ severe: $\frac{40+144}{120+200} = \frac{184}{320} = 57.5\%$

90% > 57.5% so mild infections had a higher success rate

c) By randomizing the treatment researchers are ensuring that infection severity is approximately equal across treatment groups. This allows researchers to make certain that infection severity and the treatment received are not associated.

d) No, the randomization of treatment received ensures that recovery, or lack thereof, is associated with treatment method and not something else.



2) a) power = 1 - type II error rate correct rejections = power (true associations)

$$= 1 - 0.25 \qquad = 0.75(40)$$
$$= 0.75 \qquad = 30$$

So, the analyst correctly rejected the H_0 30 times

b) # of times the H_0 is true = 5000 - 40

$$= 4960$$

of type I errors = times the H_0 is true (type I error rate)

$$= 4960(0.05)$$
$$= 248$$

248 type I errors were made

③ reporting bias

People may be hesitant to be truthful about their driving habits.