Bayesian Inference

Problem Set 2 Tip:

Useful Equation to Know

$$P(A \text{ but not } B) = P(A) - P(A \text{ and } B)$$

$P(A)$=0.7

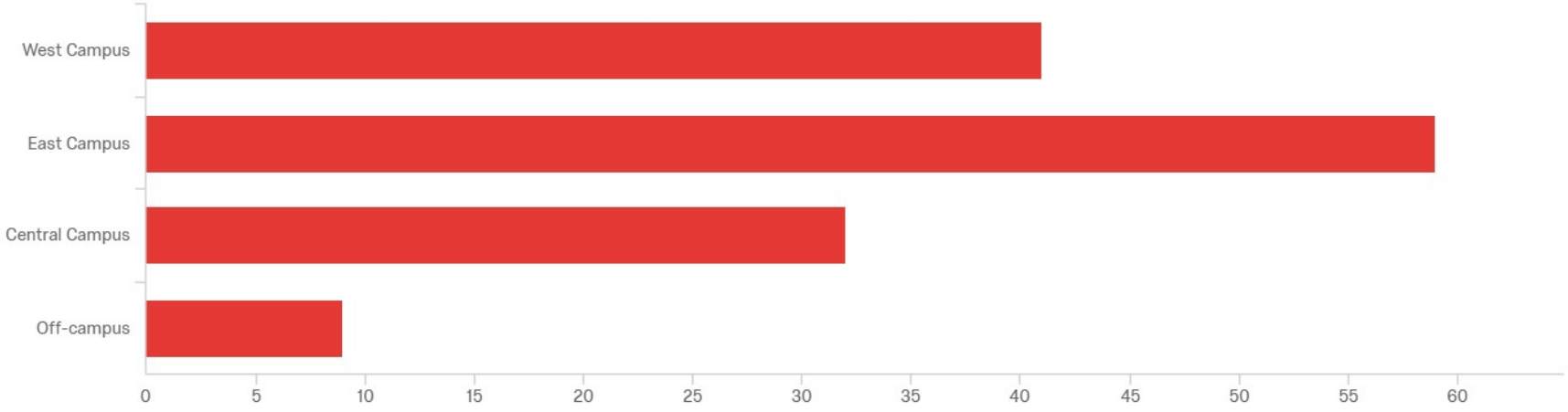
Is this enough information to find $P(\overline{A})$?

$P(A|B)$=0.6

Is this enough information to find $P(\overline{A}|B)$?

Getting to know you!

Where do you live?



$P(A)$=0.7

Enough info to find $P(\overline{A})$?

Yes! A and $\overline{A}$ are complementary events, so

$P(\overline{A})$=1-$P(A)$=1-0.7

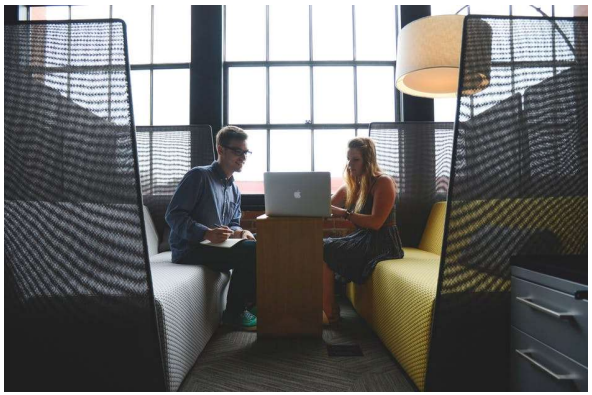
$P(A|B)$=0.6

Enough info to to find $P(\overline{A}|B)$?

Yes! $A|B$ and $\overline{A}|B$ are complementary events, so

$P(\overline{A}|B)$=1-$P(A|B)$=1-0.6

Need help? Confused about something? Come stop by office hours!



Office Hours

Instructor Office Hours: Tuesdays 2:00pm-4:00pm Old Chemistry 208A

TA Office Hours:

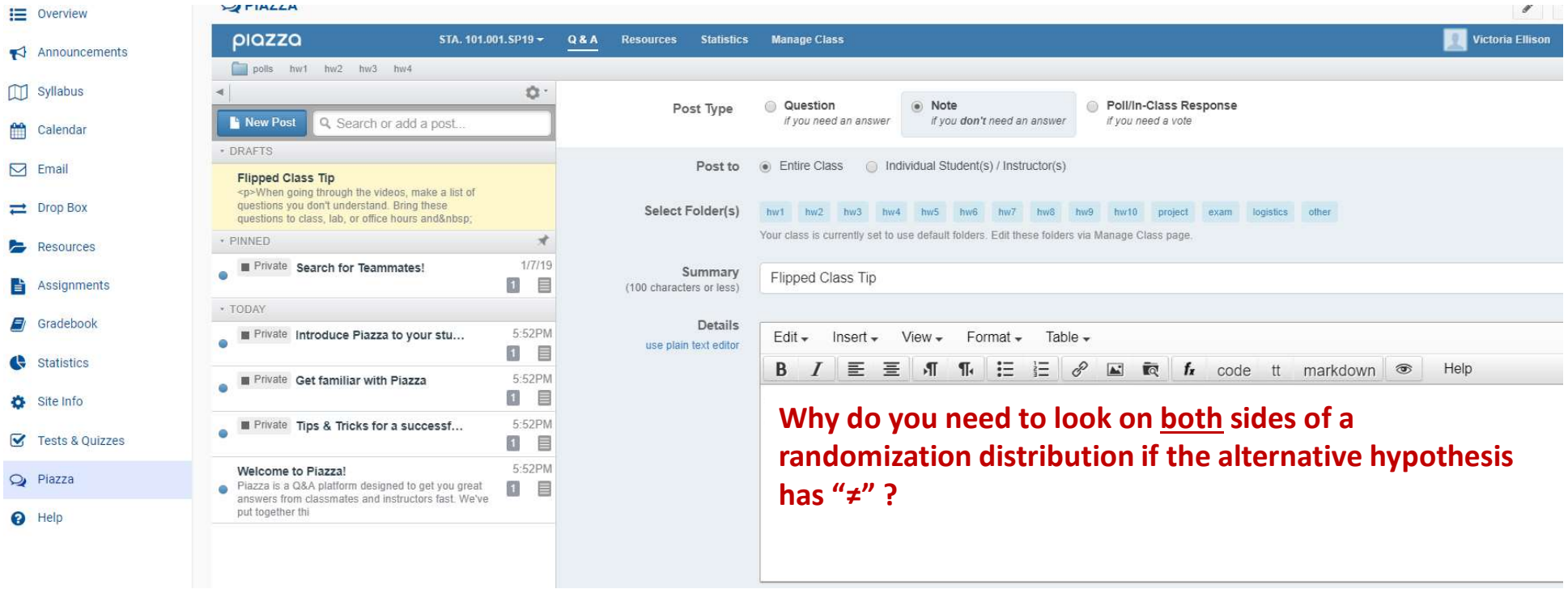
TA	Time	Location
Sibora Seranaj	Monday 9 - 11 am	Old Chem 203B
Austin Jia	Monday 2 - 4pm	Old Chem 203B
Valerie Roberts	Monday 6:30 - 8:30pm	Old Chem 025
Morgan Bird	Monday, 5:00 - 7:00pm	Old Chem 025
Melanie Lai Wai	Tuesday 8:30 - 10:30am	Old Chem 203B
Ed Tam	Tuesday 12pm - 2pm	Old Chem 203B
Samantha Morales	Tuesday 3:30-5:30pm	Old Chem 203B
Brian Jiang	Tuesday 6:00-8:00pm	Old Chem 203B
Rose Graves	Tuesday 7-9pm	Old Chem 203B
Junette Yu	Wednesday 11:00-1:00pm	Old Chem 203B
Eduardo Coronado	Wednesday 5 - 7pm	Old Chem 025
Tess Chandler	Thursday 3-4pm	Old Chem 203B
Mark Sampson	Thursday 6:00-8:00 pm	Old Chem 025
Vanessa Alwan	Friday 8-10am	Old Chem 203B
Tess Chandler	Friday 12-1pm	Old Chem 025
Lavonne Hoang	Friday 2-4 pm	Old Chem 203B
Tessa Johnson	Friday 5:30-7:30 pm	Old Chem 025

https://www2.stat.duke.edu/courses/Spring19/sta101.001/officehours.html

$P(A \text{ and } B)$=0.6 and $P(A \text{ and } \overline{B})$=0.2

Is this enough information to find $P(A)$?

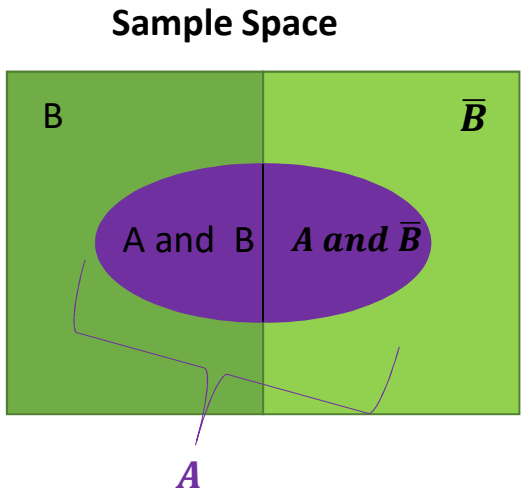
Need help? Confused about something? Ask on Sakai!



$P(A \text{ and } B)$=0.6 and $P(A \text{ and } \overline{B})$=0.2

Enough info to find $P(A)$?

Yes! $P(A)=P(A \text{ and } B)+P(A \text{ and } \overline{B})$=0.6+0.2



$P(A|B)$=0.6, $P(A|\overline{B})$=0.5, and $P(B)$=0.3

Is this enough information to find $P(B|A)$?

Win candy today!

$P(A|B)$=0.6, $P(A|\overline{B})$=0.5, and $P(B)$=0.3

Is this enough information to find $P(B|A)$?

Yes! We have enough information to fill out a Bayesian Probability Tree to get the answer!