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Readings
Reading Check due Mar 15, 2016 at 18:00 UTC

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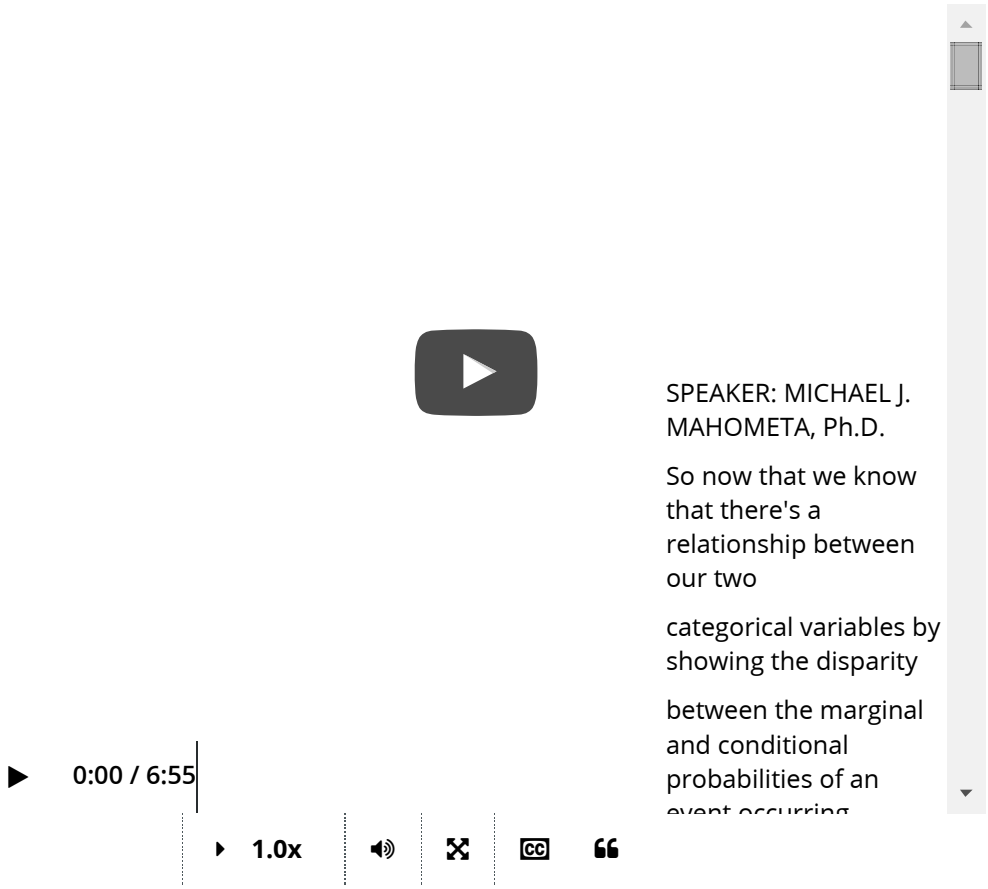
Graphing the Contingency Table



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Comprehension Check

Is there an association between car color and marital status? Below are data collected to address this question.

	Red	Black/White/Silver	Other
Married	40	22	19
Unmarried	45	10	12

R Tutorial Videos

Pre-Lab
Pre-Lab due Mar 15, 2016 at 18:00 UTC

Lab
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Problem Set
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▸ Week 5: Linear Functions

(6/6 points)

Using the contingency table above, solve for each of the following probabilities. (*Report as proportions rounded to 3 decimal places*.)

1) **P (black/white/silver)**

0.216 ✔ **Answer:** 0.216

0.216

2) **P (married)**

0.547 ✔ **Answer:** .547

0.547

3) **P (unmarried and black/white/silver car)**

0.068 ✔ **Answer:** .068

0.068

4) **P (red car | married)**

0.494 ✔ **Answer:** .494

0.494

5) **P (married | red car)**

0.471 ✔ **Answer:** .471

0.471

6) What ratio would you use to solve for P(red car| unmarried) using the contingency table?

- ○ 40/148
- ○ 40/81
- ○ 45/85
- ◉ 45/67 ✔

Now solve for P (red car | unmarried) using the formula below.
(*Probabilities should be reported as proportions rounded to 3 decimal places*.)

$$P(A \mid B) = \frac{P(A \cap B)}{P(B)}$$

$P(A \cap B)$ = **X**

$P(B)$ = **Y**

$P(A \mid B)$ = **Z**

(3/3 points)
7) **X**

0.304 ✔

0.304

8) **Y**

0.453 ✔

0.453

9) **Z**

0.671 ✔

0.671

(3/3 points)
Using the above formula, solve for these three values. (*Report each as a proportion rounded to three decimal places*.)

10) **P (red)**

0.574 ✔ **Answer:** .574

0.574

11) **P (red | married)**

0.494 ✔ **Answer:** .494

0.494

12) **P (red | unmarried)**

0.671 ✔ **Answer:** .672

0.671

(2/2 points)

13) If car color and marital status are independent, what should be true?

- P(red | married) = P(married | red)
- P(red) = P(married)
- ◉ P(red) = P(red | married) ✔
- P(red) = P(married | red)

14) Do car color and marital status appear to be independent?

- Yes, because the probability of having a red car is identical for everyone.
- Yes, because there are more married people and more red cars in the sample.
- No, because more people drive red cars than other colored cars. Therefore, color is not independent of marital status.
- ◉ No, because the probability of having a red car is different for married and unmarried people, though the difference is small. ✔