STA 138 Discussion 7

Fall 2020

	C	D
A	16	110
B	4	20

1. In the table above, you can find the results of an experiment by Kahneman and Tversky on peoples' risk preferences. The experiment consisted of eliciting choices by people for two decisions:

   (i) Choose between:

   A. a sure gain of \$240

   B. 25% chance for \$1000 gain, 75% chance for \$0 gain

   (ii) Choose between:

   C. a sure loss of \$750

   D. 75% chance to lose \$1000, 25% chance to lose \$0

   When people choose B over A, we take them to be "risk loving" in choice (i); similarly, we take people who choose D over C to be "risk loving" in choice (ii). For the moment you can assume that our large sample approximation holds for this contingency table.

   (a) What do you estimate to be the odds ratio of choosing B for D vs. C? What does this tell you about risk preferences between the two choices?

   (b) Can you, using Pearson's χ^2 test of independence, conclude that risk lovingness for (i) has an "effect" on risk livingess for (ii), at significance level $\alpha = 0.1$?

   (c) Can you, using a likelihood ratio test, conclude that risk lovingness for (i) has an "effect" on risk livingess for (ii), at significance level $\alpha = 0.1$?

I:	<2000 B.C.	V:	1200-1500 A.D.
II:	2000-500 B.C.	VI:	1500-1700 A.D.
III:	500 B.C.-500 A.D.	VII:	1700-1850 A.D.
IV:	500-1200 A.D.	VIII:	>1850 A.D.

Table 1: Time periods

	I	II	III	IV	V	VI	VII	VIII
right	79	222	169	97	107	134	133	151
left	11	19	7	8	11	9	7	16

Table 2: Contingency table

2. A study counted the numbers of depictions of right- and left- handed people in artwork (Table 2) over different time periods (Table 1). Assuming that the artworks were randomly sampled, can you conclude that the relative frequencies of left- and right- handedness change over time?