14.1.{1, 3, 8}

14.1.1 What conclusion would be appropriate for an upper-tailed chi-squared test in each of the following situations?

(a) $\alpha = 0.05$, df $= 4$, $\chi^2 = 12.25$

(b) $\alpha = 0.01$, df $= 3$, $\chi^2 = 8.54$

(c) $\alpha = 0.10$, df $= 2$, $\chi^2 = 4.36$

(d) $\alpha = 0.01$, $k = 6$, $\chi^2 = 10.20$

■

14.1.3 It is hypothesized that when homing pigeons are disoriented in a certain manner, they will exhibit no preference for any direction of flight after takeoff (so that the direction X should be uniformly distributed on the interval from $0°$ to $360°$). To test this, 120 pigeons are disoriented, let loose, and the direction of flight of each is recorded; the resulting data follows. Use the chi-squared test at level .10 to see whether the data supports the hypothesis.

Direction	$0 - < 45°$	$45 - < 90°$	$90 - < 135°$	$135 - < 180°$	$180 - < 225°$
Frequency	12	16	17	15	13

Direction	$255 - < 270°$	$270 - < 315°$	$315 - < 360°$
Frequency	20	17	10

■

14.1.8 The article "Psychiatric and Alcoholic Admissions Do Not Occur Disproportionately Close to Patients Birthdays" (*Psychological Reports*, 1992: 944–946) focuses on the existence of any relationship between the date of patient admission for treatment of alcoholism and the patient's birthday. Assuming a 365-day year (i.e., excluding leap year), in the absence of any relation, a patient's admission date is equally likely to be any one of the 365 possible days. The investigators established four different admission categories: (1) within 7 days of birthday; (2) between 8 and 30 days, inclusive, from the birthday; (3) between 31 and 90 days, inclusive, from the birthday; and (4) more than 90 days from the birthday. A sample of 200 patients gave observed frequencies of 11, 24, 69, and 96 for categories 1, 2, 3, and 4, respectively. State and test the relevant hypotheses using a significance level of .01.

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