The Poisson Distribution (1)

The null and alternative hypotheses

H_0: the Poisson distribution is a suitable model for the number of days absent

H_1: the Poisson distribution is NOT a suitable model for the number of days absent

Whether the test is one or two tailed

ALWAYS 1 tailed

The significance level

$\alpha = 0.05$

The test statistic

$\lambda = 1.097$

Number of Days Absent	O(No of Pupils)	P(X = x)	E(px31)
0	11	0.33387	10.35
1	12	0.36626	11.35
2	5	0.20089	6.228
3	*0*	*0.07346*	*2.277*
4	*3*	*0.02015*	*0.625*
5	*0*	*0.00442*	*0.137*

As the expected value for 3, 4 and 5 is less than 5 we must combine this with 2

Number of Days Absent	O(No of Pupils)	P(X = x)	E(px31)	$\frac{(O-E)^2}{E}$
0	11	0.33387	10.35	0.0408
1	12	0.36626	11.35	0.0372
≥2	8	0.29987	9.295	0.1804

$\sum \frac{(O-E)^2}{E} = 0.2585$

The critical region

v = 3 – 0 - 1 = 2

cv = 5.991

A comparison of critical value or region and test statistic

insert Chi-squared sketch here

ts < cv

Hence we ACCEPT H_0

A conclusion in context

There is insufficient evidence to suggest that Poisson distribution is not a suitable model for this sample of students' absences.