

13.1 Test for Goodness of Fit

color	observed count O	hypothesized proportion	expected count E	component $\frac{(O - E)^2}{E}$
brown	192	13%	214	
red	223	13%	214	
orange	280	20%	328	
yellow	201	14%	229	
green	406	16%	262	
blue	337	24%	393	
	<u>1639</u>			

P pop. = plain m&ms

H H_0 : plain m&ms are distributed as

H_a : plain m&ms follow
some other distribution
of colors

13% brown
13% red
20% orange
14% yellow
16% green
24% blue

A R we'll assume our bag is a SRS.

IT 1639 candies is under 10% of all plain m&ms

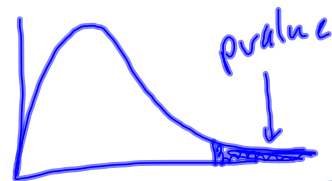
AL E_n All expected counts are over 1 & the
smallest is 213.07

N χ^2 Test for goodness of fit

T
$$\chi^2 = \sum \frac{(O-E)^2}{E} = \frac{(192-213.07)^2}{213.07} + \frac{(223-213.07)^2}{213.07} + \dots$$

O $= 99.93 \quad \downarrow df = 5$

5.47×10^{-20}



M Because the pvalue
is small ($< .05$),
we reject H_0

S we have evidence that plain
m&ms do not follow the distribution
identified by the company.