**April 25, 2013**

<u>Today's Agenda</u>
1. **Discuss categorical variables & 2-way tables (4-3)**
2. **Discuss procedures for chi-square GOF test (14-1)**

<u>Homework</u>:
- **Read Sections 4-3 and Chapter 14.**
- **(I realize that Sr. Project is tonight...do what you can!)**

Apr 25-9:58 AM

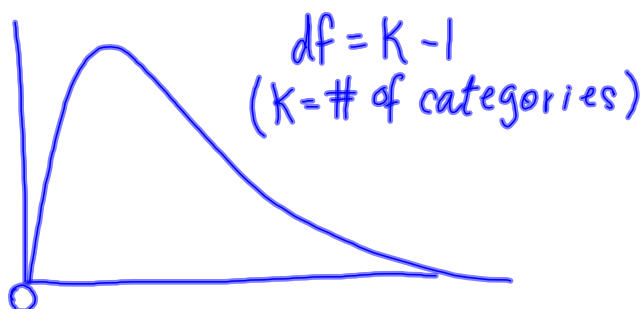# Categorical Data

- Two-way tables
  - ▷ Show values of one variable, contingent upon values of another table.

  - ▷ usually consist of counts, but could also include percentages

  - ▷ conditional vs. marginal distributions

Apr 25-10:38 AM

$\chi^2$ Chi-square GOF Test

$df = K - 1$
$(K = \text{\# of categories})$

Apr 25-2:47 PM

# Conditions

① Random Sample

② Observed counts $\geq 1$

③ Expected counts $\geq 5$
  (*No more than 20% of counts can be
    less than 5)

Apr 25-3:04 PM

$H_0$: The colors of plain M&Ms are distributed as claimed.
($p_{red} = .13$, $p_{brown} = .13$ ... $p_{yellow} = .14$)

$H_a$: The colors of plain M&Ms are not distributed as claimed.

$\alpha = .05$

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

Compute expected values
→ Total # of plain × each %age

**Conditions**
— Random sample

— All observed counts $\geq 1$

— All expected counts $\geq 5$
(No more than 20% of counts < 5)

$\chi^2 = 24.904$ (Stefan)
$$df = 5$$
p-value $= P(\chi^2 > 24.904) = .0001$

Because p-value $< \alpha$, we reject $H_0$. We have sufficient evidence to conclude that the ~~distribution of~~ colors of plain M&M's are not distributed as claimed.

Apr 25-11:02 AM