Recently while viewing the broadcast of a Chicago Cubs game the commentators offered the theory that the Cubs were penalized for playing too many day games. Their record in day games at the time of 8 wins and 18 losses was cited as evidence. Between dips of my potato chips and before I drifted off for an afternoon nap as I occupied the couch I decided I was unconvinced by this argument. What if they were a really bad team night or day? Then surely this would be unconvincing. They might even have a better record in the day than at night if they were truly bad. I was so concerned that I mustered the energy to go out to the driveway to retrieve the morning paper. The Cubs record at the time was 18 wins and 29 losses, sort of midway between the awfulness I had been concerned about and the record of a good team troubled by playing day games. I thought to myself, self, this is an ideal occasion to use your knowledge of contingency tables. Assuming the games' outcomes were independent and the probability of a win was constant across teams (not justifiable assumptions but the kind routinely made in such circumstances) no matter their probability of a win, even if they were in fact a bad or a good team, this test would detect whether or not the event of win or not was independent of the time the game was played. I set out with my trusty calculator and computed a chi square of 1.35 (see below for accuracy), not significant on one degree of freedom. I made so bold as to suggest to my wife that the announcers' conjecture was not supported by the evidence, theirs plus the additional I had obtained from the newspaper. She pointed out that my conclusion looked rather suspicious since the win loss ratios in the day vs the night games looked rather different. Below can be found the output of an analysis by SAS. I trust the numbers. They are fairly close to mine and the conclusion is the same. The conclusion reached by the broadcasters was not justified based upon their evidence nor the evidence available to the casual fan via the newspaper. There was not significant evidence of any positive or negative influence of the time of day on the outcome of games played by the Cubs.

```
********************** SAS Program*****************
options ls=79;
options pagesize=55;
  TITLE'Cubs Night vs Day';
DATA TST;
INPUT nd$ wl$ WT;
CARDS;
n w 10
n l 11
d w 8
d l 18
;
PROC FREQ;
WEIGHT WT;
TABLES nd*wl/CHISQ;


***************Output************************************

 Cubs Night vs Day                                1
                                                      00:04 Friday, June
2, 2006

                                The FREQ Procedure
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Table of nd by wl

nd	wl		
Frequency Percent Row Pct Col Pct	l	w	Total
d	18 38.30 69.23 62.07	8 17.02 30.77 44.44	26 55.32
n	11 23.40 52.38 37.93	10 21.28 47.62 55.56	21 44.68
Total	29 61.70	18 38.30	47 100.00

Statistics for Table of nd by wl

Statistic	DF	Value	Prob
Chi-Square	1	1.3958	0.2374
Likelihood Ratio Chi-Square	1	1.3962	0.2374
Continuity Adj. Chi-Square	1	0.7738	0.3791
Mantel-Haenszel Chi-Square	1	1.3661	0.2425
Phi Coefficient		0.1723	
Contingency Coefficient		0.1698	
Cramer's V		0.1723	

Fisher's Exact Test

Cell (1,1) Frequency (F)	18
Left-sided Pr <= F	0.9311
Right-sided Pr >= F	0.1896
Table Probability (P)	0.1206
Two-sided Pr <= P	0.3657

Sample Size = 47