FISHER'S EXACT TEST



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CRITERIA:

- Both variables are dichotomous qualitative (2 X 2 table).
- Sample size of < 20.</p>
- Sample size of 20 to < 40 but one of the cell has expected value of < 5.</p>

FORMULA FOR FISHER'S EXACT TEST

Weird since you have to calculate for many tables, until one of the cell becomes 0, then total up all the p values.



Example

Distribution of Underweight and Normal Weight for Taxi Drivers and Bus Drivers

	Underweight	Normal	Total
Bus Drivers	8	11	19
Taxi Drivers	3	11	14
Total	11	22	33

There is an association between the prevalence of underweight and the type of vehicle driven by the public vehicle drivers.

In this analysis, it is a 2 X 2 table, cells with an expected value < 5 (4.67) and small sample size, therefore the best type of analysis possible is **Fisher's Exact Test**.

Step 1



```
p1 = <u>19!14!11!22!</u>
33!8!11!3!11!
```

$$= 4.758 \times 10^{56} = 0.142$$
$$3.3471 \times 10^{57}$$

Step 2

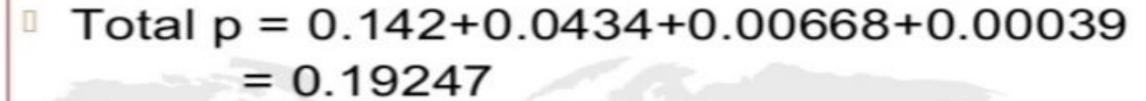
Create 3 more extreme tables by deducting 1 from the smallest value. Continue to do so till the cell becomes zero;

KB	N		KB	N		KB	N	
9	10	19	10	9	19	11	8	19
2	12	14	1	13	14	0	14	14
11	22	33	11	22	33	11	22	33

$$p2 = 0.0434$$

 $p3 = 0.00668$
 $p4 = 0.00039$

Step 3



- This is the p value for single-tailed test. To make it the p value for 2 tailed, times the value with 2; p = 0.385.
- p is bigger than 0.05, therefore the null hypothesis is not rejected.
- There is no association between occupation and UW;-)