SPSS Lab Problem – 4 **15-09-2025**

(a) The data of habit of smoking on 25 male and female is given below. By using SPSS, to test whether there is any association between habit of smoking and gender at 5% level of significance.

S.N.	Gender	Habit of Smoking
1	Male	Yes
2	Female	No
3	Male	Yes
4	Male	No
5	Male	Yes
6	Female	No
7	Female	No
8	Male	Yes
9	Female	Yes
10	Male	No
11	Female	No
12	Male	Yes
13	Female	No
14	Male	Yes
15	Female	Yes
16	Male	No
17	Male	No
18	Female	No
19	Female	No
20	Male	No
21	Male	Yes
22	Male	Yes
23	Female	No
24	Female	Yes
25	Male	Yes

SOLUTION:

H0 : Gender and Habbit of smoking are independent of each other.

H1 : Gender and habit of smoking are dependent of each other.

Steps-

Go to Analyze → Descriptive Statistics → Cross tabs → **Define** variables → Statistics → **Click** chi-square → Continue → **ok**

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
M 1 F 0 * Habit_of_smoking	25	100.0%	0	0.0%	25	100.0%

M 1 F 0 * Habit_of_smoking Crosstabulation

Count

		Habit_of_smoking		
		No	Yes	Total
M 1 F 0	F	8	2	10
	M	5	10	15
Total		13	12	25

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.235[a]	1	.022		
Continuity Correction[b]	3.532	1	.060		
Likelihood Ratio	5.514	1	.019		
Fisher's Exact Test				.041	.029
N of Valid Cases	25				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.80.

b. Computed only for a 2x2 table

INTERPRETATION:-

- ⇨ Chi square = 5.235,p= 0.022
- ⇨ Since p < 0.05 reject null hypothesis
- ⇨ The Fisher's Exact Test (p=0.0041) is preferred due to the low expected cell count and it is also supports the rejection of null hypothesis .

(b) The data of PG Grade of 20 Rural and Urban students is given below. By using SPSS, to test whether there is any association between PG Grade and Native Place of students at 5% level of significance.

S.N.	Native Place	PG Grade
1	Rural	Good
2	Urban	Very Good
3	Urban	Good
4	Rural	Excellent
5	Urban	Good
6	Rural	Very Good
7	Rural	Good
8	Urban	Very Good
9	Urban	Excellent

10	Rural	Very Good
11	Urban	Good
12	Rural	Excellent
13	Urban	Very Good
14	Rural	Good
15	Rural	Excellent
16	Urban	Good
17	Rural	Very Good
18	Rural	Good
19	Urban	Very Good
20	Urban	Excellent

SOLUTION:

H0 : There is no association between native and PG grade**.**

H1 : There is association between native and PG grade**.**

Steps –

Go to Analyze → Descriptive Statistics → Cross tabs → **Define** variables → Statistics → **Click** chi-square → Continue → **ok**

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Native_place * PG_Grade	25	100.0%	0	0.0%	25	100.0%

Native_place * PG_Grade Crosstabulation

Count

		PG_Grade				
			Excellent	Good	Very Good	Total
Native_place		5	0	0	0	5
	Rural	0	3	4	3	10
	Urban	0	2	4	4	10
Total		5	5	8	7	25

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.429[a]	6	.000
Likelihood Ratio	25.365	6	.000

N of Valid Cases	25		

a. 12 cells (100.0%) have expected count less than 5. The minimum expected count is 1.00.

INTERPRETATION:-

- ⇨ The pearson Chi-Square value is 25.429 with 6 degree of freedom
- ⇨ The p value is very small, we reject the null hypothesis .
- ⇨ The differences we obseverd in grades between students from different places are unlikely due to random chance.