Practical: 07

A. Perform testing of hypothesis using One-way ANOVA.

ANOVA assumptions:

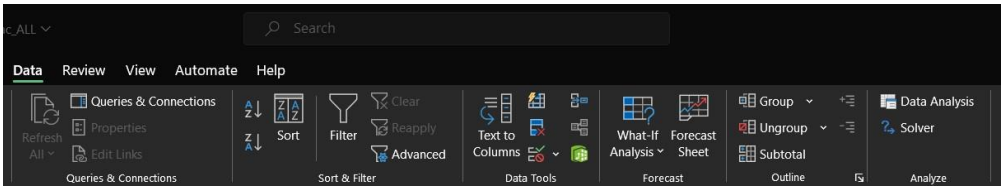
- The dependent variable (none, low medium and high in our example) should becontinuous.
- The independent variables (daily and weekly in our example) should be two or morecategorical groups.
- There must be different participants in each group with no participant being in morethan one group.
- The dependent variable should be approximately normally distributed for eachcategory.
- Variances of each group are approximately equal.

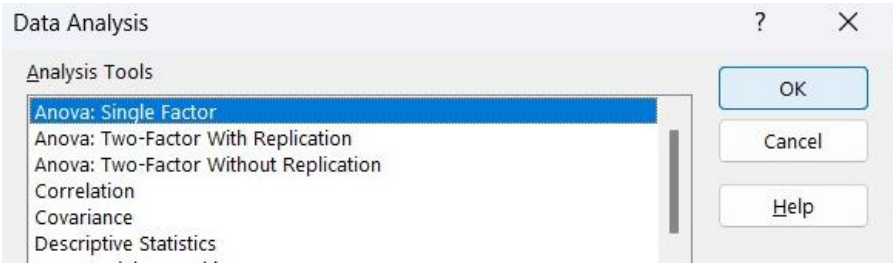
Below you can find the salaries of people who have a degree in economics, medicine orhistory.

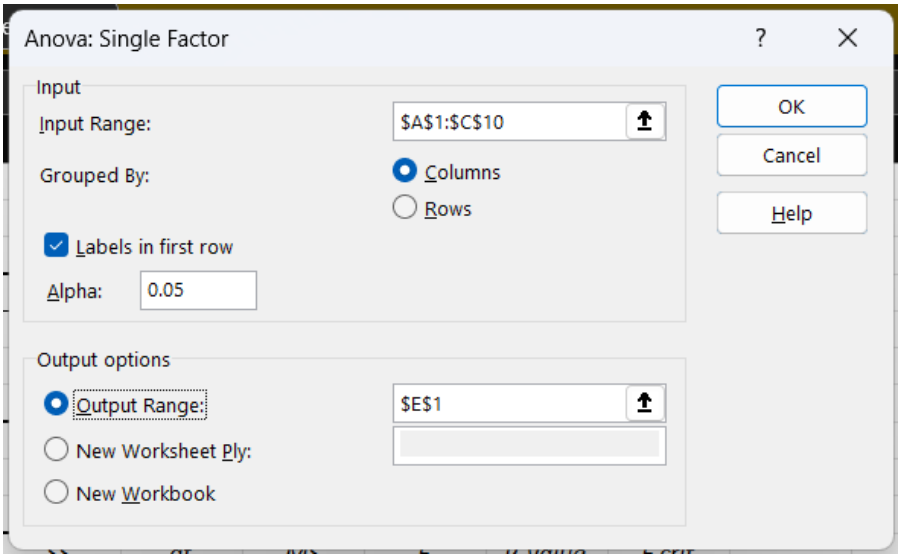
economics	medicine	history
42	69	35
53	54	40
49	58	53
53	64	42
43	64	50
44	55	39
45	56	55
52		39
54		40

H0 – all means are same (μ1 = μ2 = μ3).
H1 – at least one mean is different.

To perform ANOVA, go to Data > Data Analysis







Input Range: A1:C10
Output Range: E1

	D	E	F	G	H	I	J	K
1		Anova: Single Factor						
2								
3		SUMMARY						
4		*Groups*	*Count*	*Sum*	*Average*	*Variance*		
5		economics	9	435	48.33333	23.5		
6		medicine	7	420	60	32.33333		
7		history	9	393	43.66667	50.5		
8								
9								
10		ANOVA						
11		*Source of Variation*	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
12		Between Groups	1085.84	2	542.92	15.19623	7.16E-05	3.443357
13		Within Groups	786	22	35.72727			
14								
15		Total	1871.84	24				

To take a decision, in cell B14 type =IF(J11<C13,"H0 accepted","H1 accepted, H0 rejected")
Since the resulting p value is less than 0.05. The null hypothesis (H0) is rejected andconcluded that at least one mean is different.

Output:

	A	B	C	D
1	economics	medicine	history	
2	42	69	35	
3	53	54	40	
4	49	58	53	
5	53	64	42	
6	43	64	50	
7	44	55	39	
8	45	56	55	
9	52		39	
10	54		40	
11				
12				
13	significance level		0.05	
14		H1 accepted, H0 rejected		