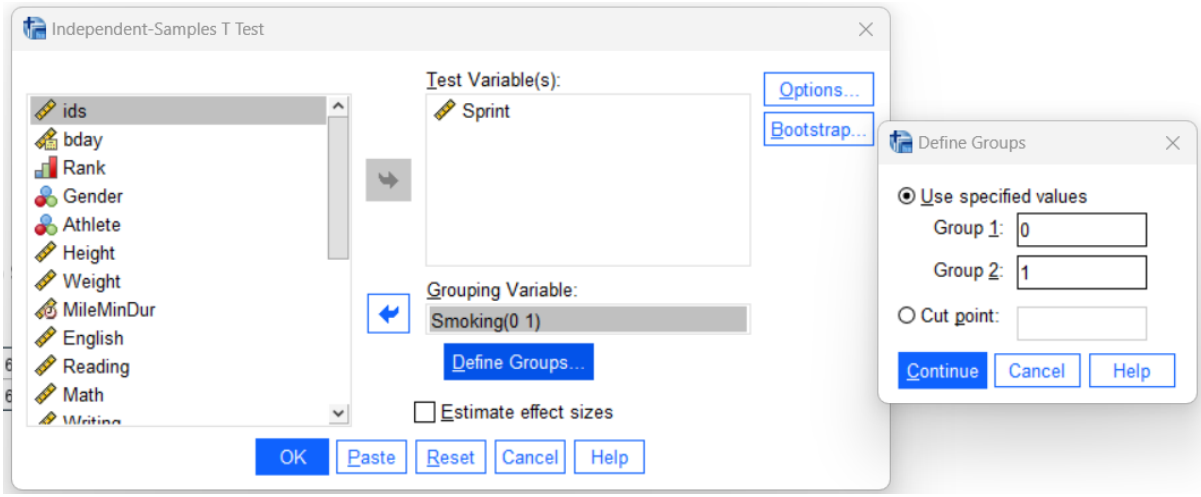
Motive

- Applying following SPSS Actions
  - Independent Sample T test
  - One Way Anova Test
- Using two datasets
  - Open-source dataset
    - dataset contains survey results from 435 students enrolled at a university in the United States.
      - ID number , Date of birth , Date of college , Expected date of college graduation , Class rank ,Gender ,Athlete , Height Height ,Weight , Smoking , sprint , MileMinDur , English Score , Reading Score, Math Score , Writing Score , State , LiveOnCampus , HowCommute , CommuteTime , SleepTime , StudyTime
  - Lecture dataset
    - ID , Gender , Age , Marital , Employment , QOL_total , Distress_total , Esteem_Q[1-10]

Open-Source Dataset

- Independent Sample T test
  - 

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Group Statistics

	Smoking	N	Mean	Std. Deviation	Std. Error Mean
Sprint	Non-smoker	261	6.41149	1.251783	.077483
	Past-smoker	33	6.83533	1.024415	.178328

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Sprint	Equal variances assumed	2.728	.100	-1.867	292	.063	-.423847	.227049	-.870707	.023014
	Equal variances not assumed			-2.180	45.026	.035	-.423847	.194434	-.815450	-.032243

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									99% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Sprint	Equal variances assumed	2.728	.100	-1.867	292	.063	-.423847	.227049	-1.012534	.164840
	Equal variances not assumed			-2.180	45.026	.035	-.423847	.194434	-.946780	.099086

Test for Variances : Sig > 0.05 so variance are equal (not significantly different)

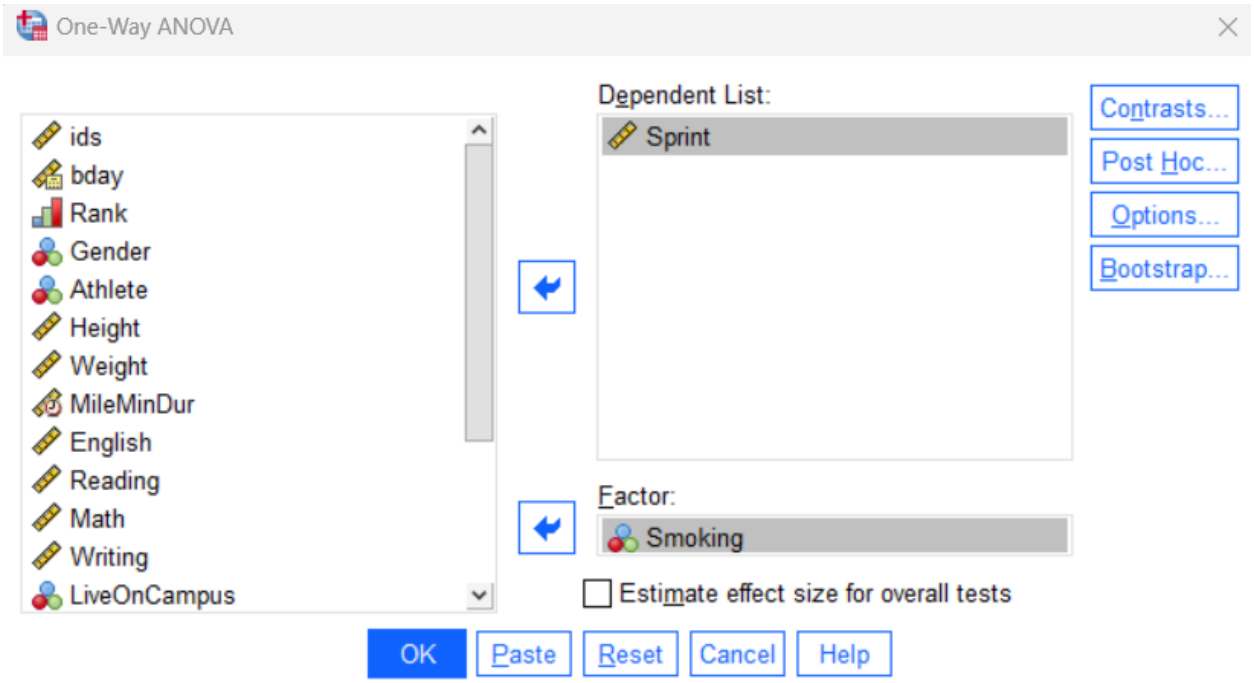
Test for Means : Sig > 0.05 so means are equal (not significantly different)

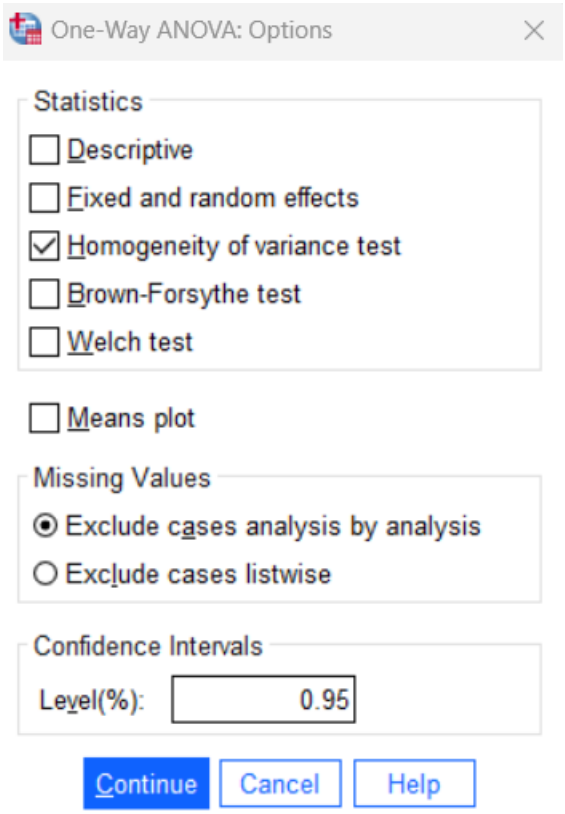
Mean difference : -0.4 so past_smoker mean greater than no_smoker mean

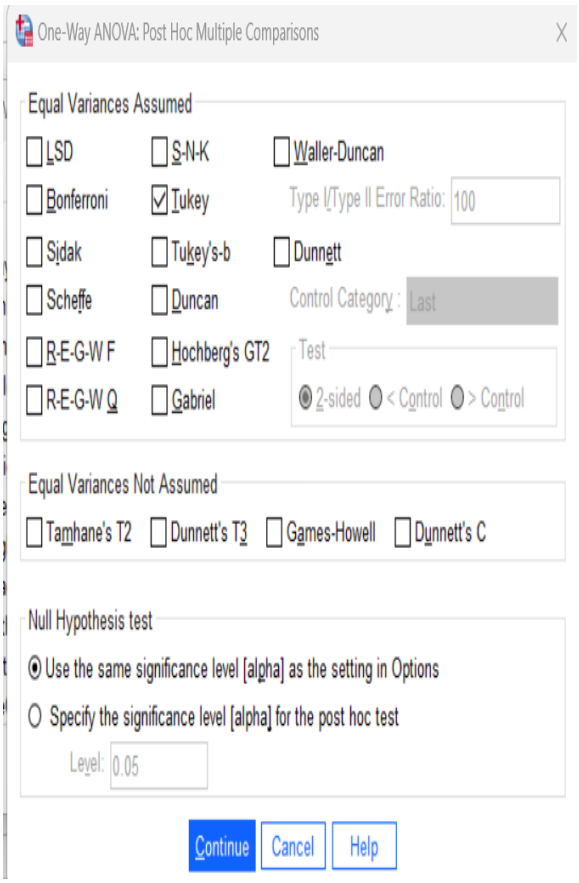
95% confidence interval for mean difference: -0.9 -> 0

99% confidence interval for mean difference: -1 -> 0.2 (wider range than 95% interval)

- One Way Anova Test







Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Sprint	Based on Mean	2.415	2	350	.091
	Based on Median	2.322	2	350	.100
	Based on Median and with adjusted df	2.322	2	343.190	.100
	Based on trimmed mean	2.349	2	350	.097

Sig > 0.05 so variances are homogenous/equal

ANOVA

Sprint

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.788	2	13.394	9.209	<.001
Within Groups	509.082	350	1.455		
Total	535.870	352			

Sig < 0.05 do they are not equal and there's significant difference

(I) Smoking	(J) Smoking	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Non-smoker	Past-smoker	-.423847	.222821	.140	-.94831	.10061
	Current-smoker	-.709429*	.173856	<.001	-1.11864	-.30022
Past-smoker	Non-smoker	.423847	.222821	.140	-.10061	.94831
	Current-smoker	-.285582	.262163	.521	-.90264	.33148
Current-smoker	Non-smoker	.709429*	.173856	<.001	.30022	1.11864
	Past-smoker	.285582	.262163	.521	-.33148	.90264

*. The mean difference is significant at the 0.05 level.

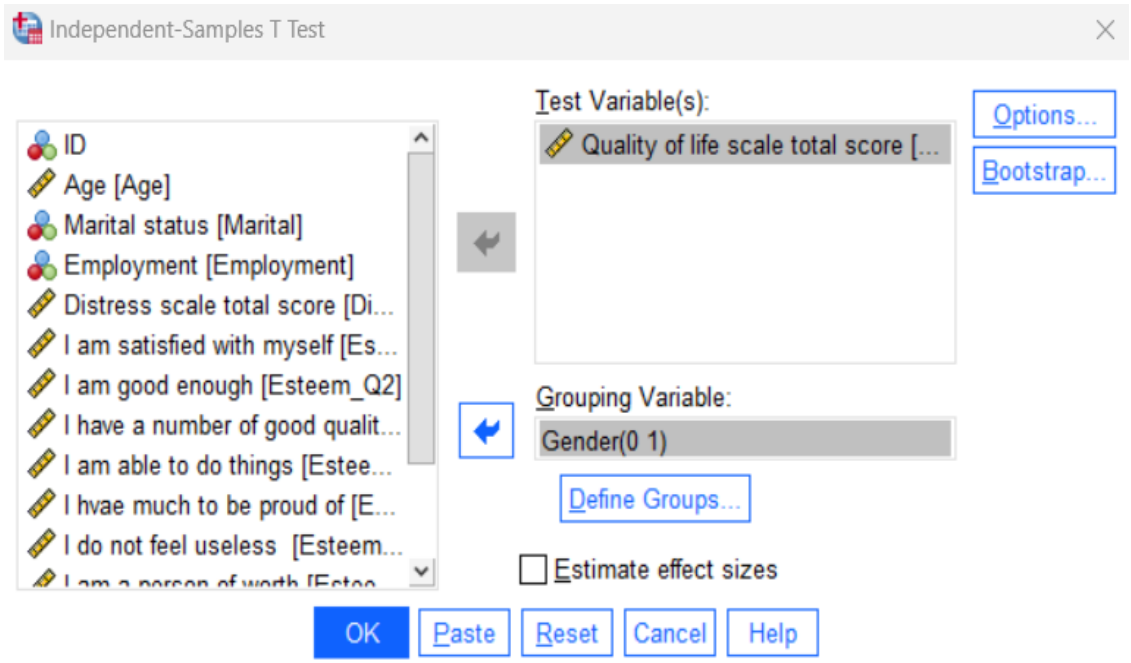
Past_smoker is higher than non_smoker (diff = .4)

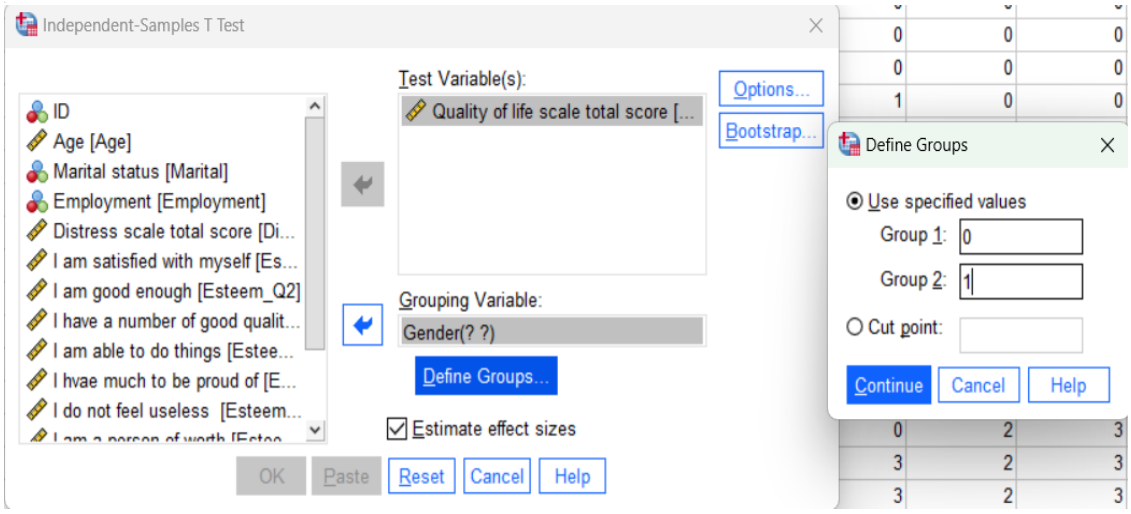
Current_smoker is higher than non_smoker (diff = 0.7)

Current_smoker is higher than past_smoker (diff = 0.3)

So the order by descending is : current_smoker then past_smoker then non_smoker

Lecture Dataset

- Independent Sample T test
  - 

  - 

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Quality of life scale total score	male	91	10.86	3.990	.418
	female	109	11.94	4.665	.447

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Quality of life scale total score	Equal variances assumed	2.490	.116	-1.738	198	.084	-1.079	.621	-2.303	.145
	Equal variances not assumed			-1.762	197.875	.080	-1.079	.612	-2.286	.128

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									99% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Quality of life scale total score	Equal variances assumed	2.490	.116	-1.738	198	.084	-1.079	.621	-2.693	.536
	Equal variances not assumed			-1.762	197.875	.080	-1.079	.612	-2.671	.513

Test for Variances : Sig > 0.05 so variance are equal (not significantly different)

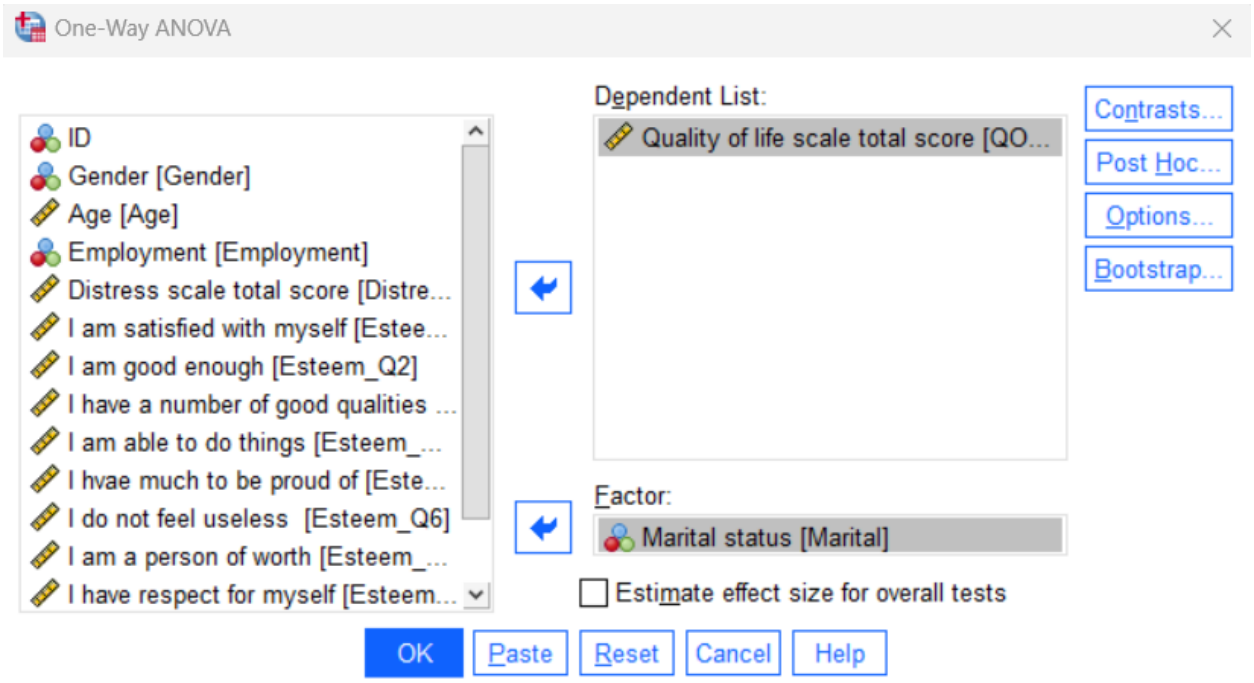
Test for Means : Sig > 0.05 so means are equal (not significantly different)

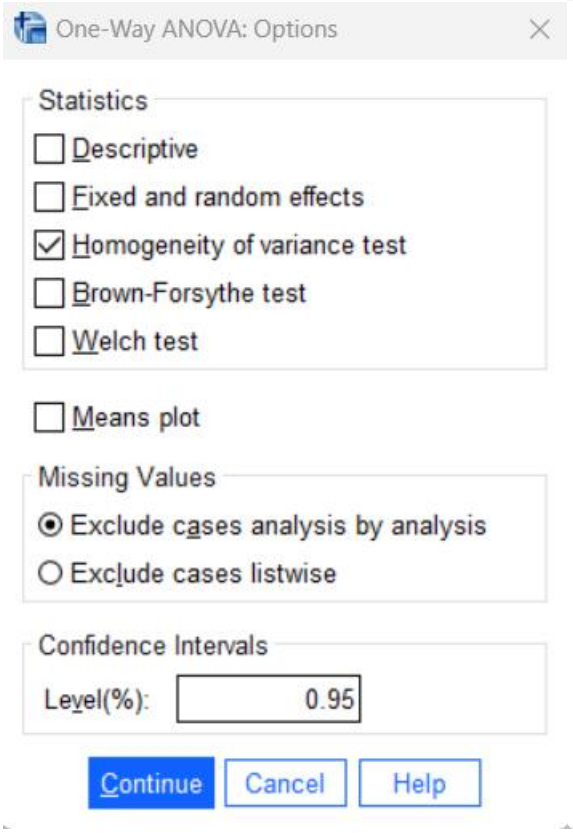
Mean difference : -1.08 so female mean greater than male mean

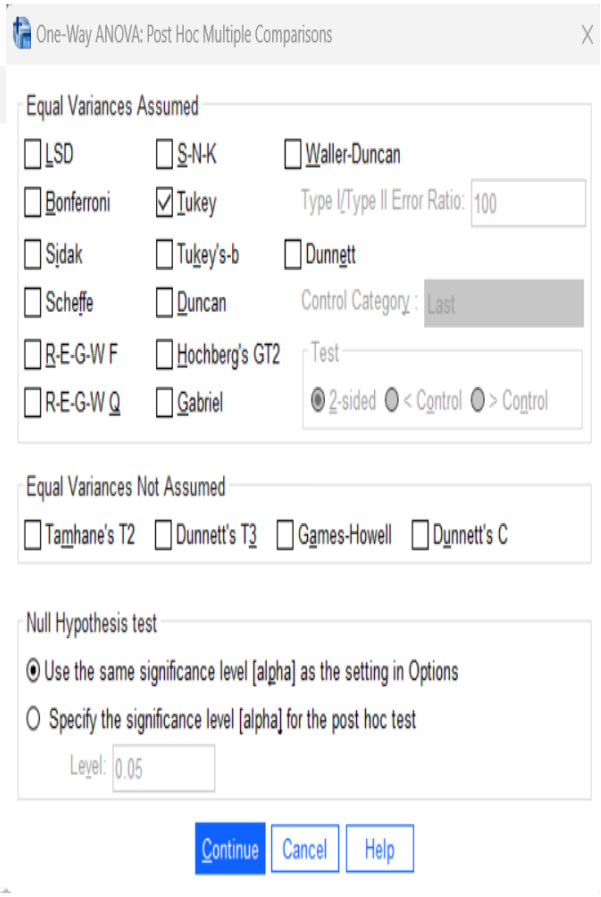
95% confidence interval for mean difference: -2.3 -> 0.15

99% confidence interval for mean difference: -2.7 -> 0.54 (wider range than 95% interval)

- One Way Anova Test







Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Quality of life scale total score	Based on Mean	.983	2	197	.376
	Based on Median	.708	2	197	.494
	Based on Median and with adjusted df	.708	2	195.081	.494
	Based on trimmed mean	.945	2	197	.390

Sig > 0.05 so variances are homogenous/equal

ANOVA

Quality of life scale total score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	643.663	2	321.831	19.827	<.001
Within Groups	3197.732	197	16.232		
Total	3841.395	199			

Sig < 0.05 do they are not equal and there's significant difference

Multiple Comparisons

Dependent Variable: Quality of life scale total score

Tukey HSD

(I) Marital status	(J) Marital status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
married, common law	widow, divorce, separate	4.381*	.712	<.001	2.70	6.06
	single, never married	1.423	.695	.104	-.22	3.06
widow, divorce, separate	married, common law	-4.381*	.712	<.001	-6.06	-2.70
	single, never married	-2.958*	.689	<.001	-4.59	-1.33
single, never married	married, common law	-1.423	.695	.104	-3.06	.22
	widow, divorce, separate	2.958*	.689	<.001	1.33	4.59

*. The mean difference is significant at the 0.05 level.

Married/common_law is higher than widow/divorce/separate (diff = 4.4)

Single/never_married is higher than widow/divorce/separate (diff = 3)

Married/common_law is higher than Single/never_married (diff = 1.4)

So the order by descending is : Married/common_law then Single/never_married then widow/divorce/separate