FORMULAS

UNIVARIATE

	SAMPLE	POPULATION
MEAN	$M = \frac{\Sigma X}{n}$	$\mu = \frac{\Sigma X}{N}$
STANDARD DEVIATION	$SD = \sqrt{\frac{SS}{n-1}}$	$\sigma = \sqrt{\frac{SS}{N}}$
VARIANCE	$SD^2 = \frac{SS}{n-1}$	$\sigma^2 = \frac{SS}{N}$
SUM OF THE SQUARED DEVIATIONS (SS)	$SS = \Sigma(X - M)^2$ $SS = \sum X^2 - \frac{(\Sigma X)^2}{n}$	$SS = \Sigma(X - \mu)^2$ $SS = \sum X^2 - \frac{(\Sigma X)^2}{n}$
Z FOR A SINGLE SCORE	$z = \frac{X - M}{SD}$	$z = \frac{X - \mu}{\sigma}$

HYPOTHESIS TESTING AND EFFECT SIZE FOR COMPARING TWO MEANS

	TEST STATISTIC	EFFECT SIZE
Z FOR A SAMPLE MEAN	$z = \frac{M - \mu}{SEM_p}$ $SEM_p = \frac{\sigma}{\sqrt{n}}$	$d = \frac{M - \mu}{\sigma}$
SINGLE SAMPLE T $df = n - 1$	$t = \frac{M - \mu}{SEM_S}$ $SEM_S = \frac{SD}{\sqrt{n}}$	$d = \frac{M - \mu}{SD}$
INDEPENDENT MEASURES T $df = (n_1 - 1) + (n_2 - 1)$	$t = \frac{(M_1 - M_2)}{SEM_i}$ $SD_p^2 = \frac{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2}{(n_1 - 1) + (n_2 - 1)}$ $SEM_i = \sqrt{\frac{SD_p^2}{n_1} + \frac{SD_p^2}{n_2}}$	$d = \frac{M_1 - M_2}{\sqrt{SD_p^2}}$
RELATED SAMPLES T $df = n - 1$	$t = \frac{M_D}{SEM_r}$ $SEM_r = \frac{SD_D}{\sqrt{n}}$ $SS_D = \Sigma D^2 - \frac{(\Sigma D)^2}{n}$	$d = \frac{M_D}{SD_D}$

INDEPENDENT MEASURES ANOVA (ONE WAY)

Source of Variance	SS	df	MS	F	η^2
Between Treatments	$(SS_M)n$	$g-1$	$\frac{SS_{between}}{df_{between}}$	$\frac{MS_{between}}{MS_{within}}$	$\frac{SS_{between}}{SS_{between}+SS_{error}}$
Within Treatments	$\sum SS_{each\ group}$	$N-g$	$\frac{SS_{within}}{df_{within}}$		
Total	$SS_{all\ scores}$	$N-1$			

INDEPENDENT MEASURES ANOVA (TWO WAY)

Source	df	MS	F	η_p^2
Between				
Factor A	*a-1*	$\frac{SS_A}{df_A}$	$\frac{MS_A}{MS_{within}}$	$\frac{SS_A}{SS_A+SS_{within}}$
Factor B	*b-1*	$\frac{SS_B}{df_B}$	$\frac{MS_B}{MS_{within}}$	$\frac{SS_B}{SS_B+SS_{within}}$
A X B	*(a-1)(b-1)*	$\frac{SS_{A\ X\ B}}{df_{A\ X\ B}}$	$\frac{MS_{A\ X\ B}}{MS_{within}}$	$\frac{SS_{A\ X\ B}}{SS_{A\ X\ B}+SS_{within}}$
Within	*N-(a)(b)*	$\frac{SS_{within}}{df_{within}}$		
Total	N-1			

$$HSD = q\sqrt{\frac{MS_{within}}{n}}$$

	Test Statistic	**Effect Size**
Pearson Correlation $df = n - 2$	$r = \frac{SS_{XY}}{\sqrt{(SS_X)(SS_Y)}}$ $SS_{XY} = \sum XY - \frac{(\sum X)(\sum Y)}{n}$	r^2
Spearman Correlation $df = n - 2$	same as Pearson but use ranked data	r^2
Regression	$\hat{Y} = bx + a$ $b = r\left(\frac{SD_Y}{SD_x}\right)$ $a = M_y - bM_x$	
Chi Square Goodness of Fit $df = (Categories - 1)$	$\chi^2 = \sum \frac{(OF - EF)^2}{EF}$	
Chi Square Test of Independence $df = (Columns - 1) * (Rows - 1)$ *df* = (Columns -1) OR (Rows – 1), whichever is smaller*	$\chi^2 = \sum \frac{(OF - EF)^2}{EF}$ $E = \frac{(RT)(CT)}{n}$	For 2X2: $\phi = \sqrt{\frac{\chi^2}{n}}$ All others: $\phi' = \sqrt{\frac{\chi^2}{n(df*)}}$

STATISTICAL TEST	**MEASURE OF EFFECT SIZE**	**GUIDELINES**
Z FOR A SAMPLE MEAN AND ALL T-TESTS	d	less than .2 = small between .2 and 8 = medium greater than .8 = large
ANOVA	Partial η^2 (Partial eta squared)	less than .1 = small between .1 and .25 = medium greater than .25 = large
PEARSON AND SPEARMAN CORRELATION	r^2 (coefficient of determination)	less than .1 = small between .1 and .25 = medium greater than .25 = large
χ^2 2 X 2	Φ	less than .1 = small between .1 and .5 = medium greater than .5 = large
X^2 *df* * = (CT -1) OR (RT – 1), WHICHEVER IS SMALLER	Cramer's Φ df* = 1	less than .3 = small between .3 and .5 = medium greater than .5 = large
	Cramer's Φ df * 2	less than.21 = small between .21 and .35 = medium greater than .35 = large
	Cramer's Φ df *=3	less than .17 = small between .17 and .29 = medium greater than .29 = large

APPENDIX B: UNIT NORMAL TABLE (Z TABLE)

z score	Body	*Tail*	z score	Body	*Tail*	z score	Body	*Tail*	z score	Body	*Tail*
0.00	0.5000	*0.5000*	**0.44**	0.6700	*0.3300*	**0.88**	0.8106	*0.1894*	**1.32**	0.9066	*0.0934*
0.01	0.5040	*0.4960*	**0.45**	0.6736	*0.3264*	**0.89**	0.8133	*0.1867*	**1.33**	0.9082	*0.0918*
0.02	0.5080	*0.4920*	**0.46**	0.6772	*0.3228*	**0.90**	0.8159	*0.1841*	**1.34**	0.9099	*0.0901*
0.03	0.5120	*0.4880*	**0.47**	0.6808	*0.3192*	**0.91**	0.8186	*0.1814*	**1.35**	0.9115	*0.0885*
0.04	0.5160	*0.4840*	**0.48**	0.6844	*0.3156*	**0.92**	0.8212	*0.1788*	**1.36**	0.9131	*0.0869*
0.05	0.5199	*0.4801*	**0.49**	0.6879	*0.3121*	**0.93**	0.8238	*0.1762*	**1.37**	0.9147	*0.0853*
0.06	0.5239	*0.4761*	**0.50**	0.6915	*0.3085*	**0.94**	0.8264	*0.1736*	**1.38**	0.9162	*0.0838*
0.07	0.5279	*0.4721*	**0.51**	0.6950	*0.3050*	**0.95**	0.8289	*0.1711*	**1.39**	0.9177	*0.0823*
0.08	0.5319	*0.4681*	**0.52**	0.6985	*0.3015*	**0.96**	0.8315	*0.1685*	**1.40**	0.9192	*0.0808*
0.09	0.5359	*0.4641*	**0.53**	0.7019	*0.2981*	**0.97**	0.8340	*0.1660*	**1.41**	0.9207	*0.0793*
0.10	0.5398	*0.4602*	**0.54**	0.7054	*0.2946*	**0.98**	0.8365	*0.1635*	**1.42**	0.9222	*0.0778*
0.11	0.5438	*0.4562*	**0.55**	0.7088	*0.2912*	**0.99**	0.8389	*0.1611*	**1.43**	0.9236	*0.0764*
0.12	0.5478	*0.4522*	**0.56**	0.7123	*0.2877*	**1.00**	0.8413	*0.1587*	**1.44**	0.9251	*0.0749*
0.13	0.5517	*0.4483*	**0.57**	0.7157	*0.2843*	**1.01**	0.8438	*0.1562*	**1.45**	0.9265	*0.0735*
0.14	0.5557	*0.4443*	**0.58**	0.7190	*0.2810*	**1.02**	0.8461	*0.1539*	**1.46**	0.9279	*0.0721*
0.15	0.5596	*0.4404*	**0.59**	0.7224	*0.2776*	**1.03**	0.8485	*0.1515*	**1.47**	0.9292	*0.0708*
0.16	0.5636	*0.4364*	**0.60**	0.7257	*0.2743*	**1.04**	0.8508	*0.1492*	**1.48**	0.9306	*0.0694*
0.17	0.5675	*0.4325*	**0.61**	0.7291	*0.2709*	**1.05**	0.8531	*0.1469*	**1.49**	0.9319	*0.0681*
0.18	0.5714	*0.4286*	**0.62**	0.7324	*0.2676*	**1.06**	0.8554	*0.1446*	**1.50**	0.9332	*0.0668*
0.19	0.5753	*0.4247*	**0.63**	0.7357	*0.2643*	**1.07**	0.8577	*0.1423*	**1.51**	0.9345	*0.0655*
0.20	0.5793	*0.4207*	**0.64**	0.7389	*0.2611*	**1.08**	0.8599	*0.1401*	**1.52**	0.9357	*0.0643*
0.21	0.5832	*0.4168*	**0.65**	0.7422	*0.2578*	**1.09**	0.8621	*0.1379*	**1.53**	0.9370	*0.0630*
0.22	0.5871	*0.4129*	**0.66**	0.7454	*0.2546*	**1.10**	0.8643	*0.1357*	**1.54**	0.9382	*0.0618*
0.23	0.5910	*0.4090*	**0.67**	0.7486	*0.2514*	**1.11**	0.8665	*0.1335*	**1.55**	0.9394	*0.0606*
0.24	0.5948	*0.4052*	**0.68**	0.7517	*0.2483*	**1.12**	0.8686	*0.1314*	**1.56**	0.9406	*0.0594*
0.25	0.5987	*0.4013*	**0.69**	0.7549	*0.2451*	**1.13**	0.8708	*0.1292*	**1.57**	0.9418	*0.0582*
0.26	0.6026	*0.3974*	**0.70**	0.7580	*0.2420*	**1.14**	0.8729	*0.1271*	**1.58**	0.9429	*0.0571*
0.27	0.6064	*0.3936*	**0.71**	0.7611	*0.2389*	**1.15**	0.8749	*0.1251*	**1.59**	0.9441	*0.0559*
0.28	0.6103	*0.3897*	**0.72**	0.7642	*0.2358*	**1.16**	0.8770	*0.1230*	**1.60**	0.9452	*0.0548*
0.29	0.6141	*0.3859*	**0.73**	0.7673	*0.2327*	**1.17**	0.8790	*0.1210*	**1.61**	0.9463	*0.0537*
0.30	0.6179	*0.3821*	**0.74**	0.7704	*0.2296*	**1.18**	0.8810	*0.1190*	**1.62**	0.9474	*0.0526*
0.31	0.6217	*0.3783*	**0.75**	0.7734	*0.2266*	**1.19**	0.8830	*0.1170*	**1.63**	0.9484	*0.0516*
0.32	0.6255	*0.3745*	**0.76**	0.7764	*0.2236*	**1.20**	0.8849	*0.1151*	**1.64**	0.9495	*0.0505*
0.33	0.6293	*0.3707*	**0.77**	0.7794	*0.2206*	**1.21**	0.8869	*0.1131*	**1.65**	0.9505	*0.0495*
0.34	0.6331	*0.3669*	**0.78**	0.7823	*0.2177*	**1.22**	0.8888	*0.1112*	**1.66**	0.9515	*0.0485*
0.35	0.6368	*0.3632*	**0.79**	0.7852	*0.2148*	**1.23**	0.8907	*0.1093*	**1.67**	0.9525	*0.0475*
0.36	0.6406	*0.3594*	**0.80**	0.7881	*0.2119*	**1.24**	0.8925	*0.1075*	**1.68**	0.9535	*0.0465*
0.37	0.6443	*0.3557*	**0.81**	0.7910	*0.2090*	**1.25**	0.8944	*0.1056*	**1.69**	0.9545	*0.0455*
0.38	0.6480	*0.3520*	**0.82**	0.7939	*0.2061*	**1.26**	0.8962	*0.1038*	**1.70**	0.9554	*0.0446*
0.39	0.6517	*0.3483*	**0.83**	0.7967	*0.2033*	**1.27**	0.8980	*0.1020*	**1.71**	0.9564	*0.0436*
0.40	0.6554	*0.3446*	**0.84**	0.7995	*0.2005*	**1.28**	0.8997	*0.1003*	**1.72**	0.9573	*0.0427*
0.41	0.6591	*0.3409*	**0.85**	0.8023	*0.1977*	**1.29**	0.9015	*0.0985*	**1.73**	0.9582	*0.0418*
0.42	0.6628	*0.3372*	**0.86**	0.8051	*0.1949*	**1.30**	0.9032	*0.0968*	**1.74**	0.9591	*0.0409*
0.43	0.6664	*0.3336*	**0.87**	0.8078	*0.1922*	**1.31**	0.9049	*0.0951*	**1.75**	0.9599	*0.0401*

z score	Body	*Tail*	z score	Body	*Tail*	*z score*	Body	*Tail*	*z score*	Body	*Tail*
1.76	0.9608	*0.0392*	**2.20**	0.9861	*0.0139*	***2.64***	0.9959	*0.0041*	***3.08***	0.9990	*0.0010*
1.77	0.9616	*0.0384*	**2.21**	0.9864	*0.0136*	***2.65***	0.9960	*0.0040*	***3.09***	0.9990	*0.0010*
1.78	0.9625	*0.0375*	**2.22**	0.9868	*0.0132*	***2.66***	0.9961	*0.0039*	***3.10***	0.9990	*0.0010*
1.79	0.9633	*0.0367*	**2.23**	0.9871	*0.0129*	***2.67***	0.9962	*0.0038*	***3.11***	0.9991	*0.0009*
1.80	0.9641	*0.0359*	**2.24**	0.9875	*0.0125*	***2.68***	0.9963	*0.0037*	***3.12***	0.9991	*0.0009*
1.81	0.9649	*0.0351*	**2.25**	0.9878	*0.0122*	***2.69***	0.9964	*0.0036*	***3.13***	0.9991	*0.0009*
1.82	0.9656	*0.0344*	**2.26**	0.9881	*0.0119*	***2.70***	0.9965	*0.0035*	***3.14***	0.9992	*0.0008*
1.83	0.9664	*0.0336*	**2.27**	0.9884	*0.0116*	***2.71***	0.9966	*0.0034*	***3.15***	0.9992	*0.0008*
1.84	0.9671	*0.0329*	**2.28**	0.9887	*0.0113*	***2.72***	0.9967	*0.0033*	***3.16***	0.9992	*0.0008*
1.85	0.9678	*0.0322*	**2.29**	0.9890	*0.0110*	***2.73***	0.9968	*0.0032*	***3.17***	0.9992	*0.0008*
1.86	0.9686	*0.0314*	**2.30**	0.9893	*0.0107*	***2.74***	0.9969	*0.0031*	***3.18***	0.9993	*0.0007*
1.87	0.9693	*0.0307*	**2.31**	0.9896	*0.0104*	***2.75***	0.9970	*0.0030*	***3.19***	0.9993	*0.0007*
1.88	0.9699	*0.0301*	**2.32**	0.9898	*0.0102*	***2.76***	0.9971	*0.0029*	***3.20***	0.9993	*0.0007*
1.89	0.9706	*0.0294*	**2.33**	0.9901	*0.0099*	***2.77***	0.9972	*0.0028*	***3.21***	0.9993	*0.0007*
1.90	0.9713	*0.0287*	**2.34**	0.9904	*0.0096*	***2.78***	0.9973	*0.0027*	***3.22***	0.9994	*0.0006*
1.91	0.9719	*0.0281*	**2.35**	0.9906	*0.0094*	***2.79***	0.9974	*0.0026*	***3.23***	0.9994	*0.0006*
1.92	0.9726	*0.0274*	**2.36**	0.9909	*0.0091*	***2.80***	0.9974	*0.0026*	***3.24***	0.9994	*0.0006*
1.93	0.9732	*0.0268*	**2.37**	0.9911	*0.0089*	***2.81***	0.9975	*0.0025*	***3.25***	0.9994	*0.0006*
1.94	0.9738	*0.0262*	**2.38**	0.9913	*0.0087*	***2.82***	0.9976	*0.0024*	***3.26***	0.9994	*0.0006*
1.95	0.9744	*0.0256*	**2.39**	0.9916	*0.0084*	***2.83***	0.9977	*0.0023*	***3.27***	0.9995	*0.0005*
1.96	0.9750	*0.0250*	**2.40**	0.9918	*0.0082*	***2.84***	0.9977	*0.0023*	***3.28***	0.9995	*0.0005*
1.97	0.9756	*0.0244*	**2.41**	0.9920	*0.0080*	***2.85***	0.9978	*0.0022*	***3.29***	0.9995	*0.0005*
1.98	0.9761	*0.0239*	**2.42**	0.9922	*0.0078*	***2.86***	0.9979	*0.0021*	***3.30***	0.9995	*0.0005*
1.99	0.9767	*0.0233*	**2.43**	0.9925	*0.0075*	***2.87***	0.9979	*0.0021*	***3.31***	0.9995	*0.0005*
2.00	0.9772	*0.0228*	**2.44**	0.9927	*0.0073*	***2.88***	0.9980	*0.0020*	***3.32***	0.9995	*0.0005*
2.01	0.9778	*0.0222*	**2.45**	0.9929	*0.0071*	***2.89***	0.9981	*0.0019*	***3.33***	0.9996	*0.0004*
2.02	0.9783	*0.0217*	**2.46**	0.9931	*0.0069*	***2.90***	0.9981	*0.0019*	***3.34***	0.9996	*0.0004*
2.03	0.9788	*0.0212*	**2.47**	0.9932	*0.0068*	***2.91***	0.9982	*0.0018*	***3.35***	0.9996	*0.0004*
2.04	0.9793	*0.0207*	**2.48**	0.9934	*0.0066*	***2.92***	0.9982	*0.0018*	***3.36***	0.9996	*0.0004*
2.05	0.9798	*0.0202*	**2.49**	0.9936	*0.0064*	***2.93***	0.9983	*0.0017*	***3.37***	0.9996	*0.0004*
2.06	0.9803	*0.0197*	**2.50**	0.9938	*0.0062*	***2.94***	0.9984	*0.0016*	***3.38***	0.9996	*0.0004*
2.07	0.9808	*0.0192*	**2.51**	0.9940	*0.0060*	***2.95***	0.9984	*0.0016*	***3.39***	0.9997	*0.0003*
2.08	0.9812	*0.0188*	**2.52**	0.9941	*0.0059*	***2.96***	0.9985	*0.0015*	***3.40***	0.9997	*0.0003*
2.09	0.9817	*0.0183*	**2.53**	0.9943	*0.0057*	***2.97***	0.9985	*0.0015*	***3.41***	0.9997	*0.0003*
2.10	0.9821	*0.0179*	**2.54**	0.9945	*0.0055*	***2.98***	0.9986	*0.0014*	***3.42***	0.9997	*0.0003*
2.11	0.9826	*0.0174*	**2.55**	0.9946	*0.0054*	***2.99***	0.9986	*0.0014*	***3.43***	0.9997	*0.0003*
2.12	0.9830	*0.0170*	**2.56**	0.9948	*0.0052*	***3.00***	0.9987	*0.0013*	***3.44***	0.9997	*0.0003*
2.13	0.9834	*0.0166*	**2.57**	0.9949	*0.0051*	***3.01***	0.9987	*0.0013*	***3.45***	0.9997	*0.0003*
2.14	0.9838	*0.0162*	**2.58**	0.9951	*0.0049*	***3.02***	0.9987	*0.0013*	***3.46***	0.9997	*0.0003*
2.15	0.9842	*0.0158*	**2.59**	0.9952	*0.0048*	***3.03***	0.9988	*0.0012*	***3.47***	0.9997	*0.0003*
2.16	0.9846	*0.0154*	**2.60**	0.9953	*0.0047*	***3.04***	0.9988	*0.0012*	***3.48***	0.9997	*0.0003*
2.17	0.9850	*0.0150*	**2.61**	0.9955	*0.0045*	***3.05***	0.9989	*0.0011*	***3.49***	0.9998	*0.0002*
2.18	0.9854	*0.0146*	**2.62**	0.9956	*0.0044*	***3.06***	0.9989	*0.0011*	***3.50***	0.9998	*0.0002*
2.19	0.9857	*0.0143*	**2.63**	0.9957	*0.0043*	***3.07***	0.9989	*0.0011*	***3.51***	0.9998	*0.0002*

APPENDIX C: T TABLE(ONE TAILED PROBABILITIES)

df	α=.05	*α=.01*	df	α=.05	*α=.01*	df	α=.05	*α=.01*	df	α=.05	*α=.01*
1	6.3138	*31.8205*	**32**	1.6939	*2.4487*	**63**	1.6694	*2.3870*	**94**	1.6612	*2.3667*
2	2.9200	*6.9646*	**33**	1.6924	*2.4448*	**64**	1.6690	*2.3860*	**95**	1.6611	*2.3662*
3	2.3534	*4.5407*	**34**	1.6909	*2.4411*	**65**	1.6686	*2.3851*	**96**	1.6609	*2.3658*
4	2.1318	*3.7469*	**35**	1.6896	*2.4377*	**66**	1.6683	*2.3842*	**97**	1.6607	*2.3654*
5	2.0150	*3.3649*	**36**	1.6883	*2.4345*	**67**	1.6679	*2.3833*	**98**	1.6606	*2.3650*
6	1.9432	*3.1427*	**37**	1.6871	*2.4314*	**68**	1.6676	*2.3824*	**99**	1.6604	*2.3646*
7	1.8946	*2.9980*	**38**	1.6860	*2.4286*	**69**	1.6672	*2.3816*	**100**	1.6602	*2.3642*
8	1.8595	*2.8965*	**39**	1.6849	*2.4258*	**70**	1.6669	*2.3808*	**101**	1.6601	*2.3638*
9	1.8331	*2.8214*	**40**	1.6839	*2.4233*	**71**	1.6666	*2.3800*	**102**	1.6599	*2.3635*
10	1.8125	*2.7638*	**41**	1.6829	*2.4208*	**72**	1.6663	*2.3793*	**103**	1.6598	*2.3631*
11	1.7959	*2.7181*	**42**	1.6820	*2.4185*	**73**	1.6660	*2.3785*	**104**	1.6596	*2.3627*
12	1.7823	*2.6810*	**43**	1.6811	*2.4163*	**74**	1.6657	*2.3778*	**105**	1.6595	*2.3624*
13	1.7709	*2.6503*	**44**	1.6802	*2.4141*	**75**	1.6654	*2.3771*	**106**	1.6594	*2.3620*
14	1.7613	*2.6245*	**45**	1.6794	*2.4121*	**76**	1.6652	*2.3764*	**107**	1.6592	*2.3617*
15	1.7531	*2.6025*	**46**	1.6787	*2.4102*	**77**	1.6649	*2.3758*	**108**	1.6591	*2.3614*
16	1.7459	*2.5835*	**47**	1.6779	*2.4083*	**78**	1.6646	*2.3751*	**109**	1.6590	*2.3610*
17	1.7396	*2.5669*	**48**	1.6772	*2.4066*	**79**	1.6644	*2.3745*	**110**	1.6588	*2.3607*
18	1.7341	*2.5524*	**49**	1.6766	*2.4049*	**80**	1.6641	*2.3739*	**111**	1.6587	*2.3604*
19	1.7291	*2.5395*	**50**	1.6759	*2.4033*	**81**	1.6639	*2.3733*	**112**	1.6586	*2.3601*
20	1.7247	*2.5280*	**51**	1.6753	*2.4017*	**82**	1.6636	*2.3727*	**113**	1.6585	*2.3598*
21	1.7207	*2.5176*	**52**	1.6747	*2.4002*	**83**	1.6634	*2.3721*	**114**	1.6583	*2.3595*
22	1.7171	*2.5083*	**53**	1.6741	*2.3988*	**84**	1.6632	*2.3716*	**115**	1.6582	*2.3592*
23	1.7139	*2.4999*	**54**	1.6736	*2.3974*	**85**	1.6630	*2.3710*	**116**	1.6581	*2.3589*
24	1.7109	*2.4922*	**55**	1.6730	*2.3961*	**86**	1.6628	*2.3705*	**117**	1.6580	*2.3586*
25	1.7081	*2.4851*	**56**	1.6725	*2.3948*	**87**	1.6626	*2.3700*	**118**	1.6579	*2.3584*
26	1.7056	*2.4786*	**57**	1.6720	*2.3936*	**88**	1.6624	*2.3695*	**119**	1.6578	*2.3581*
27	1.7033	*2.4727*	**58**	1.6716	*2.3924*	**89**	1.6622	*2.3690*	**120**	1.6577	*2.3578*
28	1.7011	*2.4671*	**59**	1.6711	*2.3912*	**90**	1.6620	*2.3685*	**∞**	1.6450	*2.3260*
29	1.6991	*2.4620*	**60**	1.6706	*2.3901*	**91**	1.6618	*2.3680*			
30	1.6973	*2.4573*	**61**	1.6702	*2.3890*	**92**	1.6616	*2.3676*			
31	1.6955	*2.4528*	**62**	1.6698	*2.3880*	**93**	1.6614	*2.3671*			

T TABLE: TWO TAILED PROBABILITIES

df	α=.05	α=.01	df	α=.05	α=.01	df	α=.05	α=.01	df	α=.05	α=.01
1	12.7062	63.6567	32	2.0369	2.7385	63	1.9983	2.6561	94	1.9855	2.6291
2	4.3027	9.9248	33	2.0345	2.7333	64	1.9977	2.6549	95	1.9853	2.6286
3	3.1824	5.8409	34	2.0322	2.7284	65	1.9971	2.6536	96	1.9850	2.6280
4	2.7764	4.6041	35	2.0301	2.7238	66	1.9966	2.6524	97	1.9847	2.6275
5	2.5706	4.0321	36	2.0281	2.7195	67	1.9960	2.6512	98	1.9845	2.6269
6	2.4469	3.7074	37	2.0262	2.7154	68	1.9955	2.6501	99	1.9842	2.6264
7	2.3646	3.4995	38	2.0244	2.7116	69	1.9949	2.6490	100	1.9840	2.6259
8	2.3060	3.3554	39	2.0227	2.7079	70	1.9944	2.6479	101	1.9837	2.6254
9	2.2622	3.2498	40	2.0211	2.7045	71	1.9939	2.6469	102	1.9835	2.6249
10	2.2281	3.1693	41	2.0195	2.7012	72	1.9935	2.6459	103	1.9833	2.6244
11	2.2010	3.1058	42	2.0181	2.6981	73	1.9930	2.6449	104	1.9830	2.6239
12	2.1788	3.0545	43	2.0167	2.6951	74	1.9925	2.6439	105	1.9828	2.6235
13	2.1604	3.0123	44	2.0154	2.6923	75	1.9921	2.6430	106	1.9826	2.6230
14	2.1448	2.9768	45	2.0141	2.6896	76	1.9917	2.6421	107	1.9824	2.6226
15	2.1314	2.9467	46	2.0129	2.6870	77	1.9913	2.6412	108	1.9822	2.6221
16	2.1199	2.9208	47	2.0117	2.6846	78	1.9908	2.6403	109	1.9820	2.6217
17	2.1098	2.8982	48	2.0106	2.6822	79	1.9905	2.6395	110	1.9818	2.6213
18	2.1009	2.8784	49	2.0096	2.6800	80	1.9901	2.6387	111	1.9816	2.6208
19	2.0930	2.8609	50	2.0086	2.6778	81	1.9897	2.6379	112	1.9814	2.6204
20	2.0860	2.8453	51	2.0076	2.6757	82	1.9893	2.6371	113	1.9812	2.6200
21	2.0796	2.8314	52	2.0066	2.6737	83	1.9890	2.6364	114	1.9810	2.6196
22	2.0739	2.8188	53	2.0057	2.6718	84	1.9886	2.6356	115	1.9808	2.6193
23	2.0687	2.8073	54	2.0049	2.6700	85	1.9883	2.6349	116	1.9806	2.6189
24	2.0639	2.7969	55	2.0040	2.6682	86	1.9879	2.6342	117	1.9804	2.6185
25	2.0595	2.7874	56	2.0032	2.6665	87	1.9876	2.6335	118	1.9803	2.6181
26	2.0555	2.7787	57	2.0025	2.6649	88	1.9873	2.6329	119	1.9801	2.6178
27	2.0518	2.7707	58	2.0017	2.6633	89	1.9870	2.6322	120	1.9799	2.6174
28	2.0484	2.7633	59	2.0010	2.6618	90	1.9867	2.6316	∞	1.9600	2.5760
29	2.0452	2.7564	60	2.0003	2.6603	91	1.9864	2.6309			
30	2.0423	2.7500	61	1.9996	2.6589	92	1.9861	2.6303			
31	2.0395	2.7440	62	1.9990	2.6575	93	1.9858	2.6297			

APPENDIX D: F TABLE (α = .05)

	df numerator									
df denominator	1	2	3	4	5	6	7	8	9	10
1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16
31	4.16	3.30	2.91	2.68	2.52	2.41	2.32	2.25	2.20	2.15
32	4.15	3.29	2.90	2.67	2.51	2.40	2.31	2.24	2.19	2.14
33	4.14	3.28	2.89	2.66	2.50	2.39	2.30	2.23	2.18	2.13
34	4.13	3.28	2.88	2.65	2.49	2.38	2.29	2.23	2.17	2.12
35	4.12	3.27	2.87	2.64	2.49	2.37	2.29	2.22	2.16	2.11
36	4.11	3.26	2.87	2.63	2.48	2.36	2.28	2.21	2.15	2.11
37	4.11	3.25	2.86	2.63	2.47	2.36	2.27	2.20	2.14	2.10
38	4.10	3.24	2.85	2.62	2.46	2.35	2.26	2.19	2.14	2.09
39	4.09	3.24	2.85	2.61	2.46	2.34	2.26	2.19	2.13	2.08
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08
45	4.06	3.20	2.81	2.58	2.42	2.31	2.22	2.15	2.10	2.05
50	4.03	3.18	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.03
55	4.02	3.16	2.77	2.54	2.38	2.27	2.18	2.11	2.06	2.01

	df numerator									
df denominator	1	2	3	4	5	6	7	8	9	10
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99
65	3.99	3.14	2.75	2.51	2.36	2.24	2.15	2.08	2.03	1.98
70	3.98	3.13	2.74	2.50	2.35	2.23	2.14	2.07	2.02	1.97
75	3.97	3.12	2.73	2.49	2.34	2.22	2.13	2.06	2.01	1.96
80	3.96	3.11	2.72	2.49	2.33	2.21	2.13	2.06	2.00	1.95
85	3.95	3.10	2.71	2.48	2.32	2.21	2.12	2.05	1.99	1.94
90	3.95	3.10	2.71	2.47	2.32	2.20	2.11	2.04	1.99	1.94
95	3.94	3.09	2.70	2.47	2.31	2.20	2.11	2.04	1.98	1.93
100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93
105	3.93	3.08	2.69	2.46	2.30	2.19	2.10	2.03	1.97	1.92
110	3.93	3.08	2.69	2.45	2.30	2.18	2.09	2.02	1.97	1.92
115	3.92	3.08	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91

F TABLE (α = .01)

	df numerator									
df denominator	1	2	3	4	5	6	7	8	9	10
1	4052.18	4999.50	5403.35	5624.58	5763.65	5858.99	5928.36	5981.07	6022.47	6055.85
2	98.50	99.00	99.17	99.25	99.30	99.33	99.36	99.37	99.39	99.40
3	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.35	27.23
4	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66	14.55
5	16.26	13.27	12.06	11.39	10.97	10.67	10.46	10.29	10.16	10.05
6	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87
7	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62
8	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81
9	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26
10	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10
14	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03	3.94
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69
17	8.40	6.11	5.18	4.67	4.34	4.10	3.93	3.79	3.68	3.59
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51
19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17
25	7.77	5.57	4.68	4.18	3.85	3.63	3.46	3.32	3.22	3.13
26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.29	3.18	3.09
27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15	3.06
28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12	3.03
29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09	3.00
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98
31	7.53	5.36	4.48	3.99	3.67	3.45	3.28	3.15	3.04	2.96
32	7.50	5.34	4.46	3.97	3.65	3.43	3.26	3.13	3.02	2.93
33	7.47	5.31	4.44	3.95	3.63	3.41	3.24	3.11	3.00	2.91
34	7.44	5.29	4.42	3.93	3.61	3.39	3.22	3.09	2.98	2.89
35	7.42	5.27	4.40	3.91	3.59	3.37	3.20	3.07	2.96	2.88
36	7.40	5.25	4.38	3.89	3.57	3.35	3.18	3.05	2.95	2.86
37	7.37	5.23	4.36	3.87	3.56	3.33	3.17	3.04	2.93	2.84
38	7.35	5.21	4.34	3.86	3.54	3.32	3.15	3.02	2.92	2.83
39	7.33	5.19	4.33	3.84	3.53	3.30	3.14	3.01	2.90	2.81
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80
45	7.23	5.11	4.25	3.77	3.45	3.23	3.07	2.94	2.83	2.74
50	7.17	5.06	4.20	3.72	3.41	3.19	3.02	2.89	2.78	2.70
55	7.12	5.01	4.16	3.68	3.37	3.15	2.98	2.85	2.75	2.66
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63

	df numerator									
df denominator	1	2	3	4	5	6	7	8	9	10
65	7.04	4.95	4.10	3.62	3.31	3.09	2.93	2.80	2.69	2.61
70	7.01	4.92	4.07	3.60	3.29	3.07	2.91	2.78	2.67	2.59
75	6.99	4.90	4.05	3.58	3.27	3.05	2.89	2.76	2.65	2.57
80	6.96	4.88	4.04	3.56	3.26	3.04	2.87	2.74	2.64	2.55
85	6.94	4.86	4.02	3.55	3.24	3.02	2.86	2.73	2.62	2.54
90	6.93	4.85	4.01	3.53	3.23	3.01	2.84	2.72	2.61	2.52
95	6.91	4.84	3.99	3.52	3.22	3.00	2.83	2.70	2.60	2.51
100	6.90	4.82	3.98	3.51	3.21	2.99	2.82	2.69	2.59	2.50
105	6.88	4.81	3.97	3.50	3.20	2.98	2.81	2.69	2.58	2.49
110	6.87	4.80	3.96	3.49	3.19	2.97	2.81	2.68	2.57	2.49
115	6.86	4.79	3.96	3.49	3.18	2.96	2.80	2.67	2.57	2.48
120	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56	2.47

APPENDIX E: PEARSON CORRELATION TABLE (ONE-TAILED)

df	α=.05	α .01	df	α=.05	α=.01	df	α=.05	α=.01	df	α=.05	α=.01
1	0.988	1.000	31	0.291	0.403	61	0.209	0.293	91	0.172	0.241
2	0.900	0.980	32	0.287	0.397	62	0.207	0.290	92	0.171	0.240
3	0.805	0.934	33	0.283	0.392	63	0.206	0.288	93	0.170	0.238
4	0.729	0.882	34	0.279	0.386	64	0.204	0.286	94	0.169	0.237
5	0.669	0.833	35	0.275	0.381	65	0.203	0.284	95	0.168	0.236
6	0.621	0.789	36	0.271	0.376	66	0.201	0.282	96	0.167	0.235
7	0.582	0.750	37	0.267	0.371	67	0.200	0.280	97	0.166	0.234
8	0.549	0.715	38	0.264	0.367	68	0.198	0.278	98	0.165	0.232
9	0.521	0.685	39	0.260	0.362	69	0.197	0.276	99	0.165	0.231
10	0.497	0.658	40	0.257	0.358	70	0.195	0.274	100	0.164	0.230
11	0.476	0.634	41	0.254	0.354	71	0.194	0.272	101	0.163	0.229
12	0.458	0.612	42	0.251	0.350	72	0.193	0.270	102	0.162	0.228
13	0.441	0.592	43	0.248	0.346	73	0.191	0.268	103	0.161	0.227
14	0.426	0.574	44	0.246	0.342	74	0.190	0.266	104	0.161	0.226
15	0.412	0.558	45	0.243	0.338	75	0.189	0.265	105	0.160	0.225
16	0.400	0.543	46	0.240	0.335	76	0.188	0.263	106	0.159	0.224
17	0.389	0.529	47	0.238	0.331	77	0.186	0.261	107	0.158	0.223
18	0.378	0.516	48	0.235	0.328	78	0.185	0.260	108	0.158	0.222
19	0.369	0.503	49	0.233	0.325	79	0.184	0.258	109	0.157	0.221
20	0.360	0.492	50	0.231	0.322	80	0.183	0.257	110	0.156	0.220
21	0.352	0.482	51	0.228	0.319	81	0.182	0.255	111	0.156	0.219
22	0.344	0.472	52	0.226	0.316	82	0.181	0.253	112	0.155	0.218
23	0.337	0.462	53	0.224	0.313	83	0.180	0.252	113	0.154	0.217
24	0.330	0.453	54	0.222	0.310	84	0.179	0.251	114	0.153	0.216
25	0.323	0.445	55	0.220	0.307	85	0.178	0.249	115	0.153	0.215
26	0.317	0.437	56	0.218	0.305	86	0.176	0.248	116	0.152	0.214
27	0.311	0.430	57	0.216	0.302	87	0.175	0.246	117	0.152	0.213
28	0.306	0.423	58	0.214	0.300	88	0.174	0.245	118	0.151	0.212
29	0.301	0.416	59	0.213	0.297	89	0.174	0.244	119	0.150	0.211
30	0.296	0.409	60	0.211	0.295	90	0.173	0.242	120	0.150	0.210

PEARSON CORRELATION TABLE (TWO-TAILED)

df	α=.05	α .01	df	α=.05	α=.01	df	α=.05	α=.01	df	α=.05	α=.01
1	0.997	*1.000*	**31**	0.344	*0.978*	**61**	0.248	*0.983*	**91**	0.204	*0.986*
2	0.950	*0.995*	**32**	0.339	*0.978*	**62**	0.246	*0.983*	**92**	0.203	*0.986*
3	0.878	*0.987*	**33**	0.334	*0.978*	**63**	0.244	*0.983*	**93**	0.202	*0.986*
4	0.811	*0.981*	**34**	0.329	*0.979*	**64**	0.242	*0.983*	**94**	0.201	*0.986*
5	0.754	*0.978*	**35**	0.325	*0.979*	**65**	0.240	*0.983*	**95**	0.200	*0.986*
6	0.707	*0.975*	**36**	0.320	*0.979*	**66**	0.239	*0.983*	**96**	0.199	*0.986*
7	0.666	*0.974*	**37**	0.316	*0.979*	**67**	0.237	*0.984*	**97**	0.198	*0.986*
8	0.632	*0.973*	**38**	0.312	*0.979*	**68**	0.235	*0.984*	**98**	0.197	*0.986*
9	0.602	*0.973*	**39**	0.308	*0.980*	**69**	0.234	*0.984*	**99**	0.196	*0.986*
10	0.576	*0.973*	**40**	0.304	*0.980*	**70**	0.232	*0.984*	**100**	0.195	*0.986*
11	0.553	*0.973*	**41**	0.301	*0.980*	**71**	0.230	*0.984*	**101**	0.194	*0.986*
12	0.532	*0.973*	**42**	0.297	*0.980*	**72**	0.229	*0.984*	**102**	0.193	*0.986*
13	0.514	*0.973*	**43**	0.294	*0.980*	**73**	0.227	*0.984*	**103**	0.192	*0.986*
14	0.497	*0.973*	**44**	0.291	*0.981*	**74**	0.226	*0.984*	**104**	0.191	*0.986*
15	0.482	*0.973*	**45**	0.288	*0.981*	**75**	0.224	*0.984*	**105**	0.190	*0.986*
16	0.468	*0.974*	**46**	0.285	*0.981*	**76**	0.223	*0.984*	**106**	0.189	*0.987*
17	0.456	*0.974*	**47**	0.282	*0.981*	**77**	0.221	*0.985*	**107**	0.188	*0.987*
18	0.444	*0.974*	**48**	0.279	*0.981*	**78**	0.220	*0.985*	**108**	0.187	*0.987*
19	0.433	*0.975*	**49**	0.276	*0.981*	**79**	0.219	*0.985*	**109**	0.187	*0.987*
20	0.423	*0.975*	**50**	0.273	*0.981*	**80**	0.217	*0.985*	**110**	0.186	*0.987*
21	0.413	*0.975*	**51**	0.271	*0.982*	**81**	0.216	*0.985*	**111**	0.185	*0.987*
22	0.404	*0.975*	**52**	0.268	*0.982*	**82**	0.215	*0.985*	**112**	0.184	*0.987*
23	0.396	*0.976*	**53**	0.266	*0.982*	**83**	0.213	*0.985*	**113**	0.183	*0.987*
24	0.388	*0.976*	**54**	0.263	*0.982*	**84**	0.212	*0.985*	**114**	0.182	*0.987*
25	0.381	*0.976*	**55**	0.261	*0.982*	**85**	0.211	*0.985*	**115**	0.182	*0.987*
26	0.374	*0.977*	**56**	0.259	*0.982*	**86**	0.210	*0.985*	**116**	0.181	*0.987*
27	0.367	*0.977*	**57**	0.256	*0.982*	**87**	0.208	*0.985*	**117**	0.180	*0.987*
28	0.361	*0.977*	**58**	0.254	*0.983*	**88**	0.207	*0.985*	**118**	0.179	*0.987*
29	0.355	*0.977*	**59**	0.252	*0.983*	**89**	0.206	*0.985*	**119**	0.179	*0.987*
30	0.349	*0.978*	**60**	0.250	*0.983*	**90**	0.205	*0.986*	**120**	0.178	*0.987*

SPEARMAN CORRELATION TABLE

1 tail	0.05	0.025	0.01	0.005		0.05	0.025	0.01	0.005
2 tail	0.1	0.05	0.02	0.01		0.1	0.05	0.02	0.01
n=4	1.000				n=30	0.306	0.362	0.425	0.467
5	0.900	1.000	1.000		31	0.301	0.356	0.418	0.459
6	0.829	0.886	0.943	1.000	32	0.296	0.350	0.412	0.452
7	0.714	0.786	0.893	0.929	33	0.291	0.345	0.405	0.446
8	0.643	0.738	0.833	0.881	34	0.278	0.340	0.399	0.439
9	0.600	0.700	0.783	0.833	35	0.283	0.335	0.394	0.433
10	0.564	0.648	0.745	0.794	36	0.279	0.330	0.388	0.427
11	0.536	0.618	0.709	0.755	37	0.275	0.325	0.383	0.421
12	0.503	0.587	0.671	0.727	38	0.271	0.321	0.378	0.415
13	0.484	0.560	0.648	0.703	39	0.267	0.317	0.373	0.410
14	0.464	0.538	0.622	0.675	40	0.264	0.313	0.368	0.405
15	0.443	0.521	0.604	0.654	41	0.261	0.309	0.364	0.400
16	0.429	0.503	0.582	0.635	42	0.257	0.305	0.359	0.395
17	0.414	0.485	0.566	0.615	43	0.254	0.301	0.355	0.391
18	0.401	0.472	0.550	0.600	44	0.251	0.298	0.351	0.386
19	0.391	0.460	0.535	0.584	45	0.248	0.294	0.347	0.382
20	0.380	0.447	0.520	0.570	46	0.246	0.291	0.343	0.378
21	0.370	0.435	0.508	0.556	47	0.243	0.288	0.340	0.374
22	0.361	0.425	0.496	0.544	48	0.240	0.285	0.336	0.370
23	0.353	0.415	0.486	0.532	49	0.238	0.282	0.333	0.366
24	0.344	0.406	0.476	0.521	50	0.235	0.279	0.329	0.363
25	0.337	0.398	0.466	0.511	60	0.214	0.255	0.300	0.331
26	0.331	0.390	0.457	0.501	70	0.190	0.235	0.278	0.307
27	0.324	0.382	0.448	0.491	80	0.185	0.220	0.260	0.287
28	0.317	0.375	0.440	0.483	90	0.174	0.207	0.245	0.271
29	0.312	0.368	0.433	0.475	100	0.165	0.197	0.233	0.257

CRITICAL VALUES FOR CHI SQUARE

	α = 0.05	***α = 0.01***
df = 1	3.841	*6.635*
2	5.991	*9.210*
3	7.815	*11.345*
4	9.488	*13.277*
5	11.070	*15.086*
6	12.592	*16.812*
7	14.067	*18.475*
8	15.507	*20.090*
9	16.919	*21.666*
10	18.307	*23.209*
11	19.675	*24.725*
12	21.026	*26.217*
13	22.362	*27.688*
14	23.685	*29.141*
15	24.996	*30.578*
16	26.296	*32.000*
17	27.587	*33.409*
18	28.869	*34.805*
19	30.144	*36.191*
20	31.410	*37.566*
21	32.671	*38.932*
22	33.924	*40.289*
23	35.172	*41.638*
24	36.415	*42.980*
25	37.652	*44.314*
26	38.885	*45.642*
27	40.113	*46.963*
28	41.337	*48.278*
29	42.557	*49.588*
30	43.773	*50.892*