

SPSS - ANOVA

Dr. Miquel A. Belmonte

Hospital General de Castellón

Castellón, España

Inicialmente en el sitio: www.pitt.edu/~super1/

Elección de tests estadísticos

Varbl. dependientes

1

> 1

Varbl.
Indep.

1

		<i>CATEG</i>		<i>CUANT</i>	
1	<i>CATEG</i>	X^2	Oneway	Manova	
	<i>CUANT</i>	Student T	Correlac		
> 1	<i>CATEG</i>	Loglinear	ANOVA	Manova	
	<i>CUANT</i>	Reg. Logist	Reg.Mult		

ANOVA - conceptos básicos

- Influencia de una o varias variables categóricas (factores) sobre una variable dependiente cuantitativa
- Valora efectos principales de factores e interacciones de éstos entre sí
- Admite una o más covariables de control, de tipo cuantitativo
- Estudia reducción de variabilidad (suma de cuadrados)
- Test paramétrico: Compara las medias de los subgrupos formados para cada factor

Condiciones

- Igualdad de varianzas
- Distribución paramétrica

Levene's Test of Equality of Error Variances^a

Dependent Variable: Current salary

F	df1	df2	Sig.
10,374	19	454	,000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

- a. Design: Intercept+AGE+SEXRACE+JOBCAT+SEXRACE
* JOBCAT

ANOVA - estadísticos

- $SS \text{ total} = \Sigma SS \text{ efectos principales} + SS \text{ interacciones orden 2 y sucesivas} + SS \text{ residuos}$

$$MS = \frac{SS \text{ (factor o interacción)}}{DF \text{ (grados de libertad)}}$$

$$F = \frac{MS \text{ (factor o interacción)}}{MS \text{ de los residuos}}$$

ANOVA - Output SPSS

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Covariates	601239435	1	601239435,132	54,882	,000
AGE	601239435	1	601239435,132	54,882	,000
Main Effects	11677985838	7	1668283691,12	152,284	,000
JOB CAT	7428829687	4	1857207421,83	169,529	,000
SEX RACE	709773003	3	236591000,879	21,596	,000
2-Way Interactions	318155497	8	39769437,169	3,630	,000
JOB CAT SEX RACE	318155497	8	39769437,169	3,630	,000
Explained	12597380770	16	787336298,143	71,869	,000
Residual	4885977728	446	10955107,014		
Total	17483358499	462	37842767,313		

$$\text{Mean Square} = \frac{\text{Sum of Squares}}{\text{DF}}$$

$$F = \frac{\text{MS Factor explained}}{\text{MS Residual}}$$

Modelos de ANOVA

- ANOVA factorial general
- ANOVA multivariado: *MANOVA*
- ANOVA de medidas repetidas

ANOVA

Modelo Lineal General Factorial

GLM - General Factorial

Dependent Variable:
Current salary [salnow]

Fixed Factor(s):
Sex & race classific
Employment catego

Random Factor(s):

Covariate(s):
Age of employee [age]

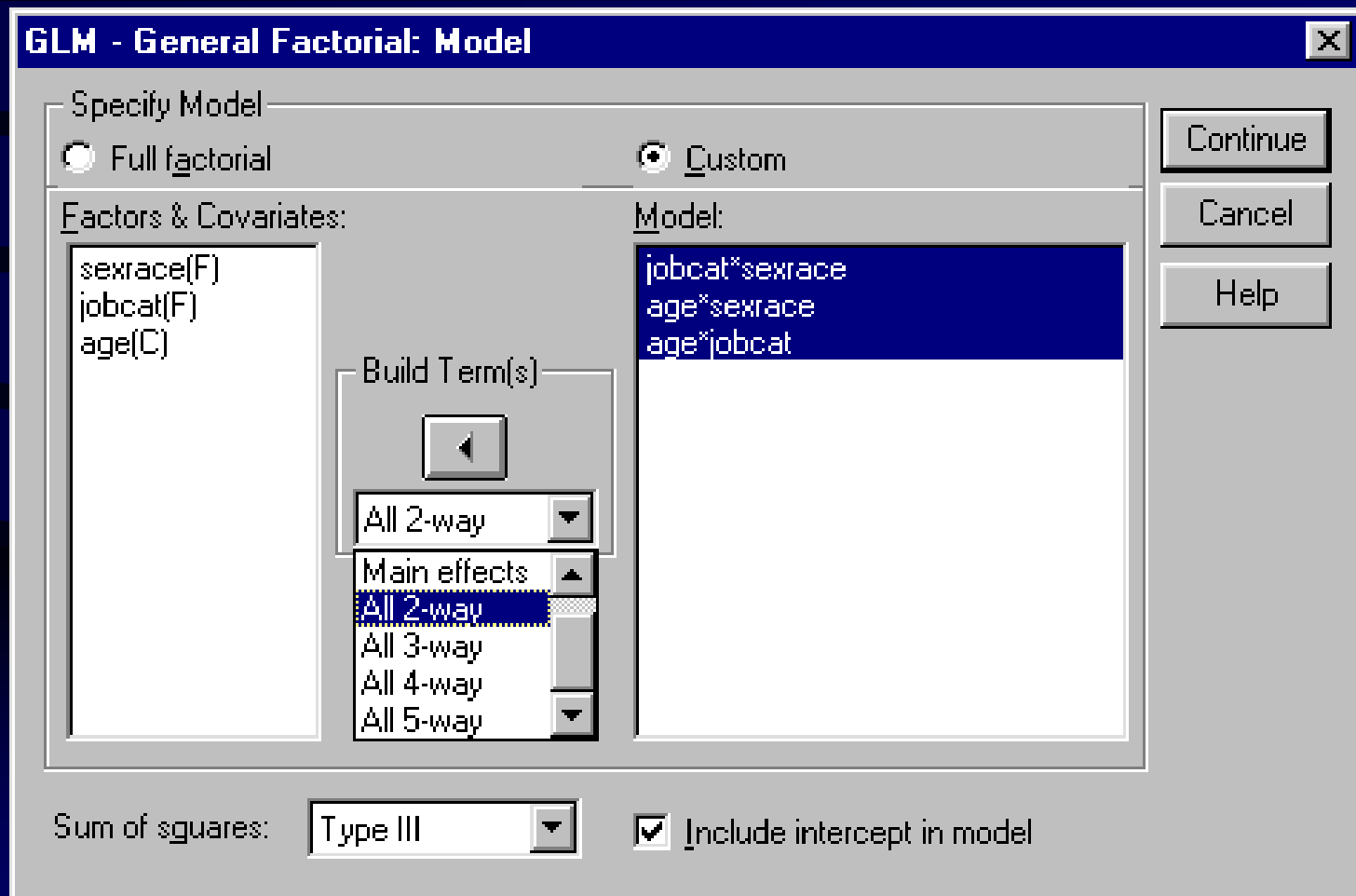
WLS Weight:

Employee code [id]
Beginning salary [salbe]
Sex of employee [sex]
Job seniority [time]
Educational level [edle]
Work experience [work]
Minority classification [m]
Salario por intervalos [s]

Model...
Contrasts...
Plots...
Post Hoc...
Save...
Options...

OK Paste Reset Cancel Help

Definición del modelo



Opciones

GLM - General Factorial: Options [X]

Estimated Marginal Means

Factor(s) and Factor Interactions:

(OVERALL)
sexrace
jobcat
sexrace*jobcat

Display Means for:

Compare main effects

Confidence interval adjustment:
LSD (none)

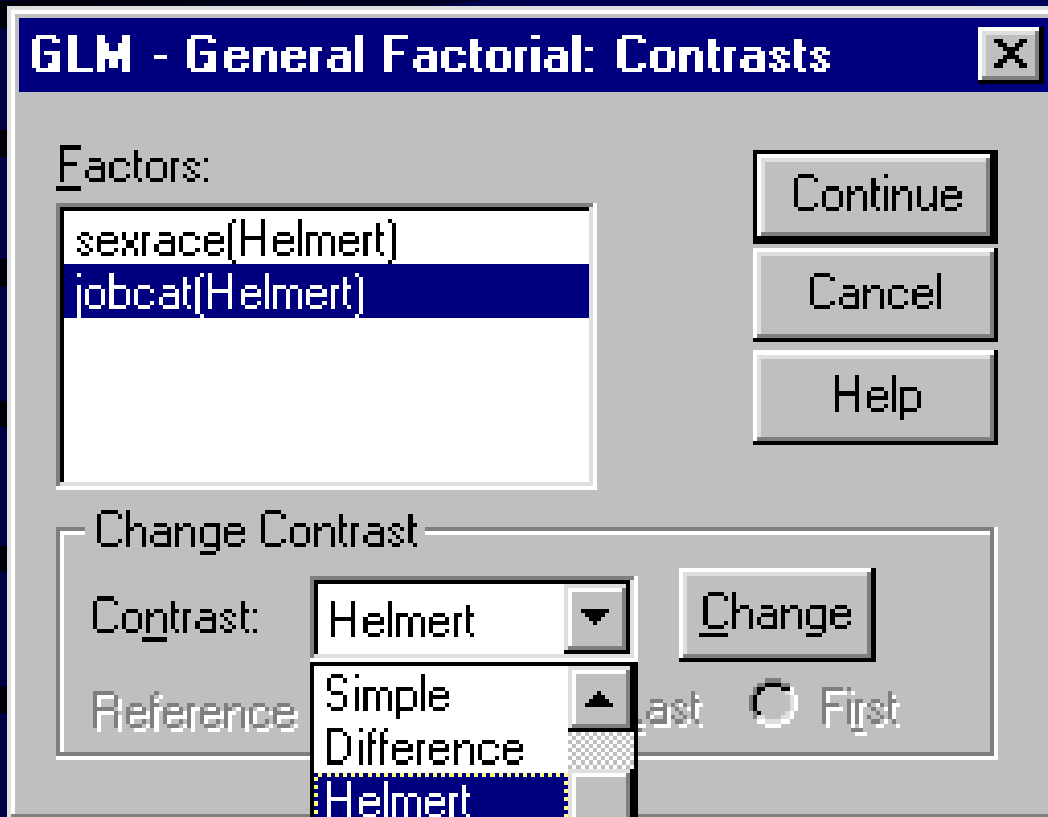
Display

Descriptive statistics
 Estimates of effect size
 Observed power
 Parameter estimates
 Contrast coefficient matrix

Homogeneity tests
 Spread vs. level plot
 Residual plot
 Lack of fit
 General estimable function

Significance level: .05 Confidence intervals are 95%

Continue Cancel Help



Contrastes

Permiten comparar niveles o categorías entre sí, dentro de cada factor considerado.

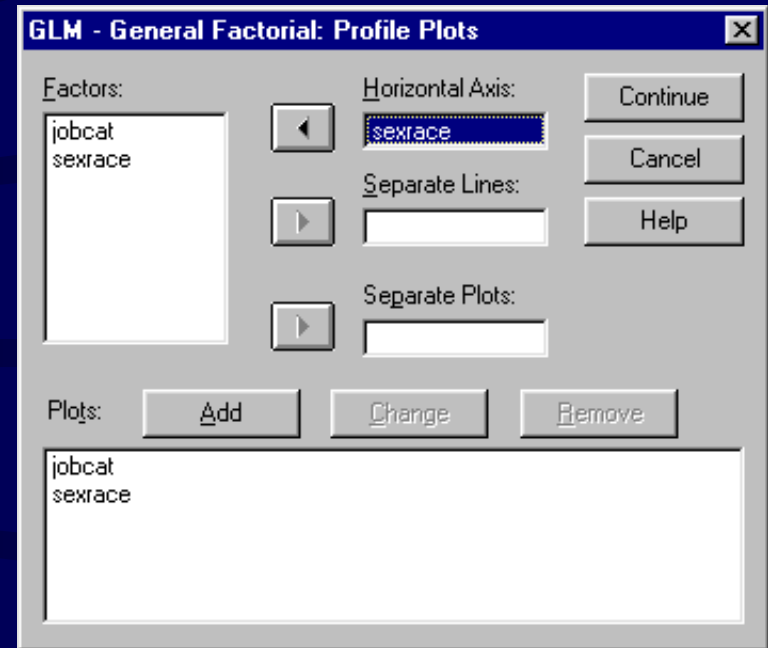
Test Results

Dependent Variable: Current salary

Source	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Contrast	1,09E+09	6	1,82E+08	15,050	,000	,166
Error	5,47E+09	453	12068299			

Profile Plots

Muestran estimaciones de Media Marginal para cada subgrupo formado.



Estimated Marginal Means of Current salary

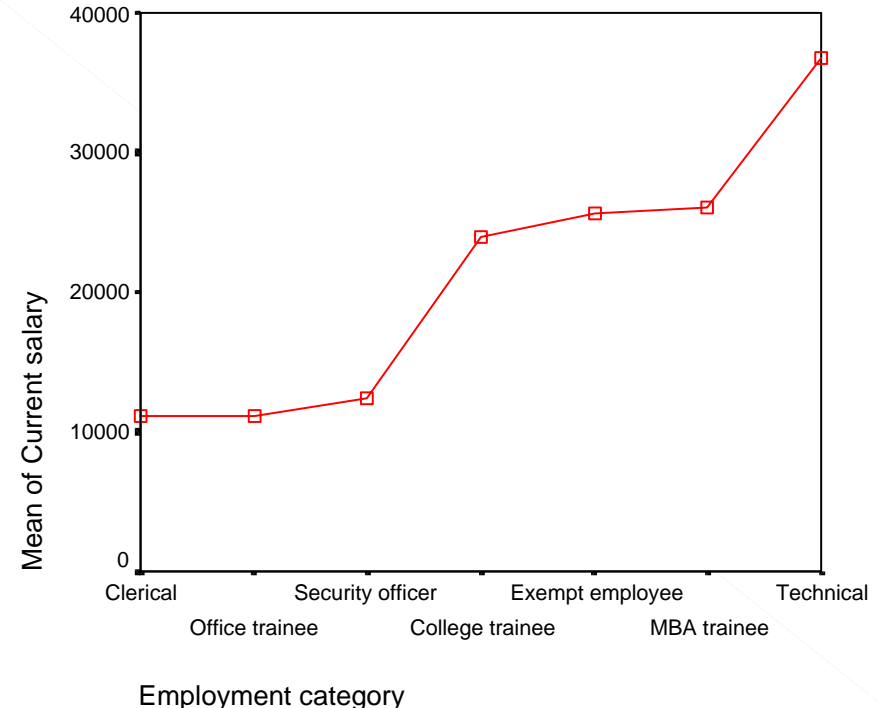
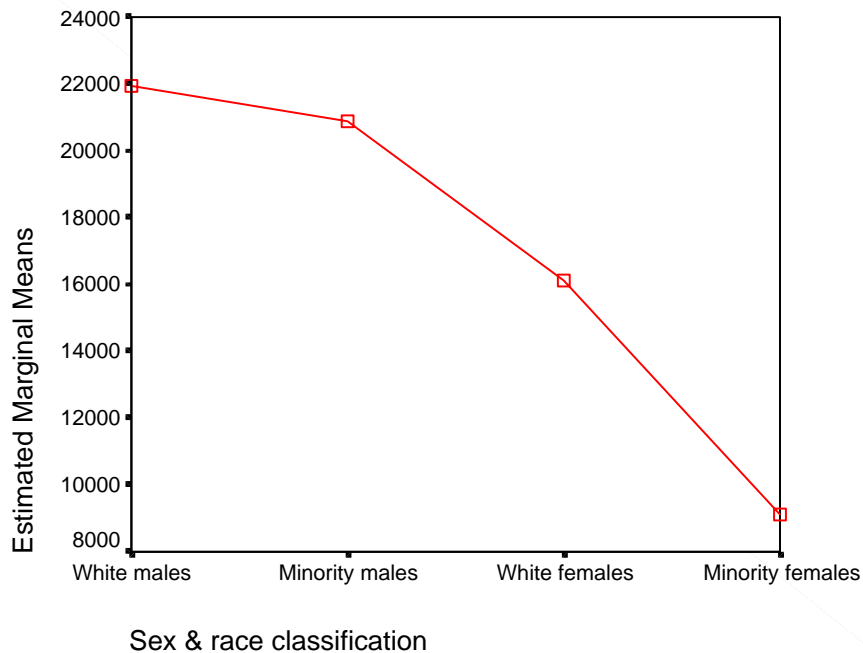
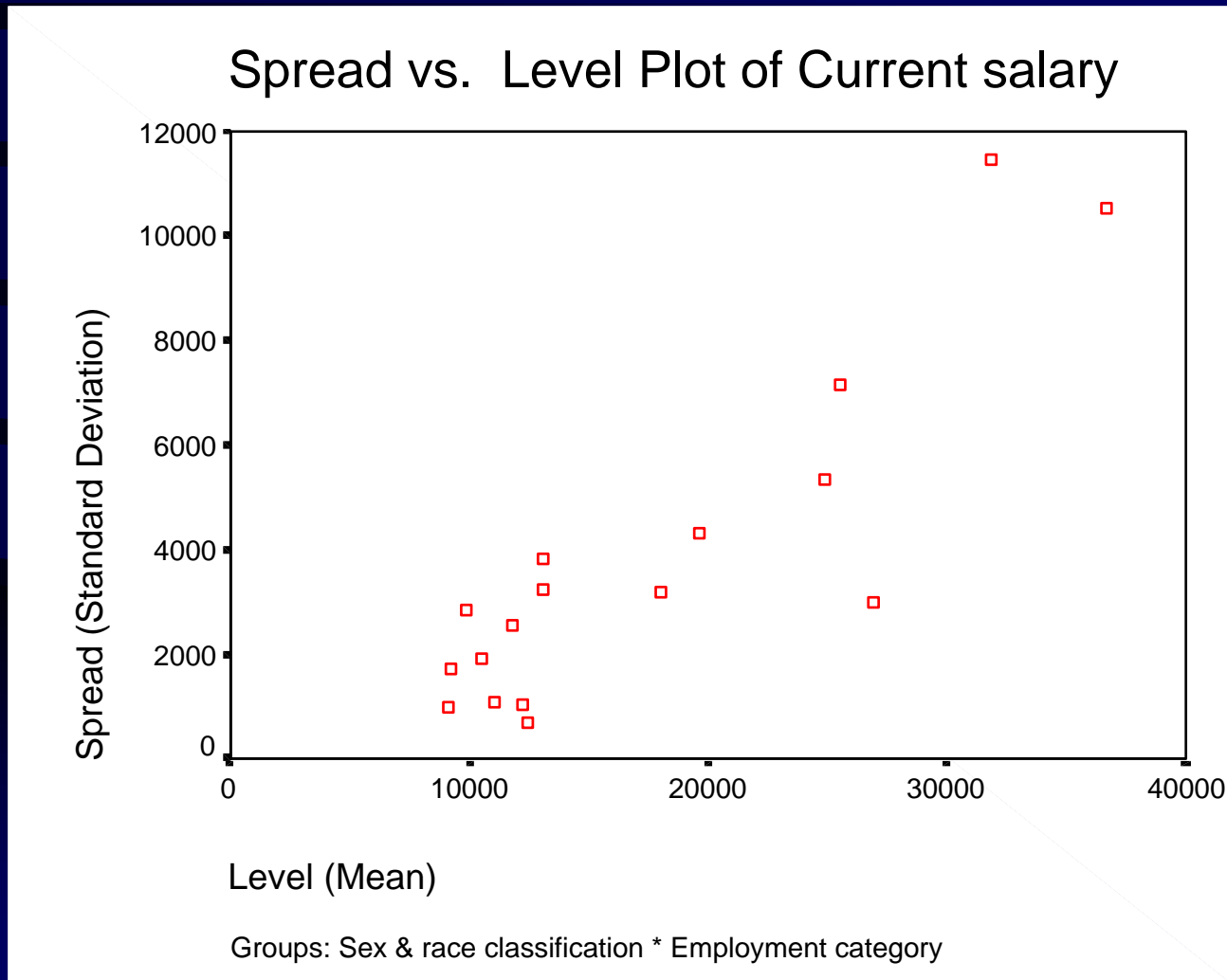


Gráfico de distribución



ANOVA

Modelo Lineal General Factorial

SYNTAX

UNIANOVA

```
salnow BY sexrace jobcat WITH age  
/METHOD = SSTYPE(3)  
/INTERCEPT = INCLUDE  
/PRINT = DESCRIPTIVE ETASQ HOMOGENEITY  
/CRITERIA = ALPHA(.05)  
/DESIGN = age sexrace jobcat sexrace*jobcat .
```

Estadísticas Descriptivas

Descriptive Statistics

Dependent Variable: Current salary

Sex & race classification	Employment category	Mean	Std. Deviation	N
White males	Clerical	13057,65	3251,46	75
	Office trainee	13092,23	3839,48	35
	Security officer	12471,43	663,50	14
	College trainee	24916,97	5321,94	33
	Exempt employee	25570,71	7152,95	28
	MBA trainee	26916,67	3003,47	3
	Technical	36691,67	10543,45	6
	Total	17790,16	8132,26	194
Minority males	Clerical	11752,57	2561,80	35
	Office trainee	11080,00	1086,75	12
	Security officer	12272,31	1025,17	13
	College trainee	31400,00	,	1
	Exempt employee	31880,00	11483,41	2
	MBA trainee	26500,00	,	1
	Total	12898,44	5223,95	64
White females	Clerical	9890,12	2839,32	85
	Office trainee	10501,78	1894,68	81
	College trainee	18040,57	3171,27	7
	Exempt employee	19660,00	4299,21	2
	MBA trainee	23250,00	,	1
	Total	10682,72	3204,76	176
Minority females	Clerical	9258,75	1719,52	32
	Office trainee	9090,00	972,77	8
	Total	9225,00	1588,95	40
Total	Clerical	11134,82	3196,57	227
	Office trainee	11136,41	2732,60	136
	Security officer	12375,56	845,85	27
	College trainee	23901,07	5695,15	41
	Exempt employee	25595,62	7364,40	32
	MBA trainee	26100,00	2661,06	5
	Technical	36691,67	10543,45	6
	Total	13767,83	6830,26	474

ANOVA Output

Tests of Between-Subjects Effects

Dependent Variable: Current salary

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	1,66E+10 ^a	20	8,30E+08	68,774	,000	,752
Intercept	9,28E+09	1	9,28E+09	768,594	,000	,629
AGE	2,06E+08	1	2,06E+08	17,075	,000	,036
SEXRACE	4,06E+08	3	1,35E+08	11,205	,000	,069
JOBCAT	5,50E+09	6	9,17E+08	75,953	,000	,501
SEXRACE * JOBCAT	3,20E+08	10	31952108	2,648	,004	,055
Error	5,47E+09	453	12068299			
Total	1,12E+11	474				
Corrected Total	2,21E+10	473				

a. R Squared = ,752 (Adjusted R Squared = ,741)

ANOVA factorial

■ Simple

- Diseños factoriales de modelos *saturados*
- Métodos:
 - » Único: todos los elementos concurrentemente
 - » Jerárquico: covariables - factores- interacción
 - » Experimental: factores- interacción

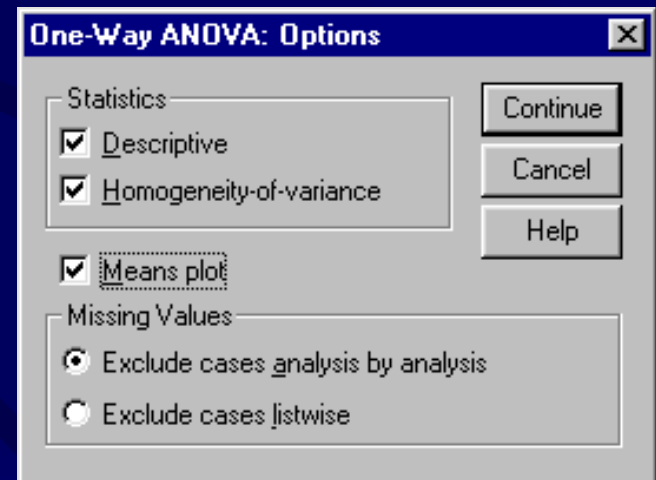
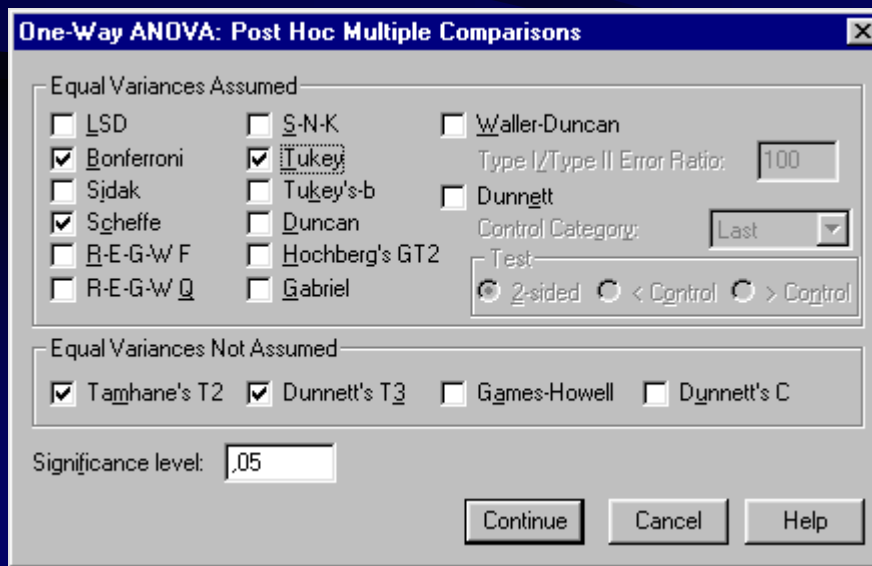
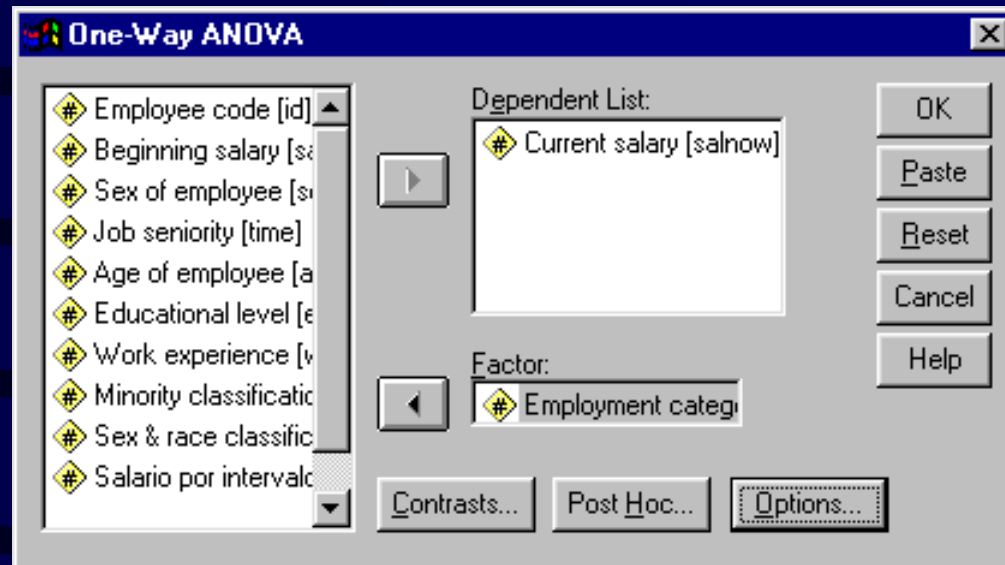
■ General

- Diseños factoriales de modelos *no saturados*
- Permite especificar con más flexibilidad el modelo a utilizar y variedad de estadísticos

ONEWAY

- Caso particular de ANOVA de un factor
- Una sola variable dependiente cuantitativa
- Un factor con varias categorías
- ONEWAY, pero no ANOVA, produce:
 - Contrastes
 - Comparaciones múltiples
 - Pruebas de tendencia
 - Test homogeneidad de varianza

ONEWAY



Resultados Oneway

Listado descriptivo

Descriptives

Current salary

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
					Clerical	227		
Office trainee	136	11136,41	2732,60	234,32	10673,00	11599,82	7260	32000
Security officer	27	12375,56	845,85	162,78	12040,95	12710,16	9720	14100
College trainee	41	23901,07	5695,15	889,43	22103,46	25698,68	13764	36500
Exempt employee	32	25595,63	7364,40	1301,86	22940,47	28250,78	15480	41500
MBA trainee	5	26100,00	2661,06	1190,06	22795,86	29404,14	23250	30000
Technical	6	36691,67	10543,45	4304,35	25626,99	47756,34	26700	54000
Total	474	13767,83	6830,26	313,72	13151,36	14384,29	6300	54000

ONEWAY - Output SPSS

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	11168758807	2792189702	202,5184	,0000
Unweighted Linear Term	1	9966174401	9966174401	722,8499	,0000
Weighted Linear Term	1	8987023511	8987023511	651,8318	,0000
Deviation from Linear	3	2181735296	727245098,6	52,7473	,0000
Within Groups	458	6314599691	13787335,57		
Total	462	17483358499			

ANOVA

Current salary

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,52E+10	6	2,53E+09	171,128	,000
Within Groups	6,90E+09	467	14772477		
Total	2,21E+10	473			

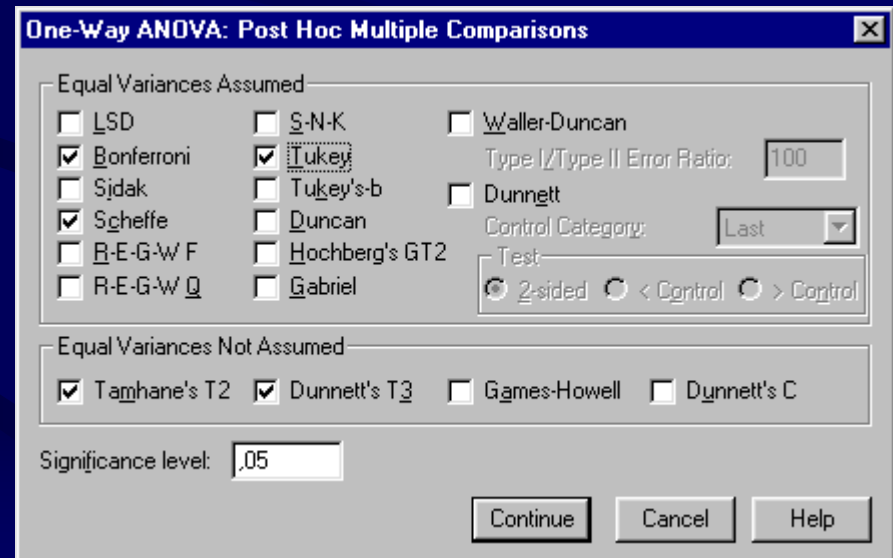
ONEWAY - Comparaciones Múltiples

Multiple Range Tests: Scheffe test with significance level ,05

The difference between two means is significant if
 $MEAN(J) - MEAN(I) \geq 2625,5795 * RANGE * \sqrt{1/N(I) + 1/N(J)}$
 with the following value(s) for RANGE: 4,37

(*) Indicates significant differences which are shown in the lower triangle

Mean	JOB CAT	C	O	S	E
11134,8194	Clerical				
11136,4118	Office t				
12375,5556	Security				
23901,0732	College	*	*	*	
25595,6250	Exempt e	*	*	*	



Oneway - Contrastes

Current salary

Employment category	N	Subset for alpha = .05		
		1	2	3
Tukey HSD ^{a,c} Clerical	227	11134,82		
Office trainee	136	11136,41		
Security officer	27	12375,56		
College trainee	41		23901,07	
Exempt employee	32		25595,63	
MBA trainee	5		26100,00	
Technical	6			36691,67
Sig.		,976	,708	1,000
Scheffe ^{a,b} Clerical	227	11134,82		
Office trainee	136	11136,41		
Security officer	27	12375,56		
College trainee	41		23901,07	
Exempt employee	32		25595,63	
MBA trainee	5		26100,00	
Technical	6			36691,67
Sig.		,993	,876	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14,859.

b. The group sizes are unequal. The harmonic mean of the group sizes is used.
Type I error levels are not guaranteed.

Oneway - Means Plot

One-Way ANOVA: Options [X]

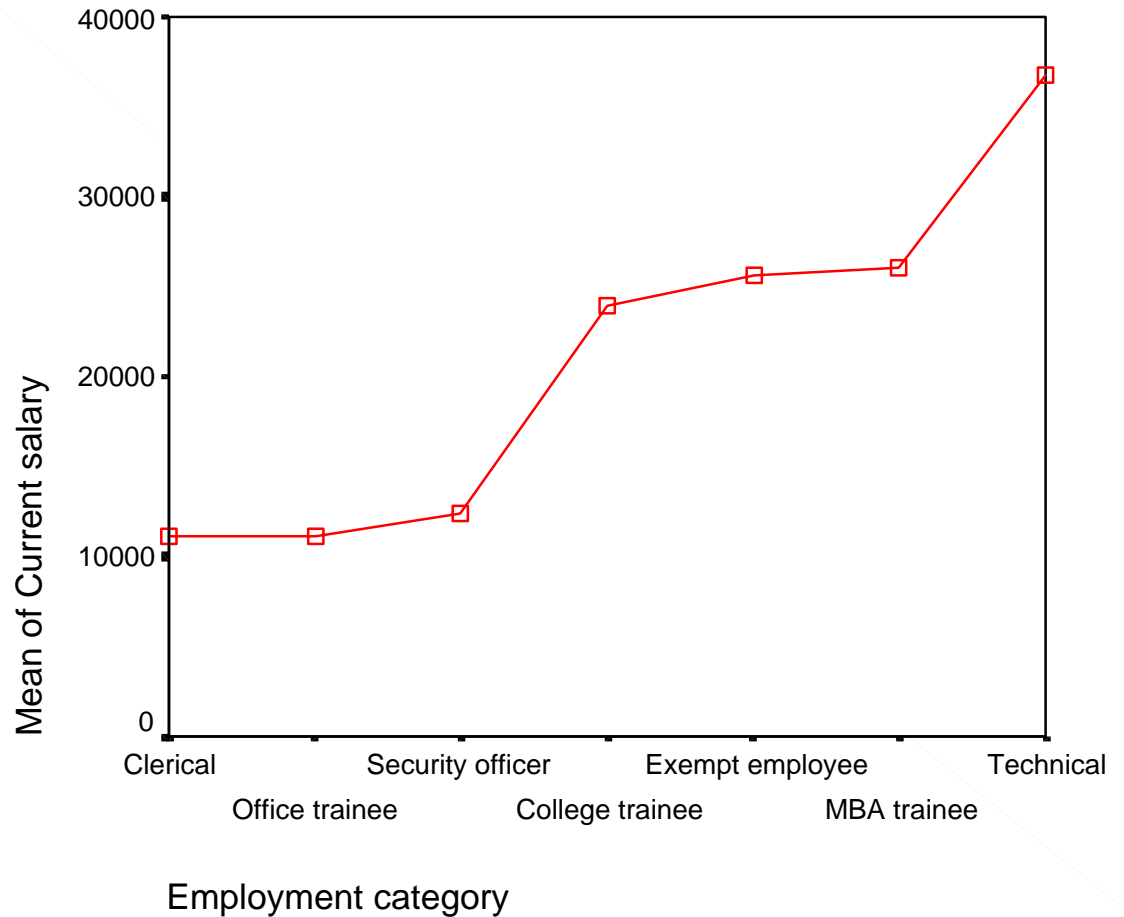
Statistics

- Descriptive
- Homogeneity-of-variance
- Means plot

Missing Values

- Exclude cases analysis by analysis
- Exclude cases listwise

Continue
Cancel
Help



Tipos de Análisis de Varianza

Número de Varbl. independientes

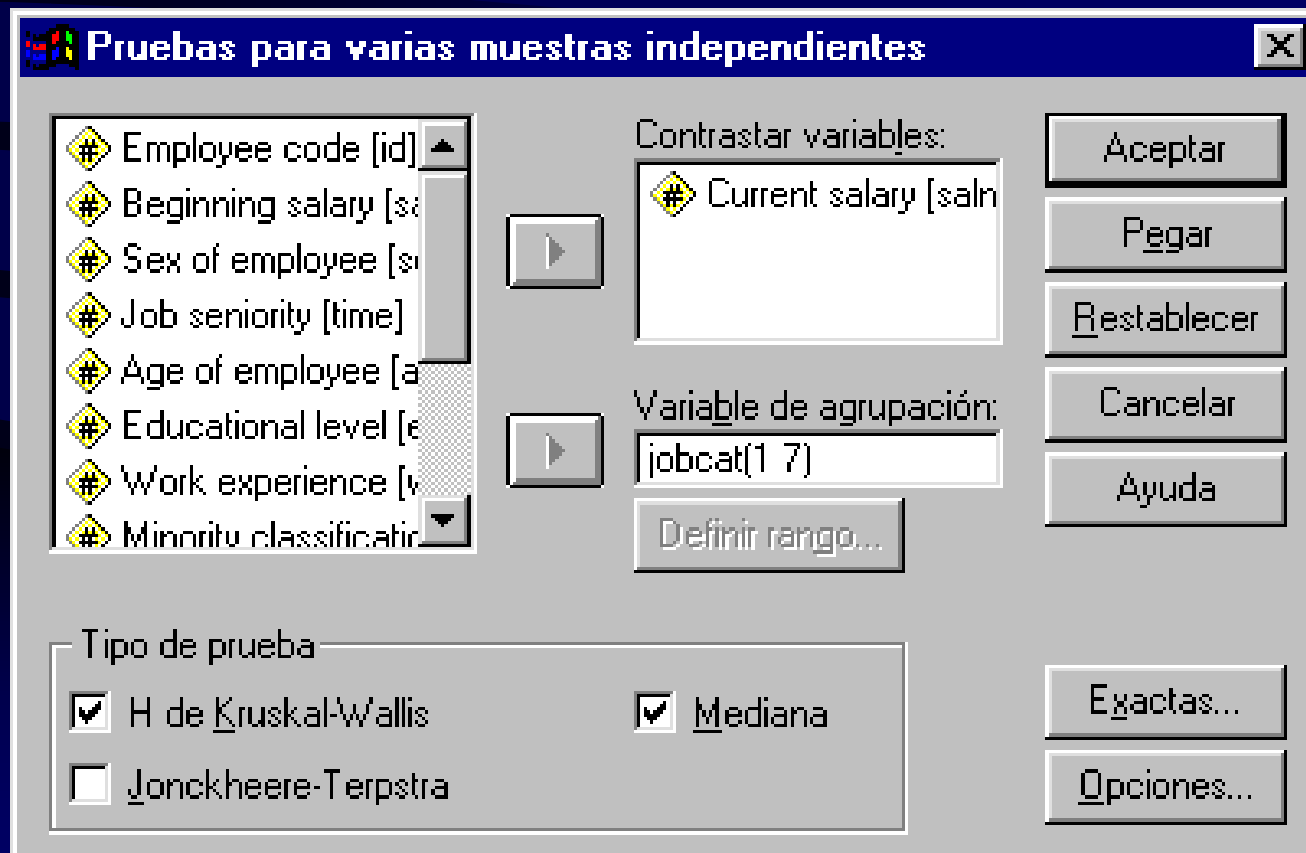
	<i>1</i>	<i>>1</i> <i>independ</i>	<i>>1</i> <i>relacionada</i>
<i>Paramétrico</i>	Oneway	ANOVA	
<i>No Paramétrico</i>	Kruskal-Wallis		Friedman

Condiciones
previas

Kruskal-Wallis

Oneway no paramétrico

Tests no paramétricos - K muestras independientes



Kruskal-Wallis

Estadísticos descriptivos

Several Independent Samples: Options [X]

Statistics

Descriptive Quartiles

Missing Values

Exclude cases test-by-test

Exclude cases listwise

Continue

Cancel

Help

Ranks

	Employment category	N	Mean Rank
Current salary	Clerical	227	187,70
	Office trainee	136	194,82
	Security officer	27	278,98
	College trainee	41	422,15
	Exempt employee	32	427,33
	MBA trainee	5	438,30
	Technical	6	460,83
	Total	474	

Test Statistics^b

	Current salary
N	474
Median	11550,00
Chi-Square	135,133 ^a
df	6
Asymp. Sig.	,000

a. 4 cells (,0%) have expected count less than 5. The minimum expected count is 1,00.

b. Grouping Variable: Employment category

Kruskal-Wallis

Prueba de la Mediana

Frequencies

	Employment category						
	Clerical	Office trainee	Security officer	College trainee	Exempt employee	MBA trainee	Technical
Current salary > Median	80	48	25	41	32	5	6
Current salary <= Median	147	88	2	0	0	0	0

Kruskal-Wallis

Contrastes

Exact Tests [X]

Asymptotic only

Monte Carlo

Confidence level: %

Number of samples:

Exact

Time limit per test: minutes

Continue

Cancel

Help

Exact method will be used instead of Monte Carlo when computational limits allow.

Estadísticos de contraste^{b,c}

			Current salary
Chi-cuadrado			208,357
gl			6
Sig. asintót.			,000
Sig. Monte Carlo	Sig.		,000 ^a
	Intervalo de confianza al	Límite inferior	,000
		Límite superior	,000

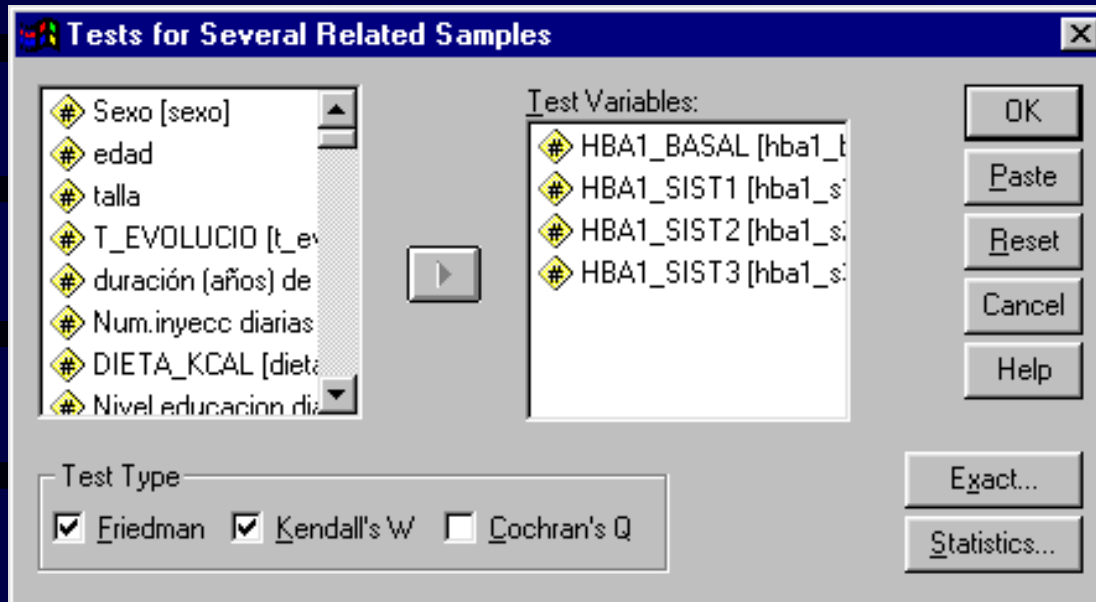
a. Basado en 10000 tablas muestrales con semilla de inicio 2000000.

b. Prueba de Kruskal-Wallis

c. Variable de agrupación: Employment category

Friedman

Anova de dos vías para muestras apareadas



Friedman es el test básico, que compara los rangos entre K variables relacionadas entre sí. Se basa en X^2

Kendall W es un test de concordancia donde cada variable es un sujeto de estudio y cada caso es un juez.

Cochran Q se usa cuando todas las variables independientes son dicotómicas

Friedman

Resultados

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
HBA1_BASAL	30	7,657	1,748	4,8	11,8
HBA1_SIST1	30	7,660	1,123	6,2	10,3
HBA1_SIST2	30	7,250	1,279	5,8	11,6
HBA1_SIST3	30	7,117	1,372	5,2	10,5

Ranks

	Mean Rank
HBA1_BASAL	2,80
HBA1_SIST1	3,15
HBA1_SIST2	2,28
HBA1_SIST3	1,77

Test Statistics

N	30
Kendall's W ^a	,229
Chi-Square	20,573
df	3
Asymp. Sig.	,000

a. Kendall's Coefficient of Concordance

ANOVA - otros modelos

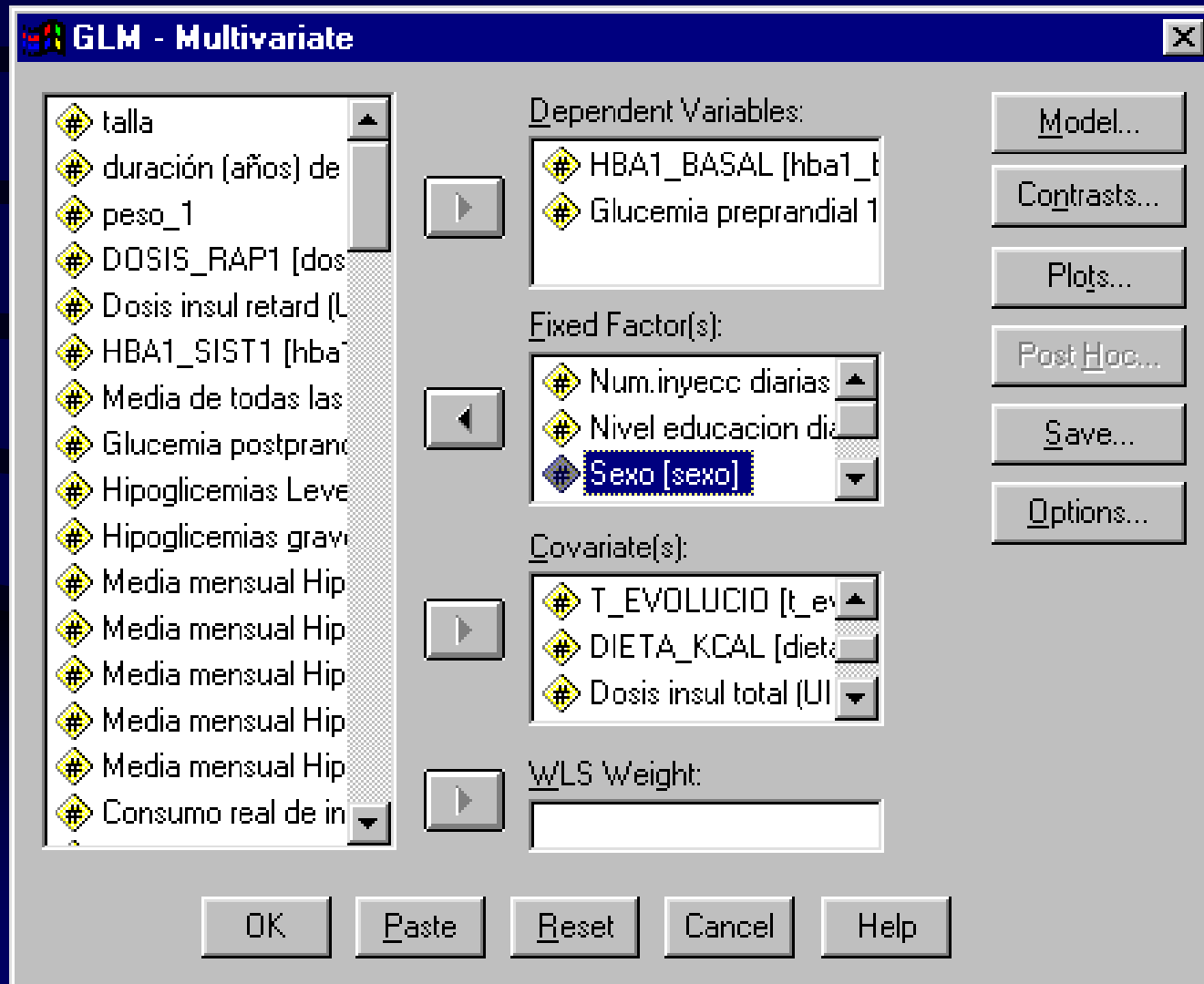
■ ANOVA multivariado: MANOVA

- Más de una variable dependiente
- Gran complejidad de modelos

■ ANOVA medidas repetidas

- La variable dependiente se mide en más de una ocasión para cada sujeto
- Multivariante complejo

MANOVA



Manova - Resultados

Between-Subjects Factors

	Value Label	N
Num.inyecc diarias	3	9
	4	21
Nivel educacion diabetologica	3	2
	5	3
	6	5
	7	5
	8	7
	9	8
Sexo	1 Hombre	12
	2 Mujer	18

Multivariate Tests^a

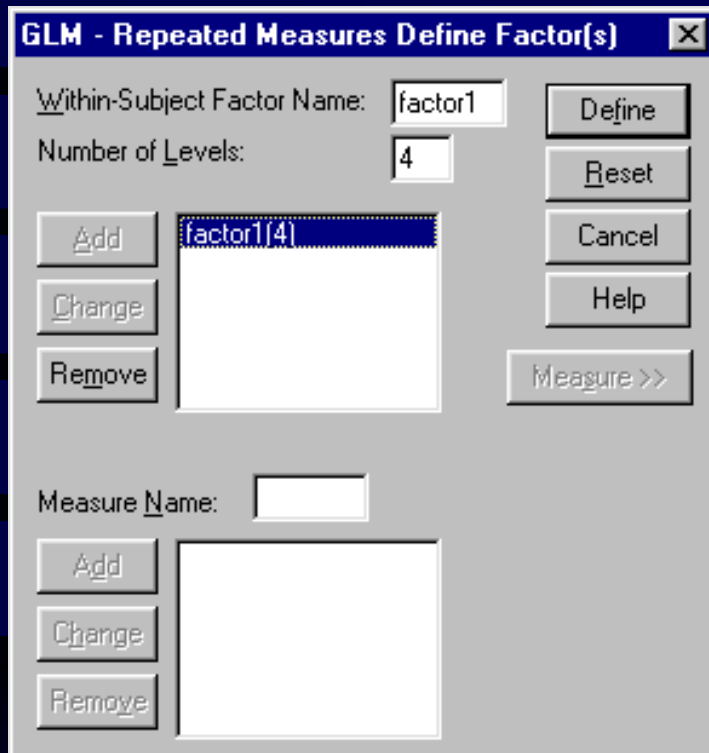
Effect		Value	F	Hypothesis df	Error df	Sig.	Eta Squared
Intercept	Pillai's Trace	,758	15,691 ^a	2,000	10,000	,001	,758
	Wilks' Lambda	,242	15,691 ^a	2,000	10,000	,001	,758
	Hotelling's Trace	3,138	15,691 ^a	2,000	10,000	,001	,758
	Roy's Largest Root	3,138	15,691 ^a	2,000	10,000	,001	,758
EDAD	Pillai's Trace	,370	2,932 ^a	2,000	10,000	,100	,370
	Wilks' Lambda	,630	2,932 ^a	2,000	10,000	,100	,370
	Hotelling's Trace	,586	2,932 ^a	2,000	10,000	,100	,370
	Roy's Largest Root	,586	2,932 ^a	2,000	10,000	,100	,370
T_EVOLUC	Pillai's Trace	,118	,669 ^a	2,000	10,000	,534	,118
	Wilks' Lambda	,882	,669 ^a	2,000	10,000	,534	,118
	Hotelling's Trace	,134	,669 ^a	2,000	10,000	,534	,118
	Roy's Largest Root	,134	,669 ^a	2,000	10,000	,534	,118
DIETA_KC	Pillai's Trace	,240	1,578 ^a	2,000	10,000	,254	,240
	Wilks' Lambda	,760	1,578 ^a	2,000	10,000	,254	,240
	Hotelling's Trace	,316	1,578 ^a	2,000	10,000	,254	,240
	Roy's Largest Root	,316	1,578 ^a	2,000	10,000	,254	,240
DOSIS_T1	Pillai's Trace	,127	,728 ^a	2,000	10,000	,507	,127
	Wilks' Lambda	,873	,728 ^a	2,000	10,000	,507	,127
	Hotelling's Trace	,146	,728 ^a	2,000	10,000	,507	,127
	Roy's Largest Root	,146	,728 ^a	2,000	10,000	,507	,127
INYECC_D	Pillai's Trace	,212	1,341 ^a	2,000	10,000	,305	,212
	Wilks' Lambda	,788	1,341 ^a	2,000	10,000	,305	,212
	Hotelling's Trace	,268	1,341 ^a	2,000	10,000	,305	,212
	Roy's Largest Root	,268	1,341 ^a	2,000	10,000	,305	,212
CALIF_ED	Pillai's Trace	,703	1,192	10,000	22,000	,348	,351
	Wilks' Lambda	,404	1,147 ^a	10,000	20,000	,379	,364
	Hotelling's Trace	1,211	1,090	10,000	18,000	,419	,377
	Roy's Largest Root	,924	2,033 ^b	5,000	11,000	,152	,480
SEXO	Pillai's Trace	,210	1,332 ^a	2,000	10,000	,307	,210
	Wilks' Lambda	,790	1,332 ^a	2,000	10,000	,307	,210
	Hotelling's Trace	,266	1,332 ^a	2,000	10,000	,307	,210
	Roy's Largest Root	,266	1,332 ^a	2,000	10,000	,307	,210
INYECC_D * CALIF_ED	Pillai's Trace	,313	2,279 ^a	2,000	10,000	,153	,313
	Wilks' Lambda	,687	2,279 ^a	2,000	10,000	,153	,313
	Hotelling's Trace	,456	2,279 ^a	2,000	10,000	,153	,313
	Roy's Largest Root	,456	2,279 ^a	2,000	10,000	,153	,313
INYECC_D * SEXO	Pillai's Trace	,155	,918 ^a	2,000	10,000	,430	,155
	Wilks' Lambda	,845	,918 ^a	2,000	10,000	,430	,155
	Hotelling's Trace	,184	,918 ^a	2,000	10,000	,430	,155
	Roy's Largest Root	,184	,918 ^a	2,000	10,000	,430	,155
CALIF_ED * SEXO	Pillai's Trace	,367	,825	6,000	22,000	,563	,184
	Wilks' Lambda	,654	,787 ^a	6,000	20,000	,590	,191
	Hotelling's Trace	,495	,743	6,000	18,000	,622	,198
	Roy's Largest Root	,416	1,525 ^b	3,000	11,000	,263	,294
INYECC_D * CALIF_ED * SEXO	Pillai's Trace	,000	, ^a	,000	,000	,	,
	Wilks' Lambda	1,000	, ^a	,000	10,500	,	,
	Hotelling's Trace	,000	, ^a	,000	2,000	,	,
	Roy's Largest Root	,000	,000 ^a	2,000	9,000	1,000	,000

a. Exact statistic

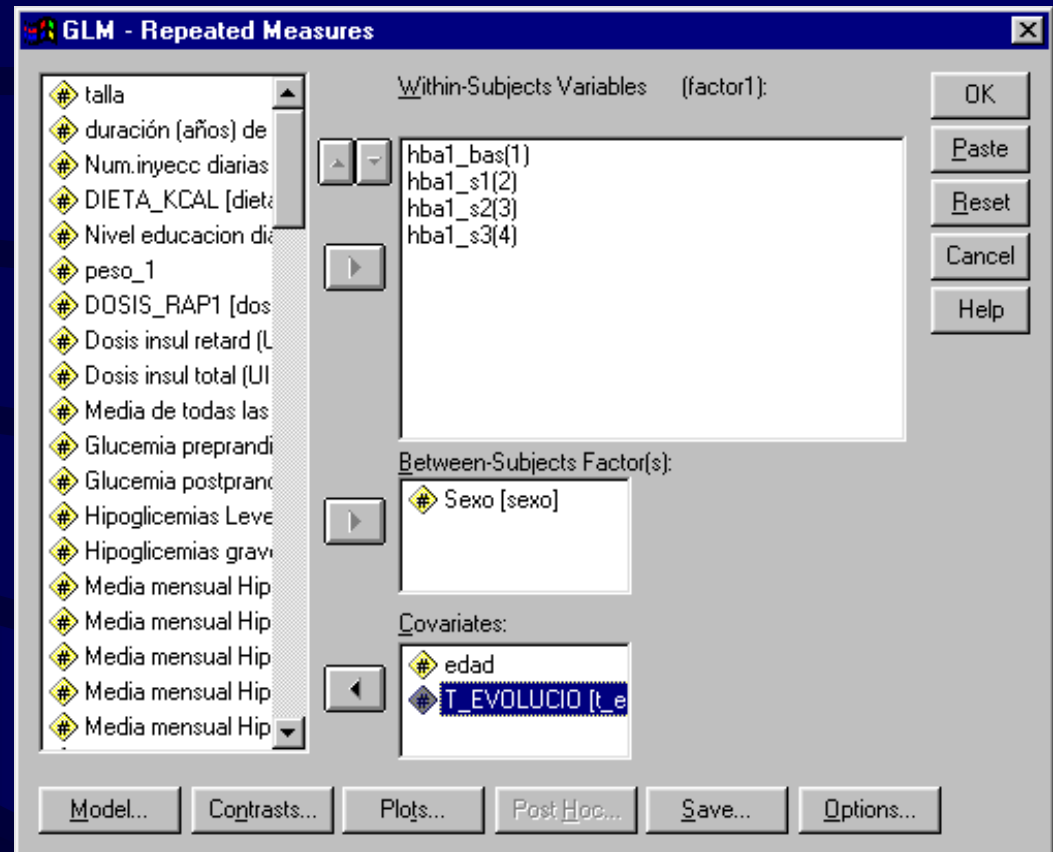
b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept+EDAD+T_EVOLUC+DIETA_KC+DOSIS_T1+INYECC_D+CALIF_ED+SEXO+INYECC_D * CALIF_ED+INYECC_D * SEXO+CALIF_ED * SEXO+INYECC_D * CALIF_ED * SEXO

ANOVA medidas repetidas



Se define un factor intra-sujetos con el número de categorías o niveles adecuado al número de mediciones realizadas



Se especifican las variables de las mediciones realizadas como grupos del factor intra-sujetos creado. Pueden definirse también covariables de corrección y factores de agrupamiento entre-sujetos.

Within-Subjects Factors

Measure: MEASURE_1

FACTOR1	Dependent Variable
1	HBA1_BAS
2	HBA1_S1
3	HBA1_S2
4	HBA1_S3

Resultados - Efectos intrasujetos

Las pruebas de efectos entre sujetos incluyen diversos tests. Se determinan también estadísticos para las interacciones con el factor estudiado.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
FACTOR1	Sphericity Assumed	3,343	3	1,114	2,631	,056
	Greenhouse-Geisser	3,343	1,851	1,807	2,631	,086
	Huynh-Feldt	3,343	2,216	1,509	2,631	,075
	Lower-bound	3,343	1,000	3,343	2,631	,117
FACTOR1 * EDAD	Sphericity Assumed	1,962	3	,654	1,544	,210
	Greenhouse-Geisser	1,962	1,851	1,060	1,544	,225
	Huynh-Feldt	1,962	2,216	,885	1,544	,221
	Lower-bound	1,962	1,000	1,962	1,544	,225
FACTOR1 * T_EVOLU	Sphericity Assumed	1,594	3	,531	1,255	,296
	Greenhouse-Geisser	1,594	1,851	,862	1,255	,292
	Huynh-Feldt	1,594	2,216	,719	1,255	,295
	Lower-bound	1,594	1,000	1,594	1,255	,273
FACTOR1 * SEXO	Sphericity Assumed	2,583	3	,861	2,033	,116
	Greenhouse-Geisser	2,583	1,851	1,396	2,033	,145
	Huynh-Feldt	2,583	2,216	1,165	2,033	,136
	Lower-bound	2,583	1,000	2,583	2,033	,166
Error(FACTOR1)	Sphericity Assumed	33,039	78	,424		
	Greenhouse-Geisser	33,039	48,115	,687		
	Huynh-Feldt	33,039	57,618	,573		
	Lower-bound	33,039	26,000	1,271		

ANOVA medidas repetidas

Pruebas multivariadas

Multivariate Tests^b

Effect		Value	F	Hypothesis df	Error df	Sig.
FACTOR1	Pillai's Trace	,234	2,446 ^a	3,000	24,000	,088
	Wilks' Lambda	,766	2,446 ^a	3,000	24,000	,088
	Hotelling's Trace	,306	2,446 ^a	3,000	24,000	,088
	Roy's Largest Root	,306	2,446 ^a	3,000	24,000	,088
FACTOR1 * EDAD	Pillai's Trace	,119	1,086 ^a	3,000	24,000	,374
	Wilks' Lambda	,881	1,086 ^a	3,000	24,000	,374
	Hotelling's Trace	,136	1,086 ^a	3,000	24,000	,374
	Roy's Largest Root	,136	1,086 ^a	3,000	24,000	,374
FACTOR1 * T_EVOLUC	Pillai's Trace	,240	2,526 ^a	3,000	24,000	,081
	Wilks' Lambda	,760	2,526 ^a	3,000	24,000	,081
	Hotelling's Trace	,316	2,526 ^a	3,000	24,000	,081
	Roy's Largest Root	,316	2,526 ^a	3,000	24,000	,081
FACTOR1 * SEXO	Pillai's Trace	,107	,960 ^a	3,000	24,000	,428
	Wilks' Lambda	,893	,960 ^a	3,000	24,000	,428
	Hotelling's Trace	,120	,960 ^a	3,000	24,000	,428
	Roy's Largest Root	,120	,960 ^a	3,000	24,000	,428

a. Exact statistic

b.

Design: Intercept+EDAD+T_EVOLUC+SEXO

Within Subjects Design: FACTOR1

ANOVA medidas repetidas

Contrastes intra-sujetos

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	FACTOR1	Type III Sum of Squares	df	Mean Square	F	Sig.
FACTOR1	Linear	2,609	1	2,609	5,764	,024
	Quadratic	,532	1	,532	,931	,343
	Cubic	,202	1	,202	,820	,373
FACTOR1 * EDAD	Linear	,504	1	,504	1,114	,301
	Quadratic	1,437	1	1,437	2,513	,125
	Cubic	2,133E-02	1	2,133E-02	,087	,771
FACTOR1 * T_EVOLUC	Linear	1,680E-02	1	1,680E-02	,037	,849
	Quadratic	1,232	1	1,232	2,155	,154
	Cubic	,346	1	,346	1,403	,247
FACTOR1 * SEXO	Linear	,683	1	,683	1,508	,230
	Quadratic	1,782	1	1,782	3,118	,089
	Cubic	,118	1	,118	,478	,496
Error(FACTOR1)	Linear	11,769	26	,453		
	Quadratic	14,863	26	,572		
	Cubic	6,407	26	,246		

ANOVA medidas repetidas

Between-Subjects Factors

		Value Label	N
Sexo	1	Hombre	12
	2	Mujer	18

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	1139,147	1	1139,147	224,589	,000
EDAD	55,247	1	55,247	10,892	,003
T_EVOLUC	11,519	1	11,519	2,271	,144
SEXO	,346	1	,346	,068	,796
Error	131,876	26	5,072		