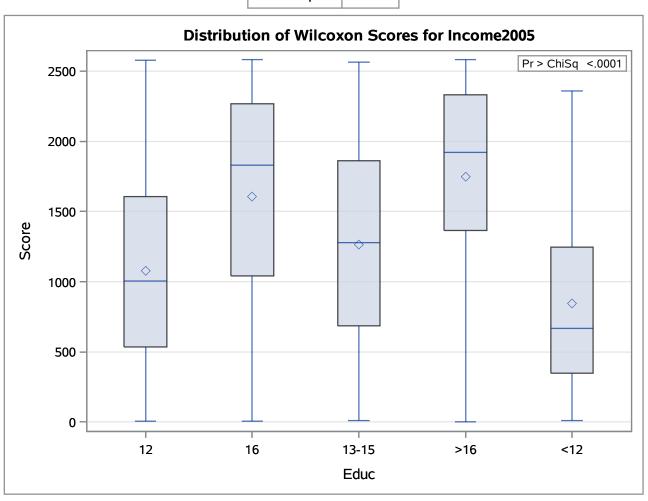
### **The NPAR1WAY Procedure**

Wilcoxon Scores (Rank Sums) for Variable Income2005 Classified by Variable Educ					
Sum of Expected Std Dev Me Educ N Scores Under H0 Under H0 Sco					
12	1020	1097659.50	1318350.0	18536.1583	1076.13676
16	406	653168.50	524755.0	13800.4492	1608.78941
13-15	648	819191.00	837540.0	16437.7151	1264.18364
>16	374	654733.00	483395.0	13342.3770	1750.62299
<12 136 115068.00 175780.0 8467.9138 846.088					
Average scores were used for ties.					

Kruskal-Wallis Test				
Chi-Square	349.4479			
DF	4			
Pr > Chi-Square	<.0001			



### **The NPAR1WAY Procedure**

	Data Scores for Variable Income2005 Classified by Variable Educ					
Educ	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score	
12	1020	37602194.0	50405338.8	1161044.06	36864.8961	
16	406	28418771.0	20063301.5	864414.80	69996.9729	
13-15	648	29079620.0	32022215.2	1029604.47	44875.9568	
>16	374 28743943.0	18481957.6	835722.66	76855.4626		
<12	136	3848997.0	6720711.8	530402.30	28301.4485	

Data Scores One-Way Analysis		
Chi-Square	315.1983	
DF	4	
Pr > Chi-Square	<.0001	

Monte Carlo Estimate for the Exact Test		
Pr >= Chi-Square		
Estimate	<.0001	
99% Lower Conf Limit	<.0001	
99% Upper Conf Limit	0.0005	
Number of Samples	10000	
Initial Seed	438414000	

## **The ANOVA Procedure**

Class Level Information				
Class	Levels	Values		
Educ	5	12 13-15 16 <12 >16		

Number of Observations Read	2584
Number of Observations Used	2584

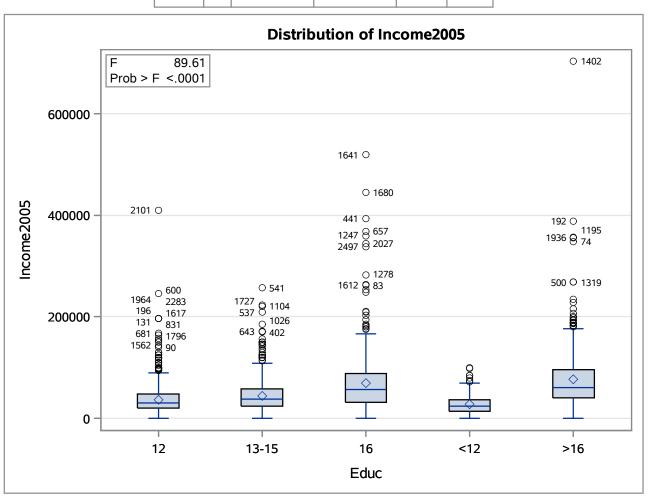
### The ANOVA Procedure

### **Dependent Variable: Income2005**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	688235137516	172058784379	89.61	<.0001
Error	2579	4.9517427E12	1920024319.9		
Corrected Total	2583	5.6399779E12			

R-Square	Coeff Var	Root MSE	Income2005 Mean
0.122028	88.67006	43818.08	49417.00

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Educ	4	688235137516	172058784379	89.61	<.0001



# Marie Wallmark MSDS 6371

#### Questions:

16 62000

- 1. Results from the ANOVA test of F-statistics and P-value of <.0001 suggest significant evidence that at least one of the five population distributions is different. We would reject the null hypothesis that the population means are the same. Further testing is required to determine which of the observed groups is different.
- With CHI-square<.0001 from a nparlway test, we would reject the null hypothesis. I trust the results of both the permutation test and the ANOVA test.

Note: confidence level of .05 for both test

```
data futureinc;
input Subject$
                  Educ$ Income2005;
if educ = "<12" then year =1;</pre>
if educ = "12" then year =2;
if educ = "13-15" then year =3;
if educ = "16" then year =4;
if educ = ">16" then year =5;
datalines;
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            5500
6
      16
            65000
7
     12
            19000
8
     13-15 36000
9
     13-15 65000
13
     16
            8000
      13-15 71000
16
17
     13-15 43000
18
     13-15 120000
20
     >16 64000
21
     16
            253043
22
     16
            45300
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38
            70000
     12
39
     12
            67000
41
     13-15 120000
42
     12
            45000
44
     12
            7200
46
      >16
            42000
47
     12
            66309
49
     13-15 34000
57
     12
            12000
58
      >16
            55500
      13-15 63000
61
      13-15 30000
62
63
      16
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69
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86
      <12 14000
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      12
           17000
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            8000
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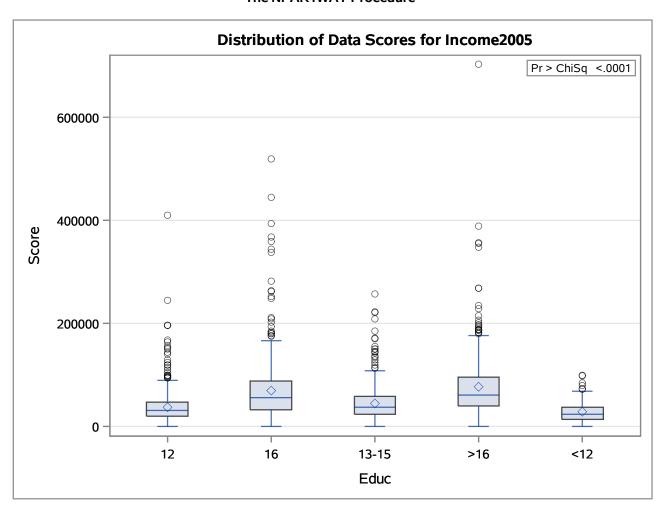
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12064 > 16 158730
          56000
12065 <12
12066 13-15 3000
12068 16
          49000
12070 13-15 34000
12076 12
          6000
12082 12
          4000
12083 12
          22000
         33793
12084 12
12087 13-15 3000
12088 16
         37000
12089 >16
          40000
12090 12
         30000
12092 16
           30000
12093 12
          82000
12097 12
           54000
12098 13-15 53000
12102 16
          100000
12104 13-15 36323
12106 > 16 120000
12110 16
           91000
12116 16
          90000
12119 >16
           45000
12122 <12
           30000
12125 12
           42000
12126 12
          21000
12128 12
         30000
12129 16
           39500
12130 12
           24000
12131 12
           23000
12133 12
           11560
12135 <12
           22000
12138 13-15 21000
12139 12
          12600
12140 13-15 45000
proc print;
run;
proc print data=futureinc;run;
ods html;
proc anova data=futureinc;
class educ;
model income2005 = educ;
run;
ods html;
PROC NPAR1WAY DATA=futureinc WILCOXON scores=data;
CLASS educ;
EXACT scores=data / MC;
VAR income2005;
run;
```

## The NPAR1WAY Procedure



```
ods html close;
ODS PDF FILE='futureinc.pdf';
ODS PDF CLOSE;
```