

Obs	Sex	Race	Age	Age_group	Weight	Weight_group	Cholesterol
1	Female	Black	49.00	40 - 49	236.00	201 lbs and heavier	225.00
2	Female	Caucasian	58.00	50 - 59	226.00	201 lbs and heavier	307.00
3	Male	Other	55.00	50 - 59	202.00	201 lbs and heavier	248.00
4	Male	Caucasian	46.00	40 - 49	205.00	201 lbs and heavier	180.00
5	Male	Caucasian	51.00	50 - 59	235.00	201 lbs and heavier	265.00

# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

Class Level Information		
Class	Levels	Values
Weight_group	6	100 lbs and lighter 101 - 125 126 - 150 151 - 175 176 - 200 201 lbs and heavier

Number of Observations Read	382
Number of Observations Used	382

# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

Dependent Variable: Cholesterol Cholesterol

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	148051.5619	29610.3124	21.27	<.0001
Error	376	523539.8936	1392.3933		
Corrected Total	381	671591.4555			

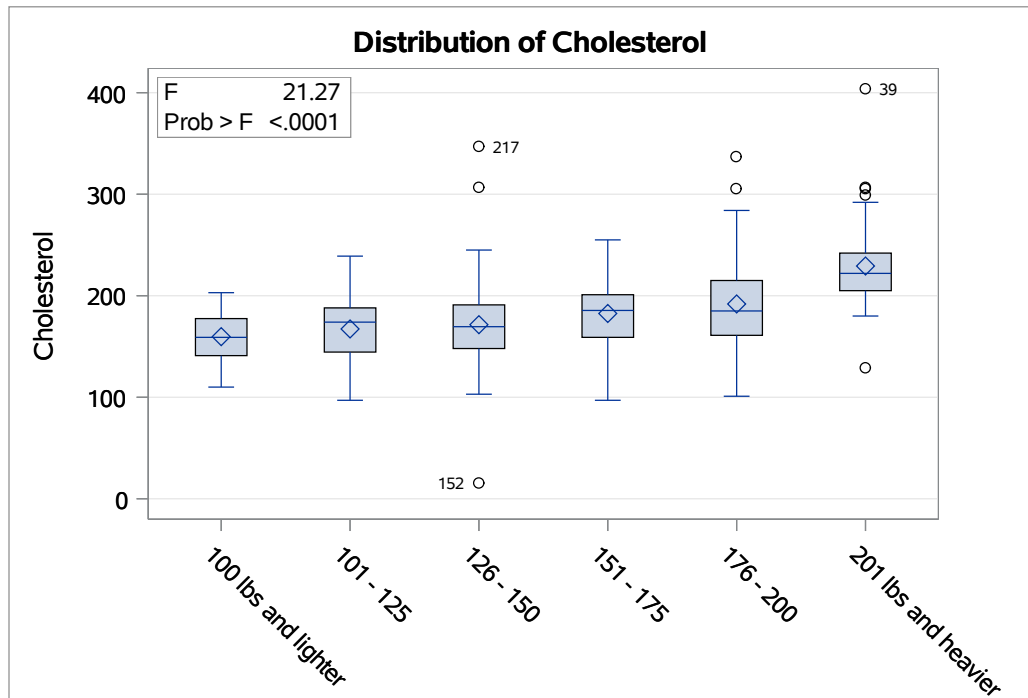
R-Square	Coeff Var	Root MSE	Cholesterol Mean
0.220449	20.40519	37.31479	182.8691

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Weight_group	5	148051.5619	29610.3124	21.27	<.0001

## **Anova using PROC ANOVA (Weight-Cholesterol)**

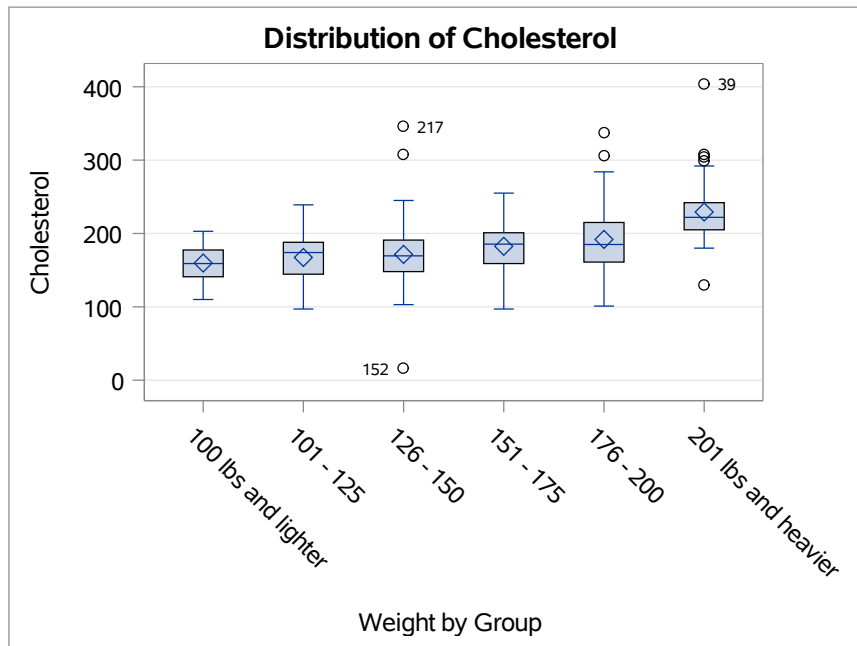
### **The ANOVA Procedure**

**Dependent Variable: Cholesterol   Cholesterol**



# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure



# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than Tukey's for all pairwise comparisons.

Alpha	0.05
Error Degrees of Freedom	376
Error Mean Square	1392.393
Critical Value of F	2.23799

# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
201 lbs and heavier - 176 - 200	37.374	12.969	61.779	***
201 lbs and heavier - 151 - 175	46.744	24.364	69.124	***
201 lbs and heavier - 126 - 150	57.776	35.554	79.998	***
201 lbs and heavier - 101 - 125	61.989	37.674	86.303	***
201 lbs and heavier - 100 lbs and lighter	69.577	39.778	99.375	***
176 - 200        - 201 lbs and heavier	-37.374	-61.779	-12.969	***
176 - 200        - 151 - 175	9.370	-11.449	30.190	
176 - 200        - 126 - 150	20.402	-0.247	41.051	



# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.					
Weight_group Comparison		Difference Between Means	Simultaneous 95% Confidence Limits		
176 - 200	- 101 - 125	24.615	1.729	47.501	***
176 - 200	- 100 lbs and lighter	32.203	3.558	60.848	***
151 - 175	- 201 lbs and heavier	-46.744	-69.124	-24.364	***
151 - 175	- 176 - 200	-9.370	-30.190	11.449	
151 - 175	- 126 - 150	11.032	-7.180	29.243	
151 - 175	- 101 - 125	15.244	-5.469	35.957	
151 - 175	- 100 lbs and lighter	22.832	-4.109	49.773	
126 - 150	- 201 lbs and heavier	-57.776	-79.998	-35.554	***

# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.					
Weight_group Comparison		Difference Between Means	Simultaneous 95% Confidence Limits		
126 - 150	- 176 - 200	-20.402	-41.051	0.247	
126 - 150	- 151 - 175	-11.032	-29.243	7.180	
126 - 150	- 101 - 125	4.212	-16.330	24.755	
126 - 150	- 100 lbs and lighter	11.801	-15.009	38.610	
101 - 125	- 201 lbs and heavier	-61.989	-86.303	-37.674	***
101 - 125	- 176 - 200	-24.615	-47.501	-1.729	***
101 - 125	- 151 - 175	-15.244	-35.957	5.469	
101 - 125	- 126 - 150	-4.212	-24.755	16.330	

# Anova using PROC ANOVA (Weight-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
101 - 125       - 100 lbs and lighter	7.588	-20.980	36.156	
100 lbs and lighter - 201 lbs and heavier	-69.577	-99.375	-39.778	***
100 lbs and lighter - 176 - 200	-32.203	-60.848	-3.558	***
100 lbs and lighter - 151 - 175	-22.832	-49.773	4.109	
100 lbs and lighter - 126 - 150	-11.801	-38.610	15.009	
100 lbs and lighter - 101 - 125	-7.588	-36.156	20.980	

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

Class Level Information		
Class	Levels	Values
Weight_group_recode	6	1 2 3 4 5 6

Number of Observations Read	382
Number of Observations Used	382

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

Dependent Variable: Cholesterol Cholesterol

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	148051.5619	29610.3124	21.27	<.0001
Error	376	523539.8936	1392.3933		
Corrected Total	381	671591.4555			

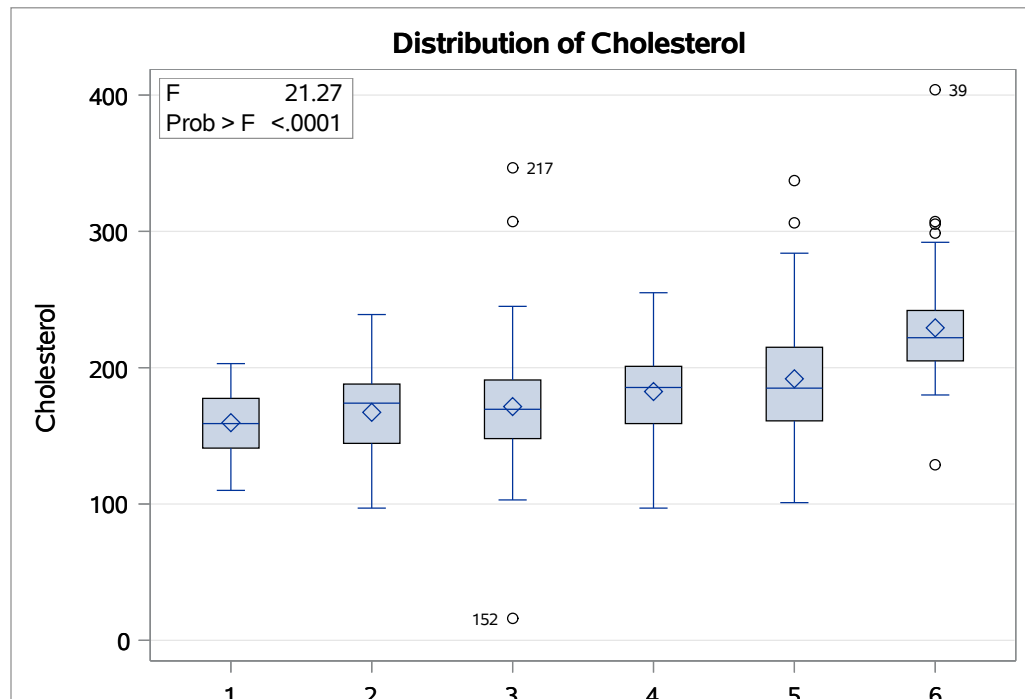
R-Square	Coeff Var	Root MSE	Cholesterol Mean
0.220449	20.40519	37.31479	182.8691

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Weight_group_recode	5	148051.5619	29610.3124	21.27	<.0001

# **Anova using PROC ANOVA (Weight\_num-Cholesterol)**

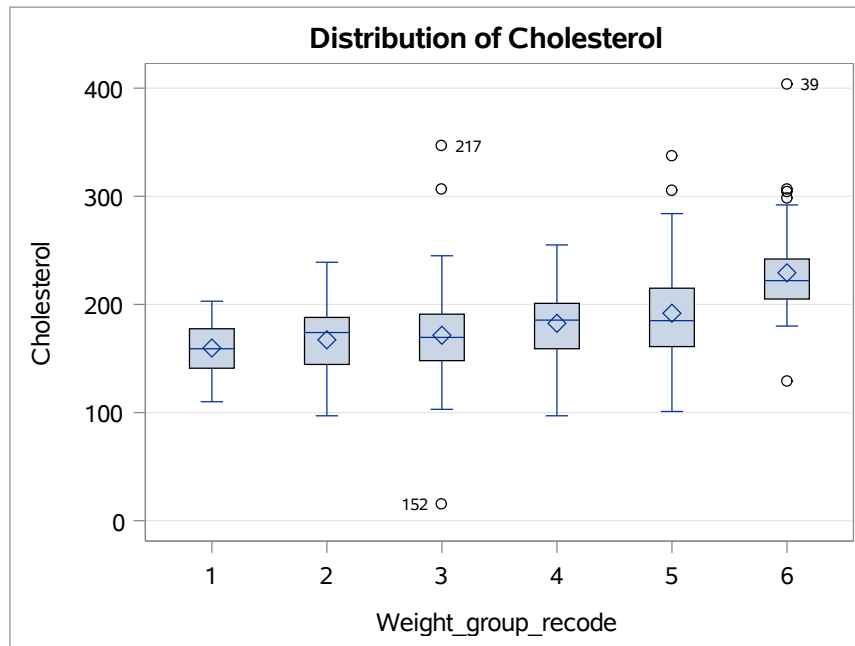
## **The ANOVA Procedure**

**Dependent Variable: Cholesterol   Cholesterol**



# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure





# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than Tukey's for all pairwise comparisons.

Alpha	0.05
Error Degrees of Freedom	376
Error Mean Square	1392.393
Critical Value of F	2.23799

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group_recode Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
6 - 5	37.374	12.969	61.779	***
6 - 4	46.744	24.364	69.124	***
6 - 3	57.776	35.554	79.998	***
6 - 2	61.989	37.674	86.303	***
6 - 1	69.577	39.778	99.375	***
5 - 6	-37.374	-61.779	-12.969	***
5 - 4	9.370	-11.449	30.190	

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group_recode Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
5 - 3	20.402	-0.247	41.051	
5 - 2	24.615	1.729	47.501	***
5 - 1	32.203	3.558	60.848	***
4 - 6	-46.744	-69.124	-24.364	***
4 - 5	-9.370	-30.190	11.449	
4 - 3	11.032	-7.180	29.243	
4 - 2	15.244	-5.469	35.957	

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group_recode Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
4 - 1	22.832	-4.109	49.773	
3 - 6	-57.776	-79.998	-35.554	***
3 - 5	-20.402	-41.051	0.247	
3 - 4	-11.032	-29.243	7.180	
3 - 2	4.212	-16.330	24.755	
3 - 1	11.801	-15.009	38.610	
2 - 6	-61.989	-86.303	-37.674	***

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group_recode Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
2 - 5	-24.615	-47.501	-1.729	***
2 - 4	-15.244	-35.957	5.469	
2 - 3	-4.212	-24.755	16.330	
2 - 1	7.588	-20.980	36.156	
1 - 6	-69.577	-99.375	-39.778	***
1 - 5	-32.203	-60.848	-3.558	***
1 - 4	-22.832	-49.773	4.109	

# Anova using PROC ANOVA (Weight\_num-Cholesterol)

## The ANOVA Procedure

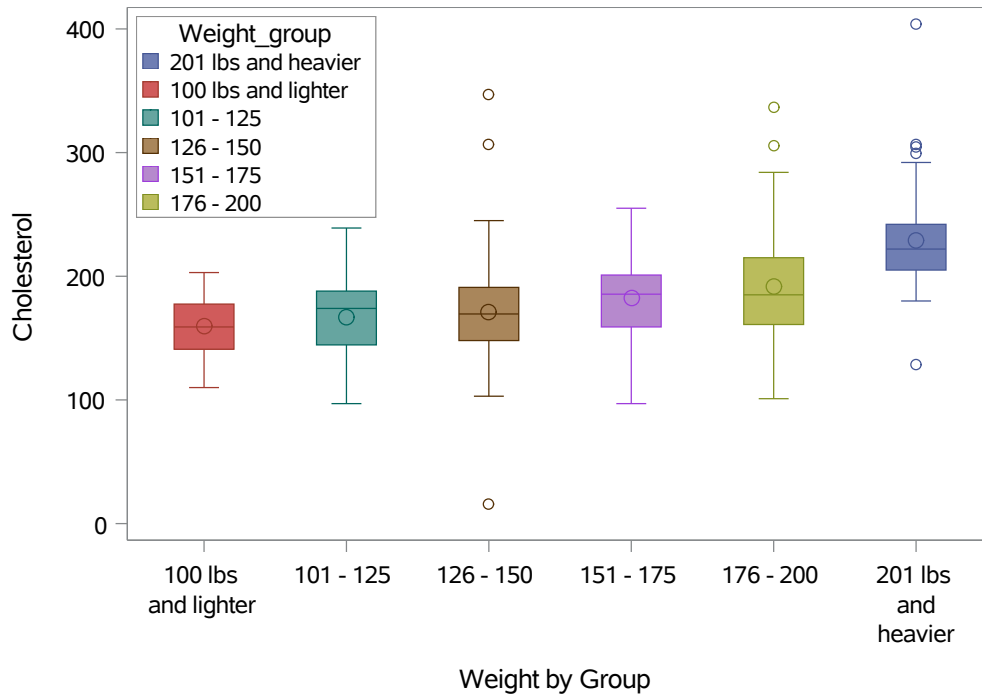
### Scheffe's Test for Cholesterol

Comparisons significant at the 0.05 level are indicated by ***.				
Weight_group_recode Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
1 - 3	-11.801	-38.610	15.009	
1 - 2	-7.588	-36.156	20.980	

## Anova using PROC ANOVA (Weight\_num-Cholesterol)

Weight by Group
100 lbs and lighter
101 - 125
126 - 150
151 - 175
176 - 200
201 lbs and heavier

### Anova using PROC ANOVA (Weight\_num-Cholesterol)





## Anova using PROC ANOVA (Weight\_num-Cholesterol)

Obs	BOX(Cholesterol,X=Weight_gro__Y	BOX(Cholesterol,X=Weight_gro__ST	BOX(Cholesterol,X=Weight_gro__X
1	180.00	MIN	201 lbs and heavier
2	205.00	Q1	201 lbs and heavier
3	222.00	MEDIAN	201 lbs and heavier
4	242.00	Q3	201 lbs and heavier
5	292.00	MAX	201 lbs and heavier

Obs	BOX(Cholesterol,X=Weight_gro__GP	Cholesterol	Weight_group
1	201 lbs and heavier	225.00	201 lbs and heavier
2	201 lbs and heavier	307.00	201 lbs and heavier
3	201 lbs and heavier	248.00	201 lbs and heavier
4	201 lbs and heavier	180.00	201 lbs and heavier
5	201 lbs and heavier	265.00	201 lbs and heavier

## Anova using PROC ANOVA (Weight\_num-Cholesterol)

Obs	BOX(Cholesterol,X=Weight_gro__Y	BOX(Cholesterol,X=Weight_gro__ST	BOX(Cholesterol,X=Weight_gro__X
6	229.26	MEAN	201 lbs and heavier
7	42.63	STD	201 lbs and heavier
8	47.00	N	201 lbs and heavier
9	129.00	DATAMIN	201 lbs and heavier
10	404.00	DATAMAX	201 lbs and heavier

Obs	BOX(Cholesterol,X=Weight_gro__GP	Cholesterol	Weight_group
6	201 lbs and heavier	199.00	201 lbs and heavier
7	201 lbs and heavier	190.00	201 lbs and heavier
8	201 lbs and heavier	204.00	201 lbs and heavier
9	201 lbs and heavier	199.00	201 lbs and heavier
10	201 lbs and heavier	218.00	201 lbs and heavier

### Anova using PROC ANOVA (Weight\_num-Cholesterol)

