

Demo: Performing a Two-Way ANOVA Using the N-Way ANOVA Task

Before conducting an analysis of variance, you should explore the data.

1. In the Navigation pane, select **Tasks and Utilities**.
2. Expand **Tasks**.
3. Expand **Statistics** and select the **Summary Statistics** task.
4. Select the **stat1.ameshousing3** table.
5. Assign **SalePrice** to the Analysis variables role.
6. Assign **Season_Sold** and **Heating_QC** to the Classification variables role.
7. Select **Season_Sold** in the list of Classification variables, and click the **Move column up** icon to move it to the top of the list.
8. On the **OPTIONS** tab, expand **Basic Statistics** and select only **Mean** and **Standard Deviation**.
9. Expand **Additional Statistics** and select **Variance**.
10. Run the code.

Generated Code

```
ods noproctitle;
ods graphics / imagemap=on;

proc means data=STAT1.AMESHOUSSING3 chartype mean std var vardef=df;
  var SalePrice;
  class Season_Sold Heating_QC;
run;
```

To further explore the numerous treatments, use the Line Chart task to examine the means graphically.

1. Expand **Graph** and select the **Line Chart** task.
2. Select the **stat1.ameshousing3** table.
3. Assign **Season_Sold** to the Category role and **Heating_QC** to the Subcategory role.
4. From the Measure drop-down list, select **Variable**. In the Variable field, select **SalePrice**.
5. Expand **Statistics** and select **Mean**.
6. Run the code.

Generated Code

```
ods graphics / reset width=6.4in height=4.8in imagemap;

proc sgplot data=STAT1.AMESHOUSSING3;
  vline Season_Sold / response=SalePrice group=Heating_QC stat=mean;
  yaxis grid;
run;

ods graphics / reset;
```

Note: To add markers to the chart for point value, edit a copy of the generated code and specify the **MARKERS** option in the **VLINE** statement as shown below.

```
vline Season_Sold / response=SalePrice group=Heating_QC stat=mean markers;
```

You can use the N-Way ANOVA task to discover the effects of both **Season_Sold** and **Heating_QC**.

1. Expand **Statistics** and select the **N-Way ANOVA** task.
2. Select the **stat1.ameshousing3** table.

3. Select **SalePrice** as the Dependent variable.
4. Select **Season_Sold** and **Heating_QC** as Factors, in that order. **Note:** Order is important when selecting factors. The displayed order determines the generated code for the CLASS statement. If you add **Heating_QC** first and **Season_Sold** second, a different graph is produced. You can use the up and down arrows to change the order of variables in the **Factors** field.
5. On the MODEL tab, click the **Edit** button to open the Model Effects Builder. Add **Heating_QC** and **Season_Sold** to Model Effects, in that order, and click **OK**. **Note:** Order is important when selecting the factors in the Model Builder. If you add **Season_Sold** first and **Heating_QC** second, a different report is produced.
6. Run the code.

Generated Code

```
ods noproctitle;
ods graphics / imagemap=on;

proc glm data=STAT1.AMESHOUSING3;
  class Season_Sold Heating_QC;
  model SalePrice=Heating_QC Season_Sold / ss1 ss3;
  lsmeans Heating_QC Season_Sold / adjust=tukey pdiff=all alpha=0.05 cl;
quit;
```