

## Performing Model Selection Using the Linear Regression Task

Use the Linear Regression task to select a model for predicting **SalePrice** in the **ameshousing3** data set by using the STEPWISE selection method. First, choose AIC as the criterion to add/remove effects, and then rerun the task three times to use BIC, AICC, and SBC, respectively.

1. In the Navigation pane, select **Tasks and Utilities**.
2. Expand **Tasks**.
3. Expand **Statistics** and open the **Linear Regression** task.
4. Select the **stat1.ameshousing3** table.
5. Assign **SalePrice** to the Dependent variable role.
6. Assign the interval variables (**Lot\_Area**, **Gr\_Liv\_Area**, **Bedroom\_AbvGr**, **Garage\_Area**, **Basement\_Area**, **Total\_Bathroom**, **Deck\_Porch\_Area**, and **Age\_Sold**) to the Continuous variables role.
7. On the MODEL tab, use the Model Effect Builder to specify the appropriate model. Click the **Edit this model** icon, select all variables, and click **Add**. Then click **OK**.
8. On the OPTIONS tab, clear the check boxes for all diagnostic plots, residual plots, and scatter plots.
9. On the SELECTION tab, use the Selection method drop-down list to choose **Stepwise selection**.
10. For the Add/remove effects with value, choose **Akaike's information criterion** for AIC as the criterion.
11. Expand **SELECTION PLOTS** and select the check box to display **Coefficient plots**, in addition to the already selected Criteria plots.
12. Expand the **DETAILS** property and select **Details for each step** from the drop-down list.
13. Click **Run**.

### Generated Code for AIC

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

proc glmselect data=STAT1.AMESHousing3 outdesign(addinputvars)=Work.reg_design
               plots=(criterionpanel coefficientpanel);
  model SalePrice=Lot_Area Gr_Liv_Area Bedroom_AbvGr Garage_Area Basement_Area
        Total_Bathroom Deck_Porch_Area Age_Sold / showpvalues selection=stepwise
        (select=aic) details=steps;
run;

proc delete data=Work.reg_design;
run;
```

Rerun the task and modify the information criterion. Choose **Sawa Bayesian information criterion** for BIC.

### Generated Code for BIC

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

proc glmselect data=STAT1.AMESHousing3 outdesign(addinputvars)=Work.reg_design
               plots=(criterionpanel coefficientpanel);
  model SalePrice=Lot_Area Gr_Liv_Area Bedroom_AbvGr Garage_Area Basement_Area
        Total_Bathroom Deck_Porch_Area Age_Sold / showpvalues selection=stepwise
        (select=bic) details=steps;
run;
```

```
proc delete data=Work.reg_design;  
run;
```

Rerun the task and modify the information criterion. Choose **Akaike's information criterion corrected for small-sample bias** for AICC.

## Generated Code for AICC

```
ods noproctitle;  
ods graphics / imagemap=on;  
  
proc glmselect data=STAT1.AMESHousing3 outdesign(addinputvars)=Work.reg_design  
    plots=(criterionpanel coefficientpanel);  
    model SalePrice=Lot_Area Gr_Liv_Area Bedroom_AbvGr Garage_Area Basement_Area  
        Total_Bathroom Deck_Porch_Area Age_Sold / showpvalues selection=stepwise  
        (select=aicc) details=steps;  
run;  
  
proc delete data=Work.reg_design;  
run;
```

Rerun the task and modify the informaton criterion. Choose **Schwarz Bayesian information criterion** for SBC.

## Generated Code for AICC

```
ods noproctitle;  
ods graphics / imagemap=on;  
  
proc glmselect data=STAT1.AMESHousing3 outdesign(addinputvars)=Work.reg_design  
    plots=(criterionpanel coefficientpanel);  
    model SalePrice=Lot_Area Gr_Liv_Area Bedroom_AbvGr Garage_Area Basement_Area \  
        Total_Bathroom Deck_Porch_Area Age_Sold / showpvalues selection=stepwise  
        (select=sbc) details=steps;  
run;  
  
proc delete data=Work.reg_design;  
run;
```