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Demo: Fitting a Multiple Logistic Regression Model with Categorical Predictors Using the Binary Logistic Regression Task

Use the Binary Logistic Regression task to fit a binary logistic regression model and characterize the relationship of **Basement_Area**, **Fireplaces**, and **Lot_Shape_2** with **Bonus**. Specify reference cell coding and specify **Regular** as the reference group for **Lot_Shape_2** and **0** as the reference level for **Fireplaces**. Model the probability of being bonus eligible and request profile likelihood confidence intervals for the estimated odds ratio. Request a report of odds ratios for 100 units for the **Basement_Area** variable.

1. In the Navigation pane, select **Tasks and Utilities**.
2. Expand **Tasks**.
3. Expand **Statistics** and open the **Binary Logistic Regression** task.
4. Select the **stat1.ameshousing3** table.
5. Assign **Bonus** to the Response role, and use the Event of interest drop-down list to specify **1**.
6. Assign **Fireplaces** and **Lot_Shape_2** to the Classification variables role.
7. Expand the **Parameterization of Effects** property and use the Coding drop-down list to select **Reference coding**.
8. Assign **Basement_Area** to the Continuous variables role.
9. On the MODEL tab, verify that **Main effects model** is selected.
10. On the OPTIONS tab, in the Select statistics to display drop-down list, select **Default and additional statistics**.
11. Expand the **Parameter Estimates** property. In the Confidence intervals for odds ratios drop-down list, select **Based on profile likelihood**.
12. Expand **PLOTS**, and in the Select plots to display drop-down list, select **Default and additional plots**.
13. Select **Effect plot** and **Odds ratio plot**.
14. Modify the code to specify specific levels of each class variable to use as reference levels. On the CODE tab, click the **Edit SAS code** icon.
15. In the CLASS statement, add the options **(REF='0')** immediately after **Fireplaces** and **(REF='Regular')** immediately after **Lot_Shape_2** .
16. Add the statement **units Basement_Area=100;** after the MODEL statement.
17. Click **Run**.

Generated Code

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

proc logistic data=STAT1.AMESHOUSING3 plots=(effect oddsratio(cldisplay=serifarrow) );
   class Fireplaces (REF='0') Lot_Shape_2 (REF='Regular')/ param=ref;
   model Bonus(event='1')=Fireplaces Lot_Shape_2 Basement_Area / link=logit
         clodds=pl alpha=0.05 technique=fisher;
   units Basement_Area=100;
run;
```