Stepwise Regression Based on Adjusted R Squared Improvement

- Use the `ols_step_forward` function to work out the model with predictors entered on the basis of improvement via *p*-value and adjusted R^2. For this we need the package `olsrr`.

```
# Using ols_step_forward

> install.packages("olsrr")
> library(olsrr)
> pmodel <- ols_step_forward_p(model1)
> pmodel
```

```
> pmodel <- ols_step_forward_p(model1)
Forward Selection Method
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Candidate Terms:

1. Population
2. Crime
3. Average_age
4. Household_income

We are selecting variables based on p value...

Final Model Output
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                            Model Summary
-----------------------------------------------------------------------
R                       0.247       RMSE                   9365.686
R-Squared               0.061       Coef. Var                 4.678
Adj. R-Squared          0.053       MSE                87716066.079
Pred R-Squared          0.039       MAE                    7416.676
-----------------------------------------------------------------------
 RMSE: Root Mean Square Error
 MSE: Mean Square Error
 MAE: Mean Absolute Error


                                 Parameter Estimates
-----------------------------------------------------------------------------------------------
      model          Beta    Std. Error    Std. Beta      t        Sig          lower         upper
-----------------------------------------------------------------------------------------------
(Intercept)    173635.236     12426.603                13.973    0.000    149159.616    198110.857
      Crime      -334.335       114.679       -0.180    -2.915    0.004      -560.208      -108.461
 Population         0.666         0.244        0.168     2.729    0.007         0.185         1.147
-----------------------------------------------------------------------------------------------
```

The model determined by p-value improvement is also the one with the lowest AIC value - but this may not always be the case.