

- Let's focus on the combined method that adds predictors which improve model fit, and removes ones that don't - based on minimising AIC:

```
> summary(stepAICboth)

Call:
lm(formula = House_price ~ Crime + Population, data = data)

Residuals:
    Min       1Q   Median       3Q      Max
-27192.2  -6161.4   -555.2   6203.4  24061.0

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.736e+05  1.243e+04  13.973  < 2e-16 ***
Crime        -3.343e+02  1.147e+02  -2.915  0.00388 **
Population    6.662e-01  2.442e-01   2.729  0.00682 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 9366 on 247 degrees of freedom
Multiple R-squared:  0.06084, Adjusted R-squared:  0.05323
F-statistic:      8 on 2 and 247 DF,  p-value: 0.0004301

> AIC(stepAICboth)
[1] 5286.855
```

We can see the procedure has settled on the model with Crime and Population. AIC value is 5286.855. In this case the stepwise model is the same as what we arrived at manually.

We can also estimate the confidence intervals for each of our parameters using the `confint()` function - this tells us that 95% of the time the true parameter value will lie somewhere between these points

```
> confint(steplimitsboth, level = 0.95)
              2.5 %              97.5 %
(Intercept)  1.491596e+05 198110.856517
Crime        -5.602084e+02   -108.461481
Population   1.853052e-01    1.147126
```