```
c(model2$deviance,model2$aic)
```

```
[1] 1553.980 8512.034
```

```
c(model_nb1$deviance,model3$aic)
```

```
[1] 1553.876 8513.906
```

The final model is:

$$Total.Number.of.Family.members = \beta_0 + \beta_1 \cdot Total.Household.Income + \beta_2 \cdot Total.Food.Expenditure + \beta_3 \cdot \mathbb{I}_{\text{Mal}}$$

$$\mathbb{I}_{\text{Male}}(x) = \begin{cases} 1 & \text{if the head of household is Male,} \\ 0 & \text{if the head of household is female.} \end{cases}$$

$$\mathbb{I}_{\text{Family}}(x) = \begin{cases} 1 & \text{Single family,} \\ 0 & \text{Otherwise.} \end{cases}$$

$$\mathbb{I}_{\text{Electricity}}(x) = \begin{cases} 1 & \text{if the house has electricity,} \\ 0 & \text{Otherwise.} \end{cases}$$

For extended family and two or more nonrelated persons/members, the final model is:

$$Total.Number.of.Family.members = 1.596 - 2.532 \times 10^{-7} \cdot Total.Household.Income + 2.953 \times 10^{-6} \cdot Total.Food.I$$

For single family, the final model is: