**Appendix for Reviewer: Diagnostics of empirical models**

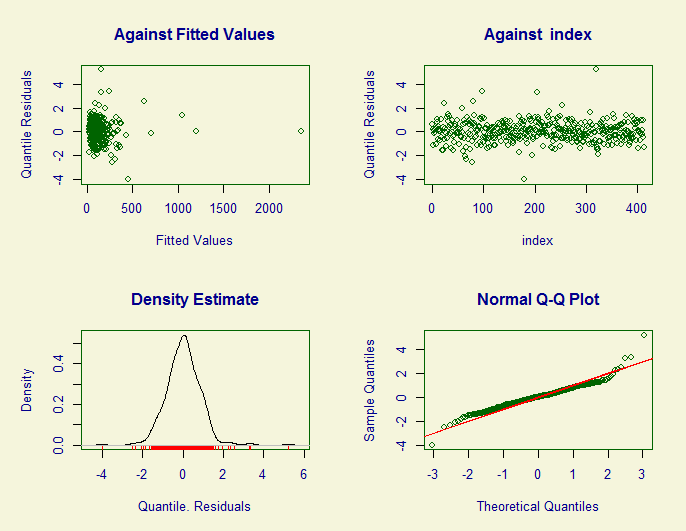


Figure 1: Diagnostics GP-density model.

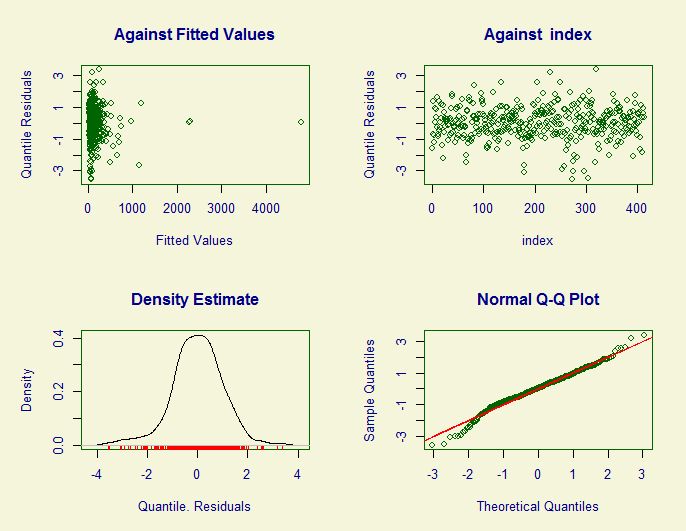


Figure 2: Diagnostics specialists-density model.

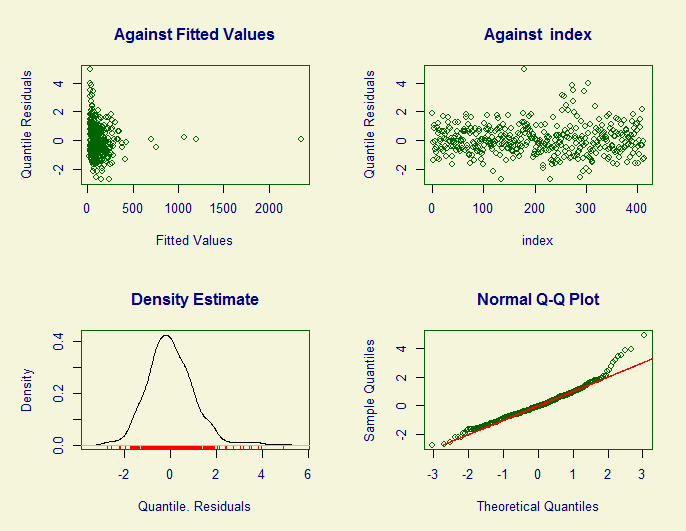


Figure 3: Diagnostics ratio model.

**Intercepts of the different ASHIPs**

As can be seen in the below table A1, all intercepts of ASHIPs in the states of former East Germany (marked by E) have a negative association with the ratio of GPs to specialists. Only the ASHIP regions of the former West German (marked by E) states Westphalia and Saarland also show negative correlations.

Table A1: Varying intercepts of the three zero-truncated, negative binomial GLMs for GP density, specialists density and ratio of GPs divided by specialists.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **General physicians** | | **Specialists** | | **Ratio GPs/specialists** | |
| **ASHIP** | **Estimate** | **p-value** | **Estimate** | **p-value** | **Estimate** | **p-value** |
| Brandenburg (E) | Reference | | | | | |
| Berlin (W) | 0.217 | 0.000\*\*\* | 0.382 | 0.035\* | -0.152 | 0.381 |
| Baden Württemberg (W) | 0.103 | 0.014\* | 0.072 | 0.346 | 0.061 | 0.406 |
| Bavaria (W) | 0.193 | 0.000\*\*\* | 0.059 | 0.452 | 0.187 | 0.013\* |
| Bremen (W) | 0.122 | 0.049\* | 0.148 | 0.260 | -0.113 | 0.393 |
| Hessen (W) | 0.062 | 0.134 | 0.156 | 0.037\* | -0.066 | 0.366 |
| Hamburg (W) | 0.173 | 0.002\*\* | 0.138 | 0.434 | 0.056 | 0.738 |
| Mecklenburg-  Western Pomerania (E) | 0.064 | 0.154 | -0.020 | 0.779 | 0.074 | 0.294 |
| Niederrhein (W) | 0.082 | 0.036\* | 0.019 | 0.795 | 0.085 | 0.226 |
| Lower Saxony (W) | 0.038 | 0.293 | 0.102 | 0.113 | -0.057 | 0.357 |
| Rhineland-  Palatinate(W) | 0.098 | 0.022\* | 0.028 | 0.713 | 0.088 | 0.227 |
| Saxony Anhalt (E) | 0.030 | 0.445 | 0.027 | 0.692 | -0.025 | 0.705 |
| Schleswig-Holstein (W) | 0.149 | 0.000\*\*\* | 0.095 | 0.221 | 0.068 | 0.361 |
| Saarland (W) | 0.237 | 0.000\*\*\* | 0.234 | 0.019\* | -0.030 | 0.755 |
| Saxony (E) | 0.070 | 0.045\* | 0.124 | 0.068 | -0.048 | 0.460 |
| Thuringia (E) | 0.074 | 0.072 | 0.047 | 0.489 | 0.028 | 0.670 |
| Westfalia-Lippe (W) | 0.006 | 0.883 | -0.038 | 0.595 | 0.059 | 0.391 |