Appendix A:

The results of modelling analysis

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | ZIP-RE | | | ZINB-RE | | |
|  | | | Estimate | Std Err | Prob>|t| | Estimate | Std Err | Prob>|t| |
| Fixed effects for the binary component | a0 | Intercept | −1.7341 | 0.5527 | 0.0026 | −20.2794 | 4881.37 | 0.9967 |
| a2 | Feb | 0.2081 | 0.3933 | 0.5986 | −0.1894 | 19480 | 1 |
| a3 | Mar | −0.7311 | 0.1812 | 0.0002 | 0.05772 | 4999.27 | 1 |
| a4 | Apr | 0.5436 | 0.153 | 0.0007 | −0.0973 | 7099.65 | 1 |
| a5 | May | 0.4164 | 0.1533 | 0.0086 | −0.09979 | 6926.08 | 1 |
| a6 | Jun | 0.6276 | 0.1742 | 0.0006 | −0.1836 | 1426.27 | 0.9999 |
| a7 | Sep | 0.6374 | 0.18 | 0.0008 | −0.2755 | 29386. | 1 |
| a8 | Oct | 0.3683 | 0.1667 | 0.031 | −0.09376 | 7433.68 | 1 |
| a9 | Nov | 0.3198 | 0.1572 | 0.0463 | −0.1364 | 5879.45 | 1 |
| a10 | Dec | 0.4725 | 0.1483 | 0.0023 | −0.102 | 6513.08 | 1 |
| a11 | County | 0.2331 | 0.3915 | 0.5537 | −0.01682 | 1556.74 | 1 |
| a12 | admin\_town | 1.1193 | 0.6108 | 0.0719 | −0.04873 | 2084.18 | 1 |
| a13 | admin\_vill | 2.3677 | 0.5642 | <0.0001 | −0.4783 | 1837.61 | 0.9998 |
| Fixed effects for the intensity component | b0 | Intercept | 1.3481 | 0.2147 | <0.0001 | 1.0106 | 0.07966 | <0.0001 |
| b2 | Feb | −0.6613 | 0.1583 | <0.0001 | −0.7328 | 0.1604 | <0.0001 |
| b3 | Mar | −0.4979 | 0.05442 | <0.0001 | −0.2714 | 0.08242 | 0.001 |
| b4 | Apr | −0.03862 | 0.05359 | 0.474 | −0.2565 | 0.08377 | 0.0022 |
| b5 | May | −0.2089 | 0.05311 | 0.0002 | −0.3715 | 0.08204 | <0.0001 |
| b6 | Jun | −0.4362 | 0.06691 | <0.0001 | −0.6785 | 0.09177 | <0.0001 |
| b7 | Sep | −0.845 | 0.07528 | <0.0001 | −1.0623 | 0.092 | <0.0001 |
| b8 | Oct | −0.3454 | 0.06207 | <0.0001 | −0.5251 | 0.08827 | <0.0001 |
| b9 | Nov | −0.4788 | 0.05874 | <0.0001 | −0.633 | 0.0845 | <0.0001 |
| b10 | Dec | −0.149 | 0.05235 | 0.0061 | −0.3978 | 0.08296 | <0.0001 |
| b11 | County | −0.258 | 0.1743 | 0.1442 | −0.0638 | 0.04017 | 0.1122 |
| b12 | admin\_town | −0.6085 | 0.2394 | 0.0136 | −0.8261 | 0.05307 | <0.0001 |
| b13 | admin\_vill | −1.2234 | 0.229 | <0.0001 | −1.9562 | 0.05341 | <0.0001 |
|  |  | k |  |  |  | 1.3457 | 0.1046 | <0.0001 |
| Random effects | Variance u1v | | 1.9617 | 0.4419 | <0.0001 | 1.4112 | 1542.96 | 0.9993 |
| Variance u2v | | 0.3161 | 0.07968 | 0.0002 | 0.3278 | 0.05554 | <0.0001 |
| Models information criteria | AIC (smaller is better) | | 20,472 | | | 21,699 | | |
| AICC (smaller is better) | | 20,472 | | | 21,699 | | |
| BIC (smaller is better) | | 20,532 | | | 21,910 | | |
| -2 Log likelihood | | 20,416 | | | 21,641 | | |
| Diff in -2LL | | 1 | | | 7.24E-08 | | |

1. The upper half of the results, from a0 to a13, shows the results of the logistic part of the model. The lower part, from b0 to b13, indicates the results of the intensity component.

2. k represents the dispersion parameter.

3. July and August are excluded because summer vacations.

4. The lower part shows the model fit for comparisons including -2 times the log-likelihood ratio, Akaike’s information criterion (AIC), the Bayesian information criterion (BIC), and the corrected Akaike’s information criterion (AICC). A smaller value for these criteria indicates a better model fit.