Simulation running from 1881 to 1910, for Western Hungary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Formula | Diffusion constant *DD* (km²/yr) | Diffusion constant *DH* (km²/yr) | Habitat factor *h* (for German speakers) |
| Model without habitat factor |  | 0.050 | 0.561 | N/A |
| Model with population as exponential habitat factor |  | 0.054 | 0.071 | -5.49\*10-7 |
| Model with speaker fraction as exponential habitat factor (+-) |  | 0.028 | 0.026 | -0.047 |
| Model with speaker fraction as exponential habitat factor (+) |  | 0.091 | 0.47 | -0.049 |
| Model with German speaker fraction as exponential habitat factor |  | 0.033 | 0.029 | -0.029 |
| Model with amended speaker fraction as exponential habitat factor |  | 0.028 | 0.026 | -0.047 |

Simulation running from 1881 to 1910, for Western Hungary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Number of German speakers, 1910 | Number of Hungarian speakers, 1910 | RMS Error, 1910 | Mean Absolute Error, 1910 |
| Census | 319285 | 500988 | N/A | N/A |
| Baseline model | 384045 | 436228 | 742.03 | 79.27 |
| Model without habitat factor | 359742 | 460531 | 686.07 | 91.53 |
| Model with population as exponential habitat factor | 349726 | 470547 | 188.30 | 44.52 |
| Model with speaker fraction as exponential habitat factor (+-) | 316199 | 504074 | 105.01 | 28.53 |
| Model with speaker fraction as exponential habitat factor (+) | 343895 | 476378 | 445.30 | 102.49 |
| Model with German speaker fraction as exponential habitat factor | 321240 | 499033 | 122.79 | 36.42 |
| Model with amended speaker fraction as exponential habitat factor | 316201 | 504072 | 105.00 | 28.53 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Sum of habitat terms | Sum of diffusion  terms | r2 value for speaker proportion plot | r2 value for total population plot |
| Census |  |  | 0.8186 | 0.0717 |
| Model without habitat factor | 20785781 | 893240 | 0.1931 | 0.0014 |
| Model with population as exponential habitat factor | 20793859 | 516642 | 0.3005 | 0.6719 |
| Model with speaker fraction as exponential habitat factor (+-) | 20892538 | 399014 | 0.9797 | 0.1033 |
| Model with speaker fraction as exponential habitat factor (+) | 19920966 | 891128 | 0.8193 | 0.0440 |
| Model with German speaker fraction as exponential habitat factor | 20593863 | 411201 | 0.0384 | 0.0963 |
| Model with amended speaker fraction as exponential habitat factor | 20824143 | 399334 | 0.9797 | 0.1033 |

Simulation running from 1880 to 1930, for Baranya and Tolna

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Formula | Diffusion constant *DD* (km²/yr) | Diffusion constant *DH* (km²/yr) | Habitat factor *h* (for German speakers) |
| Model without habitat factor |  | 6.5\*10-5 | 6.4\*10-5 | N/A |
| Model with population as exponential habitat factor |  | 6.5\*10-5 | 6.4\*10-5 | -2.8\*10-7 |
| Model with speaker fraction as exponential habitat factor (+-) |  | 6.4\*10-5 | 6.3\*10-5 | -0.019 |
| Model with speaker fraction as exponential habitat factor (+) |  | 6.4\*10-5 | 6.3\*10-5 | -0.023 |
| Model with German speaker fraction as exponential habitat factor |  | 6.5\*10-5 | 6.4\*10-5 | -0.018 |
| Model with amended speaker fraction as exponential habitat factor |  | 6.5\*10-5 | 6.4\*10-5 | -0.019 |

Simulation running from 1880 to 1930, for Baranya and Tolna

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Number of German speakers, 1930 | Number of Hungarian speakers, 1930 | RMS Error, 1930 | Mean Absolute Error, 1930 |
| Census | 156893 | 409938 | N/A | N/A |
| Baseline model | 198060 | 368771 | 509.05 | 114.00 |
| Model without habitat factor | 194461 | 372370 | 507.07 | 113.73 |
| Model with population as exponential habitat factor | 183346 | 383485 | 279.83 | 88.32 |
| Model with speaker fraction as exponential habitat factor (+-) | 154835 | 411996 | 200.36 | 78.17 |
| Model with speaker fraction as exponential habitat factor (+) | 189994 | 376837 | 371.52 | 110.13 |
| Model with German speaker fraction as exponential habitat factor | 148701 | 418130 | 316.09 | 103.81 |
| Model with amended speaker fraction as exponential habitat factor | 154834 | 411997 | 200.36 | 78.17 |

Relative influence of Habitat and Diffusion terms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Sum of habitat terms | Sum of diffusion  terms | r2 value for speaker proportion plot | r2 value for total population plot |
| Census |  |  | 0.3509 | 0.2923 |
| Model without habitat factor | 25920947 | 14657909766 | 0.1626 | 0.0058 |
| Model with population as exponential habitat factor | 25949825 | 14667531528 | 0.5082 | 0.5543 |
| Model with speaker fraction as exponential habitat factor (+-) | 26086045 | 14579444852 | 0.9201 | 0.2517 |
| Model with speaker fraction as exponential habitat factor (+) | 26434442 | 14849923308 | 0.6412 | 0.2905 |
| Model with German speaker fraction as exponential habitat factor | 25861053 | 14661771360 | 0.0519 | 0.0037 |
| Model with amended speaker fraction as exponential habitat factor | 25940491 | 14581323603 | 0.9202 | 0.2517 |