**Supplementary Table T4. Interrupted time series model results with maximum auto-correlation lag 5**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | pre-trend | | level change | | trend change | | spring | | summer | | autumn | |
|  | estimate (95% CI) | p | estimate (95% CI) | p | estimate (95% CI) | p | estimate (95% CI) | p | estimate (95% CI) | p | estimate (95% CI) | p |
| Hip Admissions | 0.995 (0.987,1.003) | 0.249 | 1.055 (0.917,1.215) | 0.454 | 0.991 (0.978,1.005) | 0.217 | 1.19 (1.04,1.362) | 0.012 | 1.207 (1.104,1.32) | 0.000 | 1.101 (0.993,1.221) | 0.069 |
| Hip Average Age | -0.015 (-0.094,0.065) | 0.714 | 1.571 (0.241,2.901) | 0.021 | -0.06 (-0.168,0.048) | 0.277 | 1.52 (-0.178,3.218) | 0.079 | 2.09 (0.818,3.361) | 0.001 | 1.031 (-0.639,2.701) | 0.226 |
| Hip Prop Women | 0.999 (0.995,1.002) | 0.503 | 0.966 (0.895,1.042) | 0.367 | 1.007 (1.001,1.014) | 0.027 | 1.023 (0.932,1.122) | 0.636 | 1.088 (1,1.184) | 0.051 | 0.981 (0.879,1.094) | 0.727 |
| Hip Prop 2+ Charlson | 0.994 (0.985,1.004) | 0.261 | 1.411 (1.116,1.785) | 0.004 | 1.01 (1,1.02) | 0.042 | 1.195 (0.979,1.459) | 0.079 | 1.306 (1.111,1.535) | 0.001 | 1.003 (0.792,1.27) | 0.981 |
| Hip Prop High Deprivation | 1.003 (0.994,1.012) | 0.551 | 1.027 (0.883,1.195) | 0.729 | 1.004 (0.99,1.018) | 0.577 | 0.937 (0.805,1.091) | 0.400 | 0.877 (0.752,1.022) | 0.092 | 0.996 (0.847,1.171) | 0.961 |
| Hip LoS | -0.006 (-0.029,0.017) | 0.605 | 0.312 (-0.12,0.745) | 0.157 | -0.014 (-0.042,0.015) | 0.346 | 0.502 (0.286,0.718) | 0.000 | 0.135 (-0.191,0.461) | 0.418 | 0.1 (-0.332,0.532) | 0.650 |
| Hip LoS Age 16-59 | -0.003 (-0.026,0.02) | 0.773 | 0.379 (-0.046,0.803) | 0.080 | -0.026 (-0.062,0.01) | 0.152 | 0.223 (-0.113,0.559) | 0.193 | 0.384 (0.09,0.679) | 0.011 | 0.219 (-0.191,0.63) | 0.295 |
| Hip LoS Age 60-69 | -0.004 (-0.031,0.024) | 0.799 | 0.013 (-0.766,0.791) | 0.975 | 0 (-0.051,0.05) | 0.987 | 0.107 (-0.33,0.543) | 0.632 | 0.158 (-0.451,0.766) | 0.611 | 0.162 (-0.352,0.676) | 0.537 |
| Hip LoS Age 70-79 | 0.006 (-0.054,0.065) | 0.853 | -0.753 (-1.944,0.438) | 0.215 | 0.007 (-0.056,0.069) | 0.836 | -0.433 (-1.343,0.476) | 0.350 | -0.842 (-1.91,0.226) | 0.122 | -0.865 (-2.063,0.334) | 0.157 |
| Hip LoS Age 80+ | -0.068 (-0.147,0.012) | 0.097 | 2.109 (0.803,3.414) | 0.002 | -0.002 (-0.111,0.107) | 0.967 | 1.506 (0.499,2.513) | 0.003 | 0.222 (-0.799,1.243) | 0.670 | 1.003 (-0.111,2.116) | 0.078 |
| Hip LoS Men | -0.007 (-0.047,0.033) | 0.732 | 0.347 (-0.44,1.135) | 0.387 | -0.02 (-0.073,0.033) | 0.458 | 0.293 (-0.117,0.704) | 0.161 | 0.289 (-0.193,0.771) | 0.239 | 0.458 (-0.163,1.079) | 0.149 |
| Hip LoS Women | -0.004 (-0.035,0.028) | 0.816 | 0.235 (-0.271,0.741) | 0.362 | -0.014 (-0.046,0.018) | 0.391 | 0.693 (0.395,0.991) | 0.000 | 0.009 (-0.421,0.439) | 0.966 | -0.203 (-0.762,0.357) | 0.477 |
| Hip LoS Charlson 0 | -0.011 (-0.039,0.016) | 0.418 | 0.297 (-0.242,0.837) | 0.280 | -0.005 (-0.035,0.025) | 0.738 | 0.912 (0.617,1.208) | 0.000 | 0.178 (-0.123,0.478) | 0.247 | 0.222 (-0.066,0.51) | 0.131 |
| Hip LoS Charlson 1 | 0.034 (0.003,0.065) | 0.030 | 0.238 (-0.604,1.08) | 0.580 | -0.077 (-0.137,-0.018) | 0.011 | 0.191 (-0.385,0.767) | 0.515 | 0.312 (-0.431,1.056) | 0.410 | 0.014 (-0.563,0.591) | 0.962 |
| Hip LoS Charlson 2+ | -0.123 (-0.239,-0.007) | 0.038 | 0.172 (-1.97,2.314) | 0.875 | 0.116 (0.005,0.228) | 0.040 | -0.789 (-2.189,0.611) | 0.269 | -0.783 (-2.119,0.553) | 0.250 | 0.188 (-2.176,2.552) | 0.876 |
| Hip LoS Dep 1 | 0.004 (-0.029,0.037) | 0.814 | 0.553 (-0.303,1.408) | 0.206 | -0.017 (-0.065,0.032) | 0.501 | 0.784 (0.131,1.437) | 0.019 | 0.42 (-0.034,0.874) | 0.070 | 0.299 (-0.401,0.999) | 0.402 |
| Hip LoS Dep 2 | -0.038 (-0.083,0.006) | 0.092 | 0.822 (-0.167,1.81) | 0.103 | -0.015 (-0.078,0.047) | 0.630 | 1.509 (0.737,2.28) | 0.000 | 0.66 (-0.202,1.522) | 0.133 | 0.589 (-0.461,1.638) | 0.272 |
| Hip LoS Dep 3 | -0.034 (-0.102,0.033) | 0.319 | 0.617 (-0.789,2.023) | 0.390 | 0.01 (-0.072,0.091) | 0.819 | -0.216 (-1.011,0.579) | 0.595 | -0.424 (-1.293,0.445) | 0.339 | -0.701 (-1.351,-0.05) | 0.035 |
| Hip LoS Dep 4 | 0.081 (0.017,0.144) | 0.013 | -0.473 (-1.858,0.913) | 0.504 | -0.112 (-0.189,-0.035) | 0.004 | -0.374 (-1.59,0.842) | 0.547 | -1.204 (-2.355,-0.053) | 0.040 | -0.491 (-1.989,1.007) | 0.520 |
| Hip LoS Dep 5 | 0.015 (-0.056,0.085) | 0.682 | -0.72 (-1.647,0.208) | 0.128 | 0 (-0.07,0.07) | 0.998 | 0.621 (-0.104,1.347) | 0.093 | 0.689 (-0.25,1.629) | 0.150 | 0.816 (-0.696,2.329) | 0.290 |
| Hip Bed Occ | 0.997 (0.987,1.008) | 0.627 | 1 (0.862,1.161) | 0.996 | 0.987 (0.97,1.004) | 0.128 | 1.291 (1.116,1.492) | 0.001 | 1.283 (1.14,1.444) | 0.000 | 1.146 (0.99,1.326) | 0.068 |
| Hip Public Private | 1.013 (0.985,1.041) | 0.377 | 0.477 (0.29,0.782) | 0.003 | 0.981 (0.951,1.011) | 0.218 | 0.992 (0.809,1.217) | 0.939 | 1.361 (1.166,1.589) | 0.000 | 1.038 (0.847,1.273) | 0.718 |
| Knee Admissions | 0.995 (0.992,0.999) | 0.016 | 0.843 (0.761,0.934) | 0.001 | 1.005 (0.998,1.012) | 0.170 | 1.308 (1.154,1.482) | 0.000 | 1.26 (1.16,1.369) | 0.000 | 1.286 (1.178,1.403) | 0.000 |
| Knee Average Age | -0.078 (-0.152,-0.005) | 0.037 | -1.632 (-2.825,-0.439) | 0.007 | 0.211 (0.128,0.293) | 0.000 | 0.926 (-0.072,1.924) | 0.069 | 0.953 (0.077,1.829) | 0.033 | 0.354 (-0.422,1.13) | 0.371 |
| Knee Prop Women | 1.004 (0.999,1.009) | 0.086 | 0.96 (0.861,1.071) | 0.465 | 0.994 (0.987,1.001) | 0.097 | 1.037 (0.973,1.105) | 0.260 | 1.017 (0.922,1.121) | 0.743 | 1.036 (0.966,1.111) | 0.319 |
| Knee Prop 2+ Charlson | 1.009 (0.993,1.026) | 0.250 | 0.638 (0.468,0.869) | 0.004 | 1.042 (1.021,1.064) | 0.000 | 1.156 (0.931,1.436) | 0.190 | 1.074 (0.841,1.372) | 0.567 | 0.909 (0.626,1.321) | 0.617 |
| Knee Prop High Deprivation | 1.005 (0.999,1.011) | 0.107 | 0.968 (0.835,1.122) | 0.664 | 0.986 (0.977,0.995) | 0.003 | 1.224 (1.082,1.384) | 0.001 | 1.075 (0.95,1.217) | 0.251 | 1.031 (0.924,1.149) | 0.586 |
| Knee LoS | -0.024 (-0.047,-0.001) | 0.042 | 0.176 (-0.2,0.551) | 0.360 | -0.008 (-0.031,0.015) | 0.490 | 0.422 (0.033,0.81) | 0.033 | 0.15 (-0.199,0.499) | 0.398 | 0.396 (-0.011,0.803) | 0.057 |
| Knee LoS Age 16-59 | -0.016 (-0.032,0.001) | 0.068 | 0.403 (0.008,0.799) | 0.046 | -0.028 (-0.059,0.003) | 0.081 | 0.484 (0.198,0.77) | 0.001 | 0.422 (-0.01,0.855) | 0.056 | 0.475 (0.216,0.734) | 0.000 |
| Knee LoS Age 16-59 | 0.007 (-0.018,0.033) | 0.571 | -0.295 (-0.854,0.265) | 0.302 | -0.026 (-0.062,0.009) | 0.147 | 0.069 (-0.455,0.593) | 0.795 | -0.194 (-0.652,0.265) | 0.407 | -0.096 (-0.713,0.52) | 0.759 |
| Knee LoS Age 70-79 | -0.009 (-0.045,0.027) | 0.616 | 0.77 (0.101,1.439) | 0.024 | -0.054 (-0.096,-0.012) | 0.012 | -0.086 (-0.736,0.563) | 0.794 | -0.552 (-1.116,0.012) | 0.055 | 0.367 (-0.3,1.034) | 0.281 |
| Knee LoS Age 80+ | -0.051 (-0.097,-0.006) | 0.026 | -0.562 (-1.849,0.724) | 0.391 | 0.028 (-0.062,0.119) | 0.541 | 1.521 (0.119,2.923) | 0.034 | 1.37 (0.391,2.349) | 0.006 | 1.361 (0.617,2.106) | 0.000 |
| Knee LoS Men | -0.007 (-0.028,0.014) | 0.514 | 0.096 (-0.297,0.488) | 0.633 | -0.033 (-0.062,-0.004) | 0.024 | 0.082 (-0.416,0.58) | 0.746 | 0.157 (-0.244,0.558) | 0.444 | 0.205 (-0.149,0.559) | 0.256 |
| Knee LoS Women | -0.042 (-0.079,-0.005) | 0.027 | 0.252 (-0.356,0.861) | 0.416 | 0.017 (-0.018,0.052) | 0.350 | 0.635 (-0.036,1.307) | 0.064 | 0.15 (-0.454,0.754) | 0.625 | 0.49 (-0.258,1.239) | 0.199 |
| Knee LoS Charlson 0 | -0.021 (-0.044,0.002) | 0.077 | 0.067 (-0.312,0.446) | 0.730 | -0.011 (-0.036,0.015) | 0.419 | 0.645 (0.331,0.959) | 0.000 | 0.193 (-0.129,0.516) | 0.240 | 0.415 (0.075,0.754) | 0.017 |
| Knee LoS Charlson 1 | -0.03 (-0.064,0.005) | 0.092 | 0.47 (-0.199,1.139) | 0.169 | -0.029 (-0.067,0.01) | 0.145 | 0.455 (-0.097,1.007) | 0.106 | 0.324 (-0.341,0.988) | 0.340 | 1.058 (0.384,1.731) | 0.002 |
| Knee LoS Charlson 2+ | -0.04 (-0.092,0.012) | 0.134 | 0.407 (-1.956,2.771) | 0.736 | -0.022 (-0.184,0.14) | 0.789 | -0.627 (-1.625,0.37) | 0.218 | -0.949 (-2.374,0.476) | 0.192 | -1.433 (-2.175,-0.691) | 0.000 |
| Knee LoS Dep 1 | -0.009 (-0.05,0.031) | 0.644 | -0.035 (-0.656,0.586) | 0.911 | -0.008 (-0.059,0.043) | 0.750 | 0.257 (-0.541,1.056) | 0.527 | 0.096 (-0.581,0.772) | 0.782 | -0.127 (-0.724,0.47) | 0.677 |
| Knee LoS Dep 2 | -0.019 (-0.055,0.017) | 0.300 | 0.199 (-0.57,0.968) | 0.612 | -0.043 (-0.086,0) | 0.049 | 0.018 (-0.731,0.767) | 0.962 | -0.731 (-1.507,0.046) | 0.065 | 0.05 (-0.887,0.987) | 0.917 |
| Knee LoS Dep 3 | 0.014 (-0.031,0.059) | 0.544 | -0.426 (-1.102,0.25) | 0.217 | -0.036 (-0.095,0.022) | 0.220 | 0.976 (0.281,1.672) | 0.006 | 0.909 (-0.067,1.886) | 0.068 | 0.547 (-0.12,1.215) | 0.108 |
| Knee LoS Dep 4 | -0.064 (-0.127,-0.001) | 0.047 | 0.634 (-0.165,1.432) | 0.120 | 0.033 (-0.04,0.106) | 0.380 | 0.669 (-0.076,1.414) | 0.079 | 0.617 (0.007,1.227) | 0.047 | 0.852 (-0.274,1.978) | 0.138 |
| Knee LoS Dep 5 | -0.035 (-0.087,0.018) | 0.194 | 0.709 (-0.225,1.643) | 0.137 | 0.015 (-0.042,0.072) | 0.606 | 0.123 (-0.701,0.947) | 0.770 | -0.387 (-1.304,0.531) | 0.409 | 1.104 (0.188,2.02) | 0.018 |
| Knee Bed Occ | 0.993 (0.986,0.999) | 0.032 | 0.834 (0.728,0.956) | 0.009 | 1 (0.991,1.009) | 0.991 | 1.42 (1.308,1.542) | 0.000 | 1.373 (1.213,1.553) | 0.000 | 1.465 (1.318,1.627) | 0.000 |
| Knee Public Private | 1.006 (0.98,1.032) | 0.667 | 0.621 (0.358,1.077) | 0.090 | 0.985 (0.961,1.01) | 0.225 | 1.119 (0.915,1.369) | 0.274 | 1.318 (1.035,1.678) | 0.025 | 1.139 (0.931,1.394) | 0.205 |
| Elec Emerg Ratio | 0.995 (0.987,1.003) | 0.198 | 0.725 (0.635,0.828) | 0.000 | 0.984 (0.974,0.995) | 0.004 | 0.992 (0.898,1.095) | 0.872 | 0.948 (0.835,1.077) | 0.414 | 0.973 (0.849,1.114) | 0.690 |