**Thyroid cancer**



|  |  |  |
| --- | --- | --- |
| **APC analysis** | Terms in model | **Summary statistics** |
| Deviance (*df*) | △D (△ *df*)  | Effect  | p-value | Adj-$R^{2}$ |
| Incidence  |  |  |  |  |  |  |
| Men  | Age  | 29,966.65 (247) | - | - | - | - |
|  | Age+drift  | 12,908.38 (246) | 17,058.27 (1) | δ | A | < 0.0001 | 0.57 |
|  | Age+period | 2,452.68 (243) | 27,513.97 (4) | P | A | < 0.0001 | 0.92 |
|  | Age+cohort | 12,544.51 (243) | 17,422.14 (4) | C | A | < 0.0001 | 0.57 |
|  | Age+period+cohort | 1,691.40 (240) | 10,853.11 (3) | P | AC | < 0.0001 | 0.94 |
|  |  |  | 761.28 (3) | C | AP | < 0.0001 |  |
| Women  | Age  | 103,558.10 (247) | - | - | - | - |
|  | Age+drift  | 63,063.40 (246) | 40,494.70 (1) | δ | A | < 0.0001 | 0.39 |
|  | Age+period | 7,188.09 (243) | 96,370.01 (4) | P | A | < 0.0001 | 0.93 |
|  | Age+cohort | 6,237.32 (243) | 97,320.78 (4) | C | A | < 0.0001 | 0.94 |
|  | Age+period+cohort | 6,077.74 (240) | 159.58 (3) | P | AC | < 0.0001 | 0.94 |
|  |  |  | 1,110.35 (3) | C | AP | < 0.0001 |  |
| Mortality |  |  |  |  |  |  |
| Men  | Age  | 328.93 (205) |  | - |  |  |
|  | Age+drift  | 254.22 (204) | 74.72 (1) | δ | A | < 0.0001 | 0.22 |
|  | Age+period | 247.74 (201) | 81.19 (4) | P | A | < 0.0001 | 0.23 |
|  | Age+cohort | 241.26 (201)  | 87.68 (4) | C | A | < 0.0001 | 0.25 |
|  | Age+period+cohort | 236.83 (198) | 4.43 (3) | P | AC | < 0.0001 | 0.25 |
|  |  |  | 10.92 (3)  | C | AP | < 0.0001 |  |
| Women  | Age  | 463.66 (205) |  | - | - | - |
|  | Age+drift  | 314.25 (204) | 149.42 (1) | δ | A | < 0.0001 | 0.32 |
|  | Age+period | 296.55 (201) | 167.11 (4) | P | A | < 0.0001 | 0.35 |
|  | Age+cohort | 235.26 (201) | 228.41 (4) | C | A | < 0.0001 | 0.48 |
|  | Age+period+cohort | 226.94 (198) | 8.32 (3) | P | AC | < 0.0001 | 0.49 |
|  |  |  | 69.61 (3) | C | AP | < 0.0001 |  |

Abbreviation: *df*, degree of freedom; △D, difference of deviance; △*df*, difference of the degree of freedom; δ|A, δ effect adjusted by age; P|A, period effect adjusted by age; C|A, cohort effect adjusted by age; P|AC, period effect adjusted by age and cohort; C|AP, cohort effect adjusted by age and period

Supplemental Material 13. Age, cohort and period effects for the rates of thyroid cancer in the age-period-cohort (APC) model (first curve, age effect; second curve, cohort effect; third curve, period effect) and the forecasts of cancer rates in the Bayesian generalized APC power model (x-axis means the calendar year, such as 0=2000, 5=2005, 10=2010, 15=2015 (the year of observation); 20=2020, 25=2025, 30=2030, 35=2035 (the predicted year); y-axis means the number of observed or estimated cancer cases; The fan shows the predictive distribution of cancer cases from the 5% to the 95% value; dot, mean predictive value) (Abbreviation: ASIR, age-standardized incidence rates; ASMR, age-standardized mortality rates).