**Kidney cancer**



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| **APC analysis** | Terms in model | **Summary statistics** |
| Deviance (*df*) | △D (△ *df*)  | Effect  | p-value | Adj-$R^{2}$ |
| Incidence  |  |  |  |  |  |  |
| Men  | Age  | 2,422.61 (247) | - | - | - | - |
|  | Age+drift  | 941.59 (246) | 1481.02 (1) | δ | A | < 0.0001 | 0.61 |
|  | Age+period | 760.63 (243) | 1661.98 (4) | P | A | < 0.0001 | 0.68 |
|  | Age+cohort | 871.35 (243) | 1551.25 (4) | C | A | < 0.0001 | 0.63 |
|  | Age+period+cohort | 671.42 (240) | 199.93 (3) | P | AC | < 0.0001 | 0.71 |
|  |  |  | 89.21 (3) | C | AP | < 0.0001 |  |
| Women  | Age  | 1,306.82 (247) | - | - | - | - |
|  | Age+drift  | 449.47 (246) | 857.35 (1) | δ | A | < 0.0001 | 0.65 |
|  | Age+period | 385.52 (243) | 921.30 (4) | P | A | < 0.0001 | 0.70 |
|  | Age+cohort | 432.83 (243) | 873.98 (4) | C | A | < 0.0001 | 0.66 |
|  | Age+period+cohort | 369.30 (240) | 63.23 (3) | P | AC | < 0.0001 | 0.71 |
|  |  |  | 15.92 (3)  | C | AP | < 0.0001 |  |
| Mortality |  |  |  |  |  |  |
| Men  | Age  | 373.64 (242) |  | - | - | - |
|  | Age+drift  | 361.97 (241) | 11.68 (1) | δ | A | < 0.0001 | 0.03 |
|  | Age+period | 339.39 (238) | 34.25 (4) | P | A | < 0.0001 | 0.08 |
|  | Age+cohort | 306.93 (238) | 66.71 (4) | C | A | < 0.0001 | 0.16 |
|  | Age+period+cohort | 289.10 (235) | 17.84 (3) | P | A, C | < 0.0001 | 0.20 |
|  |  |  | 50.29 (3)  | C | A, P | < 0.0001 |  |
| Women  | Age  | 331.93 (242) |  | - | - |  |
|  | Age+drift  | 329.39 (241) | 2.54 (1) | δ | A | < 0.0001 | 0.00 |
|  | Age+period | 329.30 (238) | 2.63 (4) | P | A | < 0.0001 | 0.00 |
|  | Age+cohort | 288.90 (238) | 43.03 (4) | C | A | < 0.0001 | 0.12 |
|  | Age+period+cohort | 287.53 (235) | 1.37 (3) | P | A, C | < 0.0001 | 0.11 |
|  |  |  | 41.77 (3) | C | A, P | < 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 14. Age, cohort and period effects for the rates of kidney 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).