Appendix 4 (as supplied by the authors)

Age-period-cohort intrinsic estimator model coefficients for non incidentally-detected differentiated thyroid cancer rates, Females, 1998-2017

For female non-incidentally-detected cases, the age-period-cohort intrinsic estimator provides empirical evidence that the birth cohort constraint imposed (1918-1927=1923-1932) is appropriate. Since the method improves statistical efficiency, standard errors are reduced thus providing statistical evidence of significant "individual" age and birth cohort effects. The pattern of these effects is consistent with the parameter estimates from the constrained APC, which had larger standard errors due to the constraint imposed. However, the intrinsic estimator uses effect coding rather than reference coding and thus the parameter estimates are not directly comparable although they have been adjusted to the reference values of the constrained age-period-cohort model.

Instrinsic estimator							Relevative to Referent groups	Constrained APC	Constrained APC	% change in coefficient IE vs Constrained
covariate	exp(b)	Std. Err.	z	P>z	[95% Conf.	Interval]	exp(b)	exp(b)	Std. Err.	%
Intercept	**16.450**	**0.271**	**169.910**	**0.000**	**15.927**	**16.990**	**16.450**	17.357	8.432	-5.2%
Age group										
15-19	**0.328**	**0.021**	**-17.420**	**0.000**	**0.289**	**0.372**	0.198	0.230	0.196	-13.9%
20-24	**0.638**	**0.026**	**-10.840**	**0.000**	**0.589**	**0.692**	0.386	0.438	0.320	-12.0%
25-29	1.019	0.033	0.590	0.553	0.957	1.086	0.616	0.684	0.416	-10.0%
30-34	**1.369**	**0.038**	**11.350**	**0.000**	**1.296**	**1.445**	0.826	0.899	0.438	-8.1%
35-39	**1.569**	**0.040**	**17.580**	**0.000**	**1.492**	**1.650**	0.948	1.010	0.369	-6.2%
40-44	**1.619**	**0.041**	**19.250**	**0.000**	**1.542**	**1.701**	0.978	1.020	0.249	-4.1%
45-49	**1.664**	**0.042**	**20.080**	**0.000**	**1.583**	**1.749**	1.005	1.026	0.127	-2.1%
50-54	**1.656**	**0.044**	**18.990**	**0.000**	**1.572**	**1.744**	1.000	Referent		
55-59	**1.474**	**0.043**	**13.400**	**0.000**	**1.393**	**1.560**	0.890	0.872	0.109	2.1%
60-64	**1.298**	**0.041**	**8.240**	**0.000**	**1.220**	**1.381**	0.784	0.751	0.184	4.3%
65-69	**1.092**	**0.038**	**2.520**	**0.012**	**1.020**	**1.169**	0.659	0.619	0.227	6.5%
70-74	**0.969**	**0.037**	**-0.810**	**0.420**	**0.899**	**1.046**	0.585	0.538	0.264	8.8%
75-79	**0.663**	**0.032**	**-8.650**	**0.000**	**0.604**	**0.728**	0.400	0.360	0.217	11.2%
80-84	**0.365**	**0.026**	**-14.070**	**0.000**	**0.317**	**0.420**	0.220	**0.194**	**0.140**	13.5%
Diagnosis period										
1998-2002	**0.590**	**0.009**	**-35.740**	**0.000**	**0.573**	**0.607**	1.000	Referent		
2003-2007	**0.925**	**0.011**	**-6.610**	**0.000**	**0.904**	**0.946**	1.567	**1.601**	**0.196**	-2.1%
2008-2012	**1.327**	**0.014**	**27.270**	**0.000**	**1.301**	**1.355**	2.249	**2.346**	**0.569**	-4.1%
2013-2017	**1.380**	**0.016**	**28.070**	**0.000**	**1.350**	**1.412**	2.339	**2.492**	**0.907**	-6.1%
Birth cohort										
1913-1922	1.143	0.201	0.760	0.448	0.810	1.612	0.972	1.201	1.464	-19.0%
1918-1927†	0.915	0.089	-0.920	0.357	0.756	1.106	0.778	0.941	0.942	-17.3%
1923-1932	0.934	0.061	-1.040	0.301	0.821	1.063	0.795	0.941	0.942	-15.5%
1928-1937	1.007	0.052	0.140	0.890	0.911	1.113	0.857	0.994	0.843	-13.8%
1933-1942	**1.125**	**0.051**	**2.600**	**0.009**	**1.030**	**1.230**	0.958	1.087	0.792	-11.9%
1938-1947	**1.122**	**0.047**	**2.770**	**0.006**	**1.034**	**1.218**	0.955	1.061	0.646	-10.0%
1943-1952	**1.147**	**0.044**	**3.590**	**0.000**	**1.064**	**1.237**	0.976	1.062	0.517	-8.1%
1948-1957	**1.144**	**0.041**	**3.800**	**0.000**	**1.067**	**1.226**	0.974	1.037	0.379	-6.1%
1953-1962	**1.144**	**0.037**	**4.140**	**0.000**	**1.074**	**1.220**	0.974	1.016	0.248	-4.1%
1958-1967	**1.180**	**0.035**	**5.530**	**0.000**	**1.113**	**1.252**	1.005	1.026	0.127	-2.1%
1963-1972	**1.175**	**0.034**	**5.650**	**0.000**	**1.111**	**1.243**	1.000	Referent		
1968-1977	**1.140**	**0.032**	**4.710**	**0.000**	**1.080**	**1.204**	0.970	0.950	0.118	2.1%
1973-1982	1.031	0.029	1.090	0.275	0.976	1.090	0.878	0.841	0.206	4.4%
1978-1987	**0.921**	**0.028**	**-2.720**	**0.007**	**0.868**	**0.977**	0.784	0.736	0.259	6.5%
1983-1992	**0.736**	**0.029**	**-7.880**	**0.000**	**0.682**	**0.794**	0.626	0.576	0.281	8.8%
1988-1997	**0.719**	**0.039**	**-6.010**	**0.000**	**0.646**	**0.801**	0.612	0.551	0.337	11.0%
1993-2002	**0.675**	**0.074**	**-3.580**	**0.000**	**0.544**	**0.837**	0.574	0.506	0.374	13.5%
								Mean % change:		**-2.7%**

Abbreviation: APC, age-period-cohort model; Conf. interval, confidence interval; exp(b), exponentiated coefficients (intercept per 100,000 rates; all others, rate ratios); Std. Err., standard error; P>z, probability that z<>0; z, z-score.