

# Comparison of thyroid cancer incidence rates in Austria, Switzerland and Germany

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## Objectives

In recent years, age-standardised incidence rates for thyroid cancer have increased considerably in many industrialised countries, predominantly in younger adults. To show similarities and differences in three neighbouring countries where similar diagnostic standards can be assumed, we compared recent developments of thyroid cancer in Austria, Switzerland and Germany.

## Methods

We analysed thyroid cancer incidence using pooled data from population-based cancer registries stratified by sex, age group and histologic subtype: Papillary and non-papillary (follicular, medullary and anaplastic) carcinomas<sup>1</sup>. Rates were age-standardised using the old European standard population (1976). Data from four different regions was analysed: Austria (AUT, 1991-2012), Switzerland (SUI, pooled data from 10 cantons<sup>▲</sup>, 1996-2012), Bavaria (BAV, 2002-2012) and 11 other German federal states, + 1 district\* (GER, 1998-2012). The Average Annual Percentage Change (AAPC) was calculated in a joinpoint regression model using Joinpoint Trend Analysis Software.

### Average Annual Percentage Change (AAPC)

	Women		Men	
	Papillary	Non-papillary	Papillary	Non-papillary
<b>AUT</b>	<b>6.7%</b> CI [4.1; 9.3]	<b>-1.1%</b> CI [-4.0; 2.0]	<b>6.0%</b> CI [3.1; 9.1]	<b>-1.1%</b> CI [-3.3; 1.2]
<b>SUI</b>	<b>5.4%</b> CI [3.1; 7.8]	<b>1.5%</b> CI [-1.4; 4.5]	<b>4.5%</b> CI [-0.3; 9.5]	<b>-2.2%</b> CI [-8.4; 4.6]
<b>BAV</b>	<b>5.8%</b> CI [2.4; 9.3]	<b>-1.1%</b> CI [-3.6; 1.4]	<b>6.0%</b> CI [2.4; 9.7]	<b>-0.6%</b> CI [-3.1; 1.9]
<b>GER</b>	<b>6.1%</b> CI [4.9; 7.3]	<b>-0.9%</b> CI [-2.3; 0.5]	<b>5.7%</b> CI [4.4; 7.0]	<b>-0.5%</b> CI [-2.7; 1.8]

Table 1: Average Annual Percentage Change (AAPC) with 95% confidence limits of age-standardised incidence rates for thyroid carcinoma, by histological type, sex and region (2002-2012)

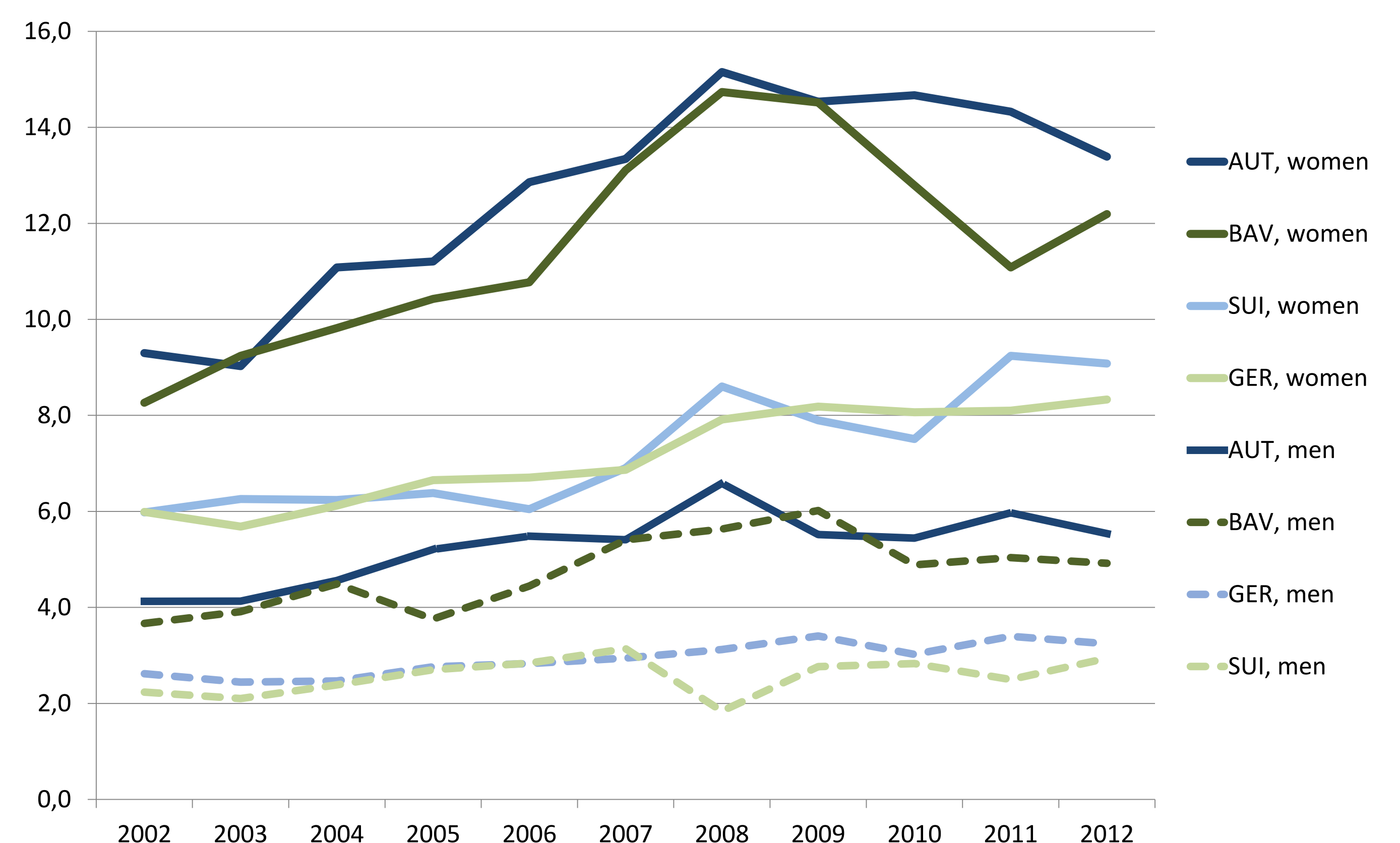


Figure 1: Age-standardised incidence rates, ICD-10 C73 (all histologic types), per 100.000 (European Standard, 1976), by sex, by region

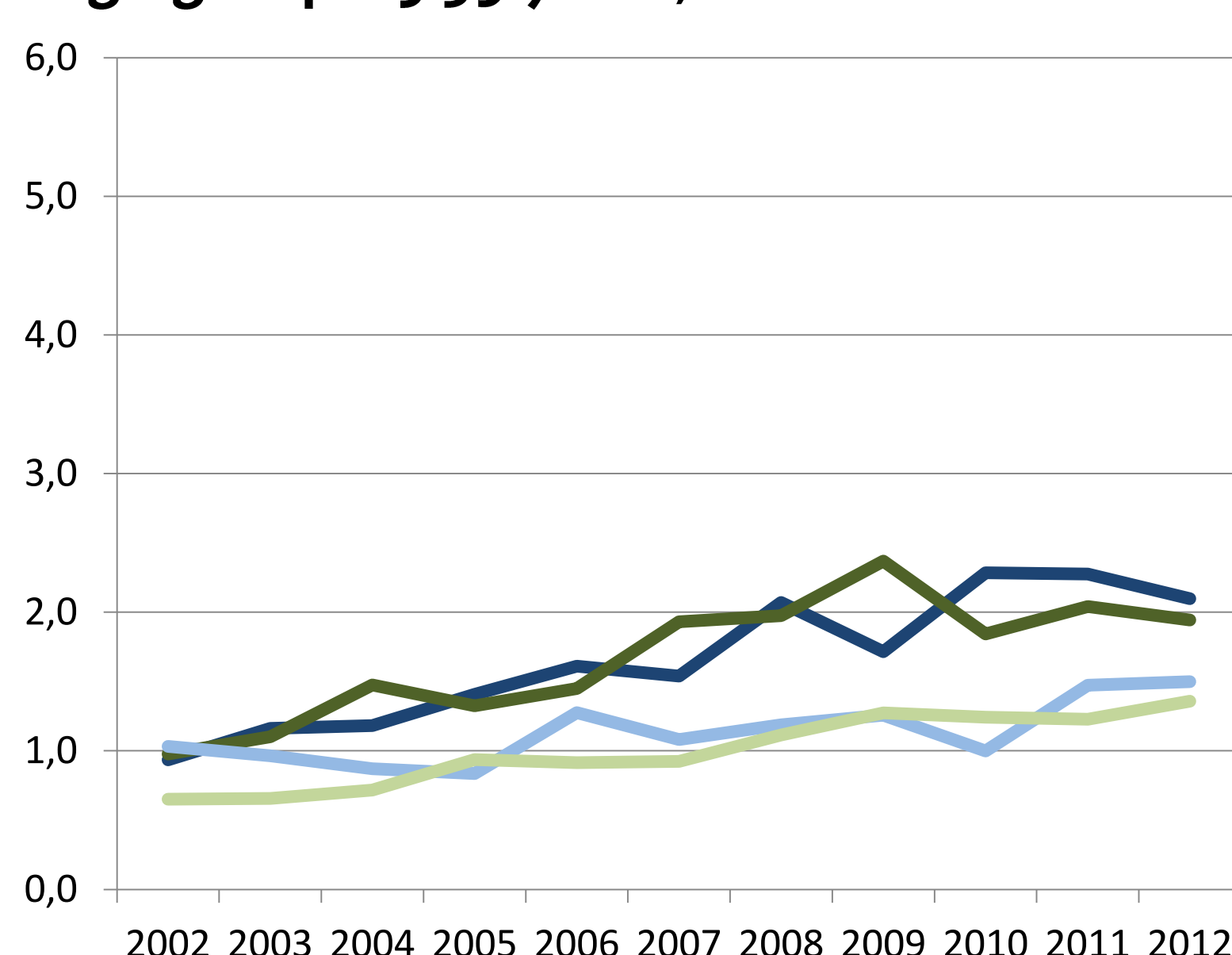
## Results

Age-standardised incidence rates have been steadily rising in all three countries. For women, they have almost doubled since 2002, reaching a peak around the year 2008, with incidence rates of ~15 per 100.000 in Bavaria and Austria and ~ 8 per 100.000 in Switzerland and the rest of Germany. Rates for men were about three times lower in all four regions, but showed a similar relative increase as in women [Fig. 1]. Rising trends were only observed for papillary carcinomas [Tab. 1], predominantly under the age of 65 years [Fig. 2]. Similarities between the rates in Austria and adjacent Bavaria are striking, whereas the rates in the northern/central region of Germany correspond to slightly lower rates in Switzerland.

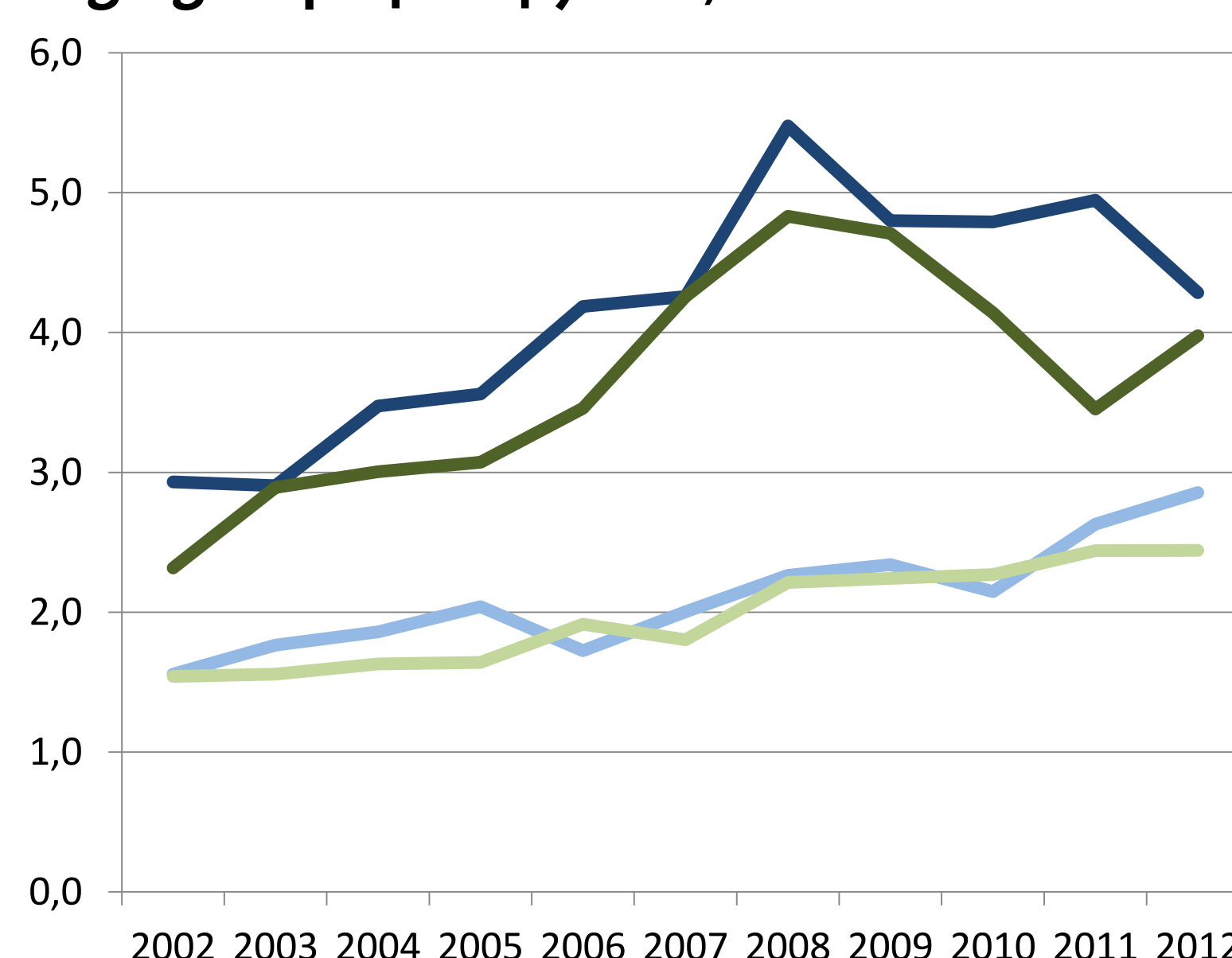
## Discussion

The results underline the similarities in thyroid cancer incidence trends in Austria, Switzerland and Germany, while the level of incidence was highest in Austria and Bavaria. Papillary carcinomas in young and middle-aged adults are predominantly responsible for the rising numbers of cases. While several factors (obesity, exposition to Chernobyl fallout) are still discussed, improved imaging techniques may play a major role. The higher rates in Bavaria and Austria may suggest a relation to former regional iodine deficiency, but more in-depth and small-scale analyses are required.

### Age-group: 15-39 years, both sexes



### Age-group: 40-64 years, both sexes



### Age-group: 65+ years, both sexes

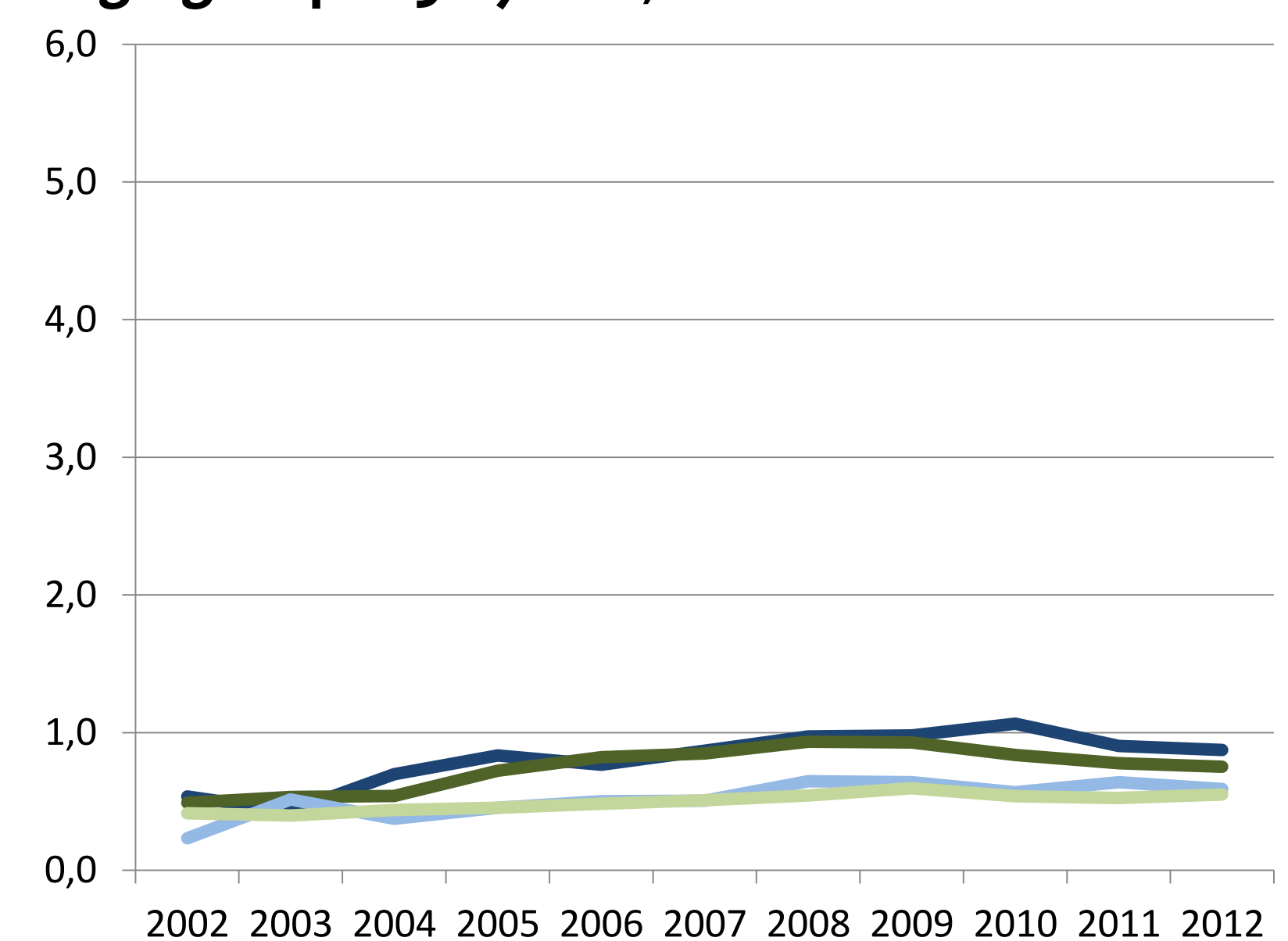


Figure 2: Age-standardised incidence rates, per 100.000 (European Standard, 1976), papillary carcinoma of the thyroid in different age-groups, by region

<sup>1</sup> IARC (2013), Cancer Incidence in Five Continents Vol. X, Chapter 4

<sup>▲</sup> Geneva, Neuchâtel, Zürich, St. Gallen, Appenzell Ausserrhoden, Appenzell Innerrhoden, Graubünden, Glarus, Valais, Ticino

<sup>\*</sup> Hamburg, Bremen, Brandenburg, Schleswig-Holstein, Saxony, Berlin, Thuringia, Saxony-Anhalt, Mecklenburg-West Pomerania, Rhineland-Palatinate, Saarland, District of Münster (Northrhine-Westfalia)

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