

SUBSITE-SPECIFIC COLORECTAL CANCER TRENDS IN SWITZERLAND 1990-2011

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Background

- Colorectal carcinoma (CRC) incidence is high in Switzerland and is the 2nd most frequent cause of cancer-related deaths. Hence, there is a need for prevention and early detection of carcinomas.
- Known risk factors are family history of CRC, inflammatory bowel disease, smoking, excessive alcohol consumption, high consumption of red and processed meat, obesity, and diabetes [1].
- Available endoscopic methods (sigmoidoscopy, colonoscopy) are especially effective because in addition to detect early cancer they may detect and eliminate precancerous lesions. Both methods have shown to reduce CRC risk and mortality with better results at distal versus proximal colonic sites [2].
- Despite its invasiveness endoscopy has become an alternative to fecal occult blood testing in recent years. According to the Swiss Health Survey of 2012, about 33% of those above age 40 had ever undergone colorectal endoscopy. Among those with age 75 or higher, the percentage was 47% [3].

Objective

- To document changes in population-based trends in CRC incidence and mortality compatible with the hypothesis of CRC screening effects.

Data and Methods

Data were extracted from the National Cancer Dataset (NCD) managed by the National Institute for Cancer Epidemiology and Registration (NICER). All primary malignant cancer diagnoses for ICD10 C18, C19 and C20 from the cancer registries of ZH, GR, SG, AR, AI, VD, VS, NE and GE, covering at least 1989 to 2011 were included (39'871 cases). Information about tumour progression (tumour node metastasis TNM system) was available from ZH, VS and GE only (22'164 cases). We distinguished between two subsites: proximal colon (caecum to transverse colon) and distal colon plus rectum (splenic flexure to rectum). Unspecified and overlapping site codes were infrequent (3%). Age-adjusted rates are based on the European standard population. Annual percentage changes (APC) were analysed with the Joinpoint Regression Program, v.4.0.4. The program starts with the minimum number of joinpoints (which is a straight line) and tests whether several different lines connected at "joinpoints" are statistically significant [4]. Swiss vital statistics were derived from the Federal Statistical Office (eCOD).

A. Incidence trends by Subsite and Language area

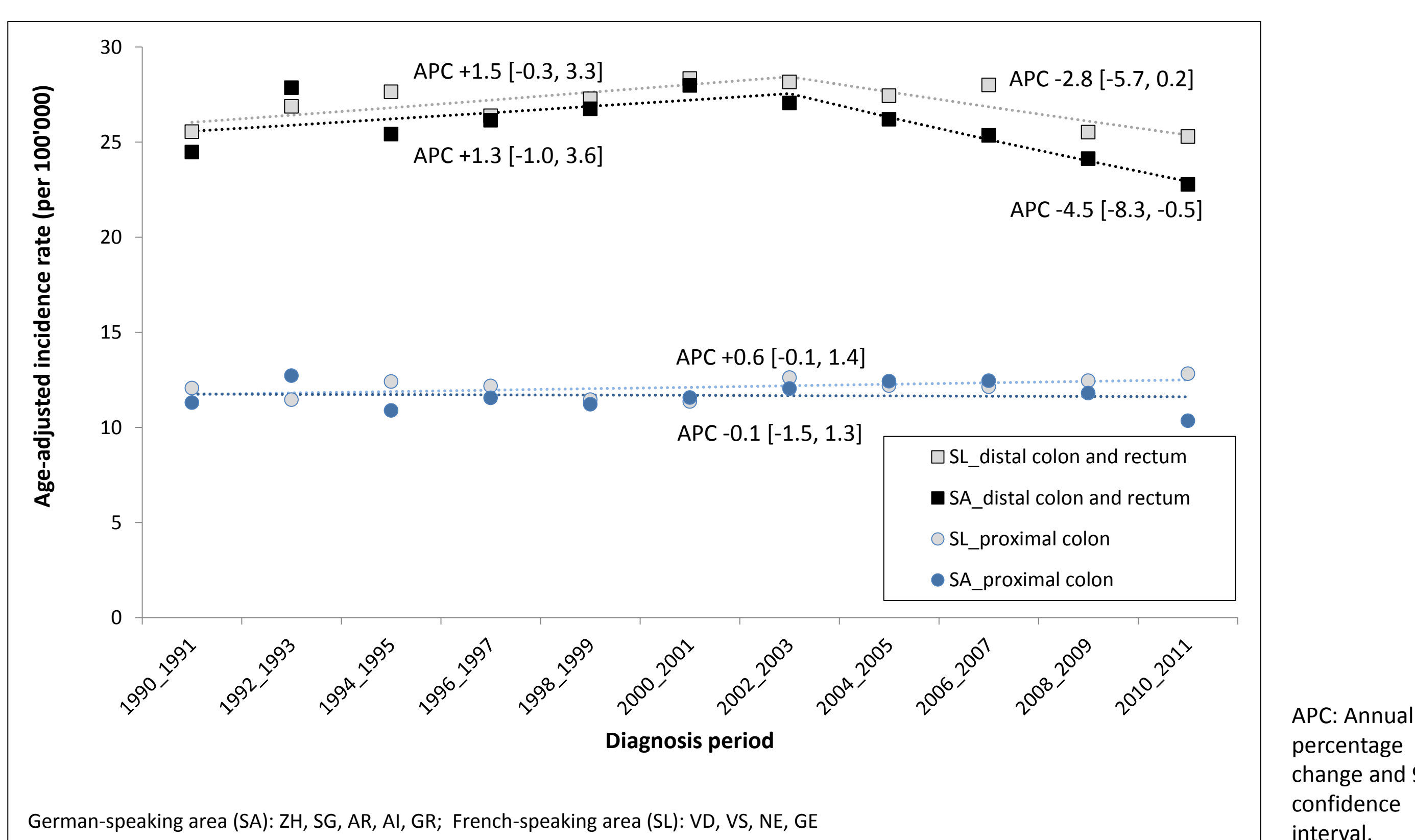


Fig. 1. Incidence trends for cancer at proximal colon remained rather stable over the whole observation period, while the trends for cancer at distal colon and rectum were biphasic: after a slight increase until 2002-2003, the rates began to decrease. There were no large differences with regard to language area.

B. Incidence trends by Subsite and Sex

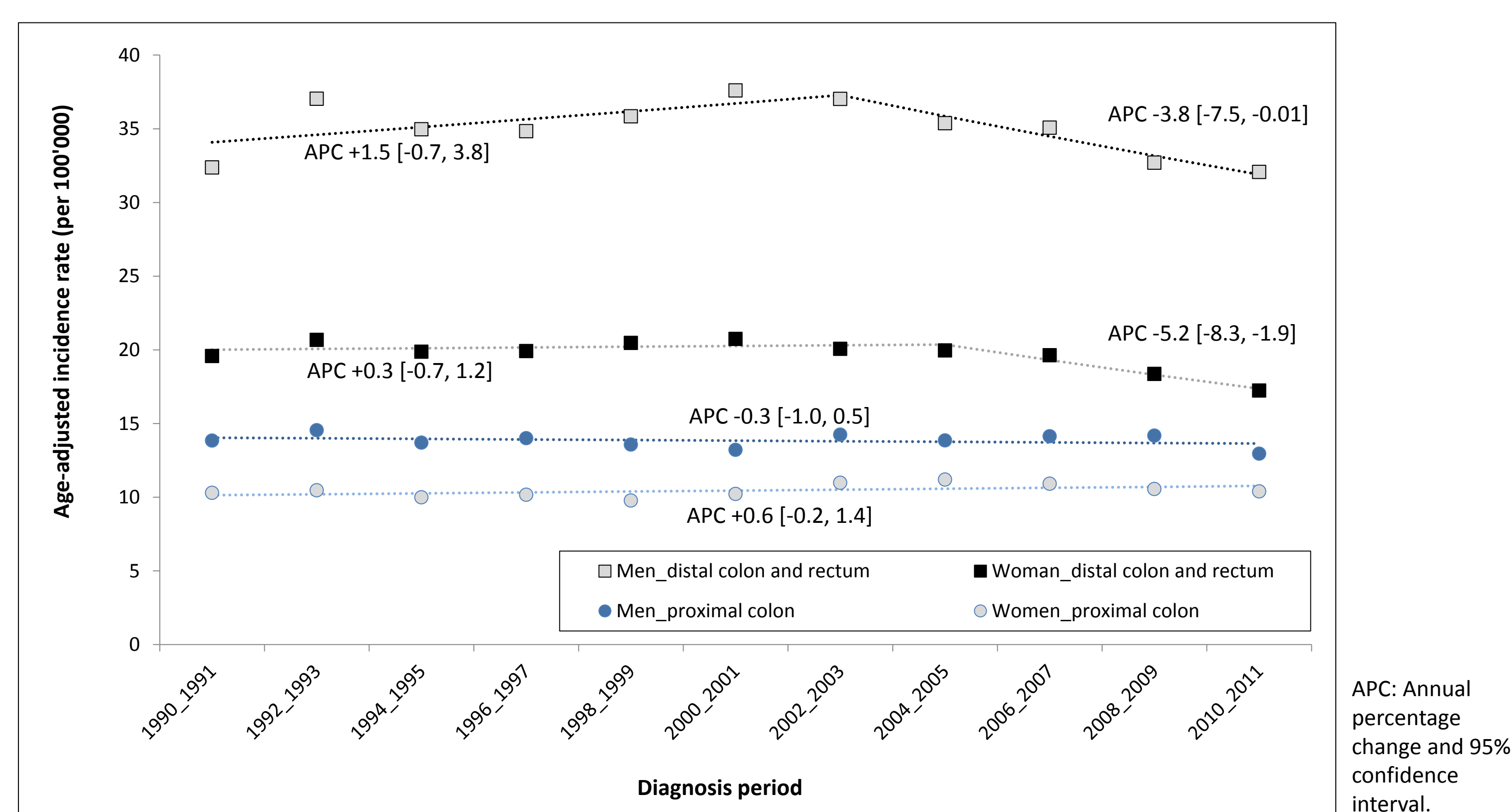


Fig. 2. Incidence trends for cancer at proximal colon remained rather stable over the whole observation period, while the trends for cancer at distal colon and rectum had been slightly increasing until 2002-2005, after which the rates decreased. Trend patterns did not differ substantially with regard to sex.

C. Incidence trends by Subsite and Age

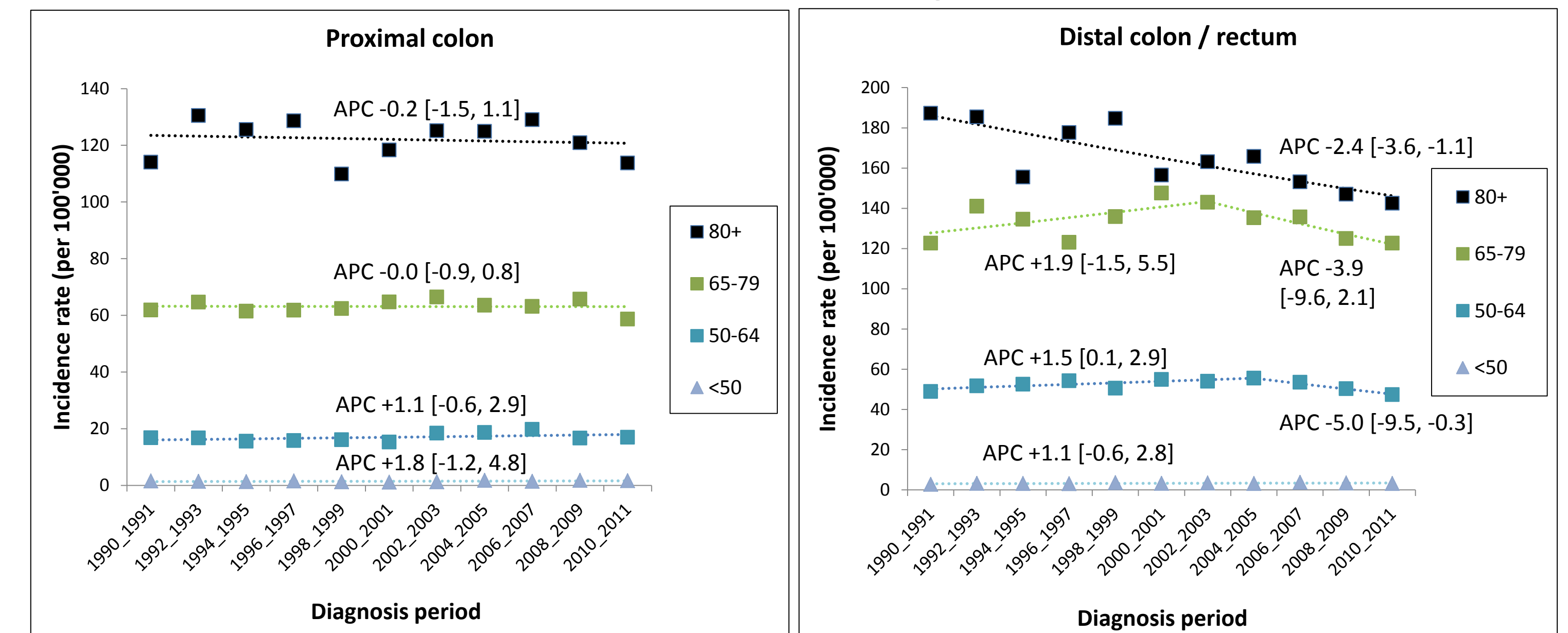


Fig. 3. Incidence trends for cancer at proximal colon remained rather stable over the whole observation period at all age-groups, while the rates for cancer at distal colon and rectum displayed age-specific patterns: decreasing rates for ages 80+, biphasic trends for ages 50-79 and stable rates for ages <50.

D. Incidence trends by Subsite and TNM-Stage

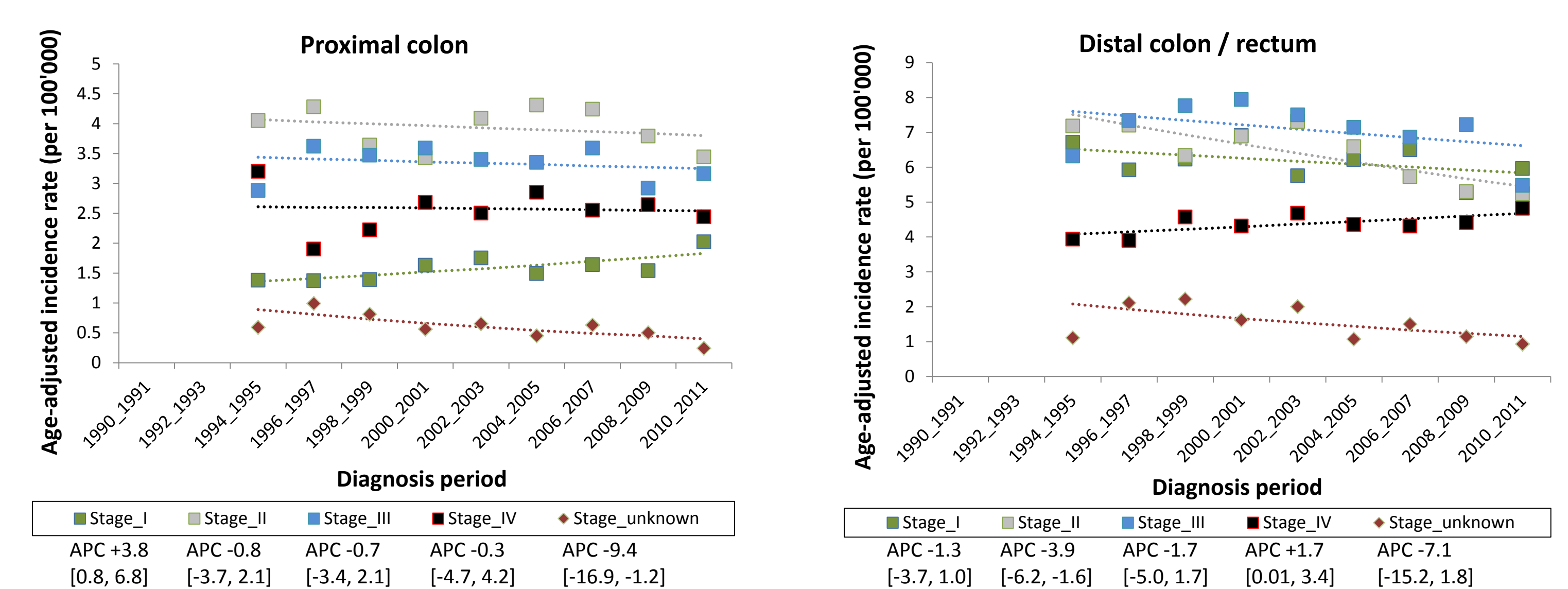


Fig. 4. The distribution of disease progression stages remained rather stable for diagnoses at proximal colonic sites, except for a positive trend for stage_I diagnoses. At distal sites of the colon and rectum we observed a positive trend in the rate of stage_IV CRC, a fact that deserves further attention. At both subsites of the colon/rectum the relative contribution of stages unknown was <10% for diagnoses after 1994 and expressing a negative trend. Data from registries of ZH, VS and GE were pooled for this analysis.

E. Mortality trends by Subsite

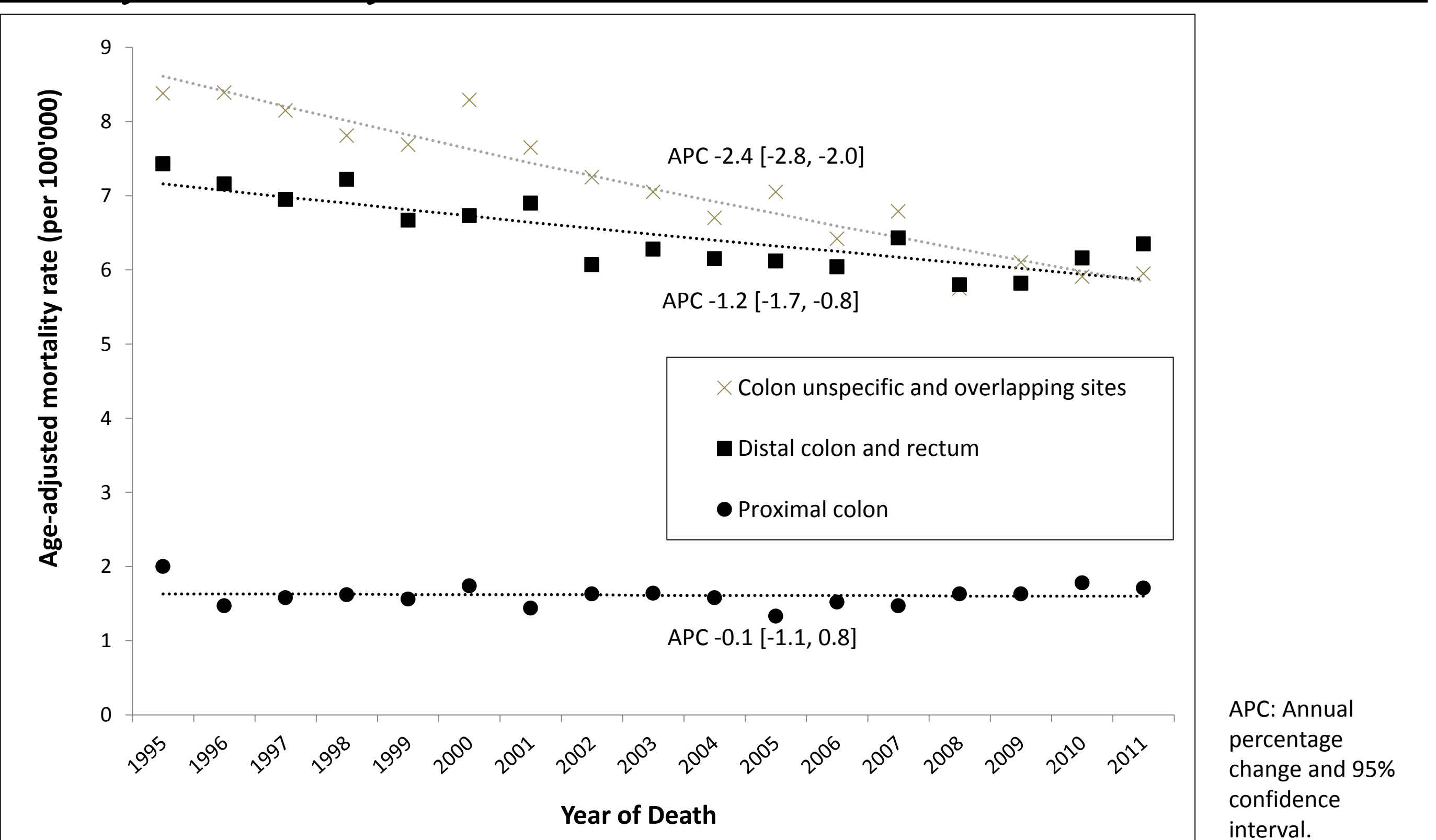


Fig. 5. Mortality trends for cancer at proximal colon as principle cause of death remained stable over the whole observation period, while the rates for deaths due to cancer of the distal colon and rectum decreased. Also decreasing was the usage of unspecific and overlapping sites of the colon as principle cause in the official vital statistics. This might have biased the trends for specific site codes. All 26 Swiss cantons were pooled for this analysis.

Summary

- Reductions in CRC risk and mortality were essentially limited to distal colonic and rectal sites.
- Reductions were similar with regard to language region and sex. Age-period plots (in Fig. 3) showed non-parallel trends for different ages.
- These observations may have been caused by an increased use of colorectal endoscopy. The contribution of additional changes in environmental risk factors for CRC cannot be ruled out.

Conclusion

- Time trends in CRC will need to be evaluated further to determine the potential impact of endoscopic screening methods at the population level.

References

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