

Trends in precancerous lesions and cervical cancer incidence by age and histology in France (1990-2017)

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Introduction: Incidence of cervical cancer (CC) has been decreasing for decades, mainly due to screening, but a slowdown in this decline has been observed since 2010. A screening program was organized at national level in France in 2018. Human Papillomavirus (HPV) vaccination was introduced in France in 2006 but immunisation coverage is still far from recommended levels. The goal of vaccination is to reduce CC incidence by preventing persistent infections from the most common high-risk HPV types. Trends in incidence of precancerous lesions could provide an earlier measure of HPV vaccine effectiveness.

This is the first population-based data on cervical tumour incidence in France by tumour behaviour (precancerous vs invasive lesions), morphologic type and age.

Methods: Incidence of CC data by age and histology were provided by 18 French departments covered by a cancer registry.

Age groups were adapted to screening age (25-64 years). Morphology was described by squamous cell carcinoma (SCC) and adenocarcinoma (AC) for invasive CC (ICC) and precancerous lesions (PreK-L: CIN3, *in situ* carcinoma and adenocarcinoma). French cancer registries collect data on PreK-L lesions since 2005 enabling analysis of trends in incidence rate for these lesions.

Incidence rates were world age-standardised (ASI). Incidence trends for ICC (1990-2017) and for PreK-L (2005-2017) were analysed using the JoinPoint Regression Program, and presented with annual percentage change (APC).

Results

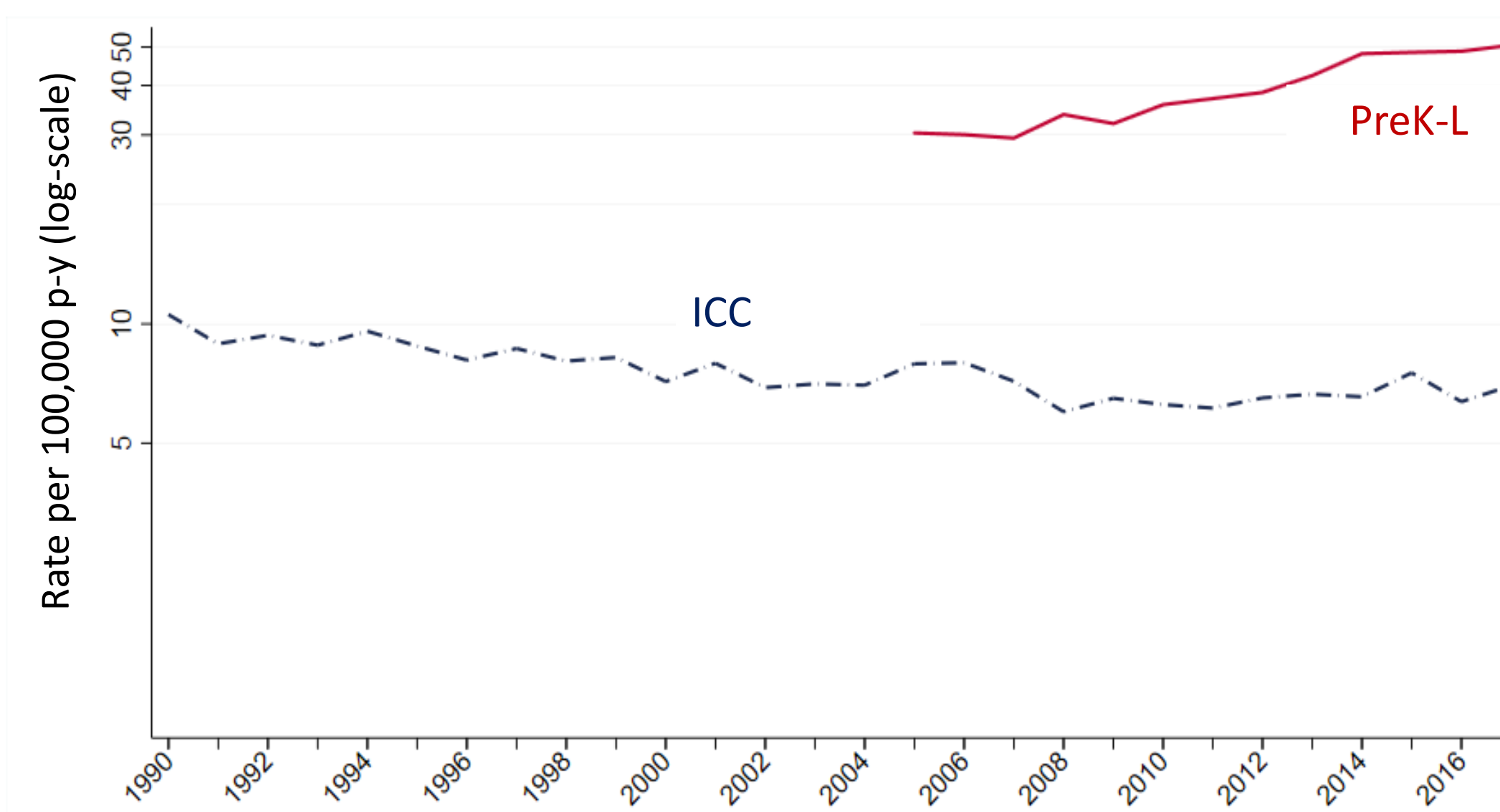
PreK-L represented 83.2% of all cervical lesions and ICC accounted for 16.8%.

PreK-L age-standardised incidence (ASI) increased by 5.2% per year from 2005 to 2017. The highest rates were observed among women in the screening age (ASI was 149.3 and 44.2 per 100,000 person-years, at 25-44 and 45-64 years, respectively) and increased by more than 5% per year. Women aged 65 years and over had lower rates, incidence trends decreased markedly between 2005 and 2009 (APC: -15.1%) and increased between 2009 and 2017 (APC: +5.2%).

ICC ASI declined by 2.1% per year between 1990 and 2011, then increased non-significantly by 1.9% until 2017. Trends are different according to age group. Rates decreased over the entire period for women aged 0-44 (APC: -1.4%) but for those aged 45-64 years, after a decrease between 1990 and 2008 (APC: -2.7%) rates rose until 2017 (APC: +3.2%).

According to **morphologic subtype**, between 2005 and 2017, PreK-L ASI rose for SCC and AC by 5.2% and 5.8% per year, respectively. For ICC (1990-2017), trends were different: SCC decreased by 2.0% and AC increased by 2.2% per year.

ASI of PreK-L and ICC by year of diagnosis



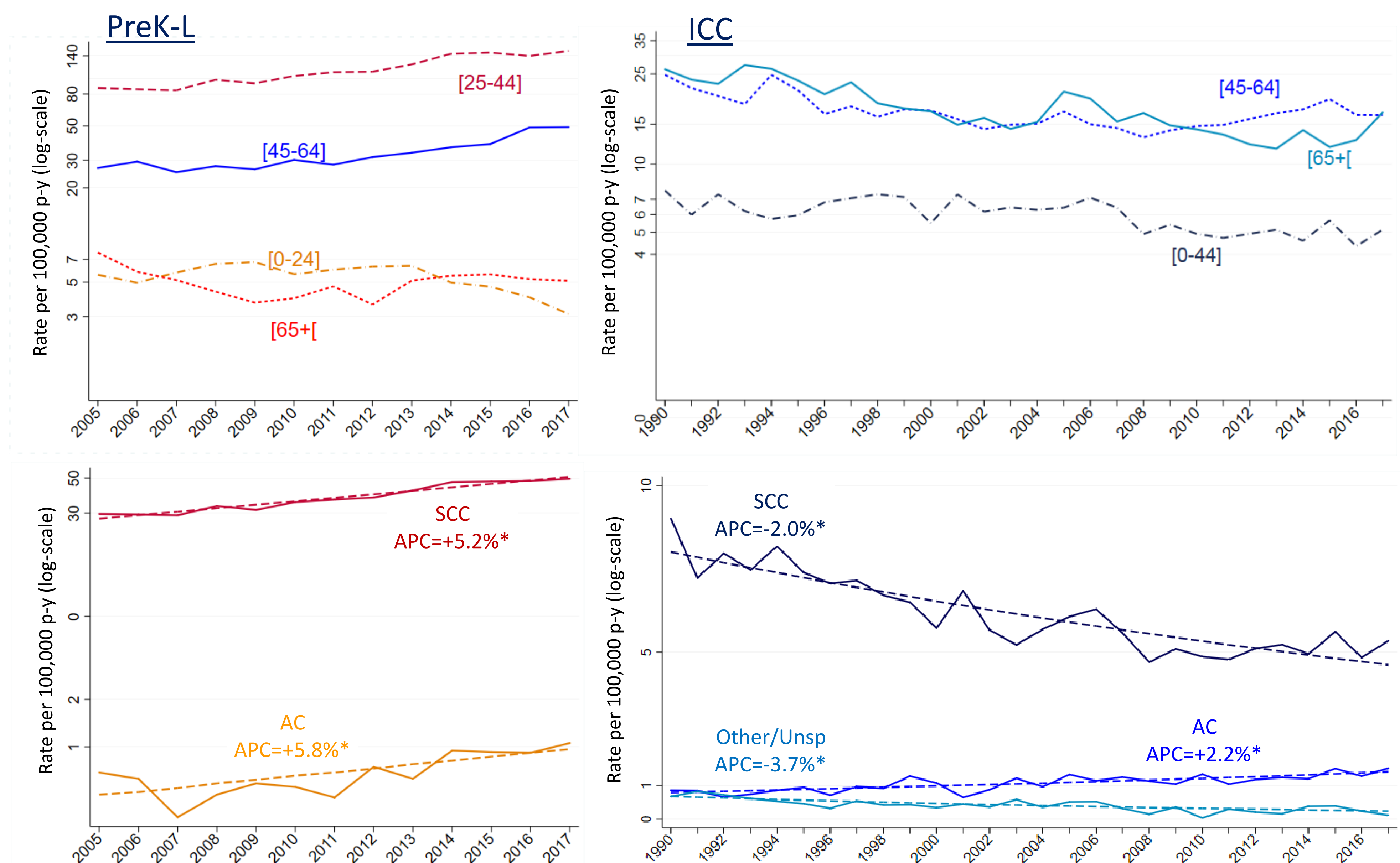
ASI of PreK-L and ICC & APC by age

	Trends 1990-2017				2016-2017	
	Trend 1		Trend 2		ASI	[IC95%]
	Years	APC	Years	APC		
PreK L						
All ages	2005-2017	5.2*			49.6	[48.4-50.9]
0-24	2005-2017	-3.3*			3.3	
25-44	2005-2017	5.5*			149.3	
45-64	2005-2017	5.2*			44.2	
≥65	2005-2009	-15.1*	2009-2017	5.2*	4.8	
ICC						
All ages	1990-2011	-2.1*	2011-2017	1.9	6.5	[6.2-6.9]
0-44	1990-2017	-1.4*			4.7	
45-64	1990-2008	-2.7*	2008-2017	3.2*	16.2	
≥65	1990-2015	-3.0*	2015-2017	16	14.1	

ASI: world age-standardised incidence; APC: annual percentage change

* APC significantly different from 0.0 (p < 0.05)

PreK-L and ICC incidence rate by age, behaviour, morphology and year of diagnosis



AC: adenocarcinoma, ICC: invasive cervical cancer, SCC: squamous cell carcinoma, AC: adenocarcinoma, Other/Unsp: Other and Unspecified

Conclusion : The rising rates of PreK-L in women aged 25-64 years (screening ages) associated with the declining rates of ICC at the same ages suggests a role of the screening program with early detection of PreK-L. However, for women aged over 45 years, after a decrease from 1990, ICC incidence rates have been increasing since 2008. This must be seen in the context of HPV infection trends and suboptimal screening participation.

Further analyses of PreK-L rates trends will enable to detect a reduction in incidence in relation with the HPV immunisation program, provided that HPV vaccine coverage increases.