Prevention of lung cancer: a view through the Brazilian Population-Based Cancer Registries

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BACKGROUND

Information on the occurrence of cancer is essential for the evaluation of control programs. Surveillance is a strategic component for planning, monitoring and evaluation of these programs. One of the indicators proposed by the Global Alliance for Control of Non-Communicable Diseases is to know the incidence of cancer by type. The goal is to increase surveillance of morbidity and mortality.

METHODS

Brazilian PBCR are established in 27 cities and in 11 of these has at least eight years of continuous data. The incidence of lung cancer was analyzed from PBCR of Aracaju, Curitiba, Fortaleza, Goiânia, Jaú, João Pessoa, Palmas, Porto Alegre, Recife, Salvador e São Paulo.
All Incidence rates were age-adjusted by the World Standard Population. To describe incidence time trends, it was carried out joinpoint regression analysis using the software Joinpoint Regression Program, Version 3.5.4.
The AAPC of lung cancer incidence rates were obtained.

RESULTS

Jointpoint analysis was used to obtain the trends of lung cancer incidence and evaluate the effect of control actions. The APC showed declining trends to the cities of the South and Southeast regions in males for incidence rates. In females like observed all over the world, to the most of Brazilian cities showed ascendant rates.
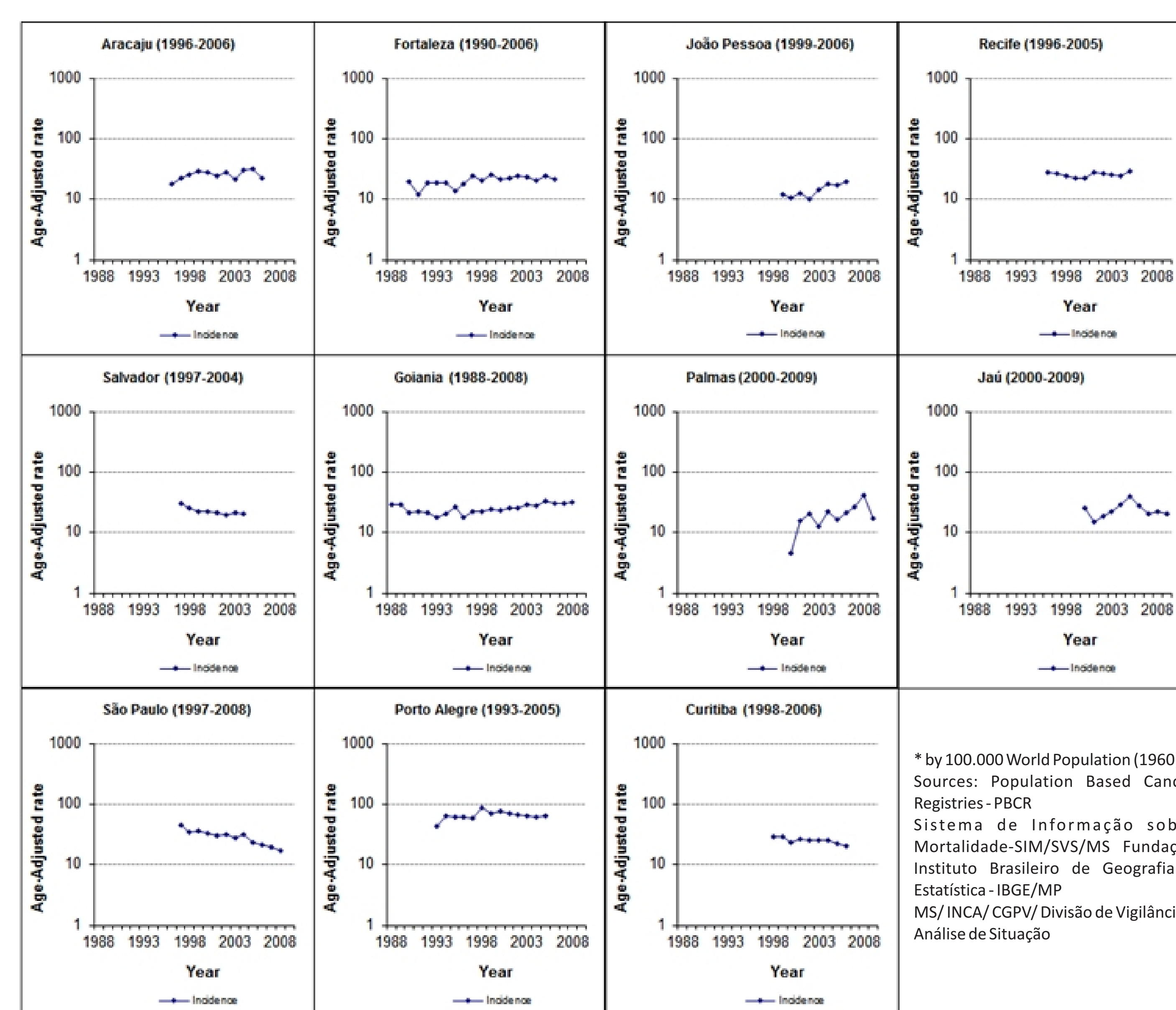
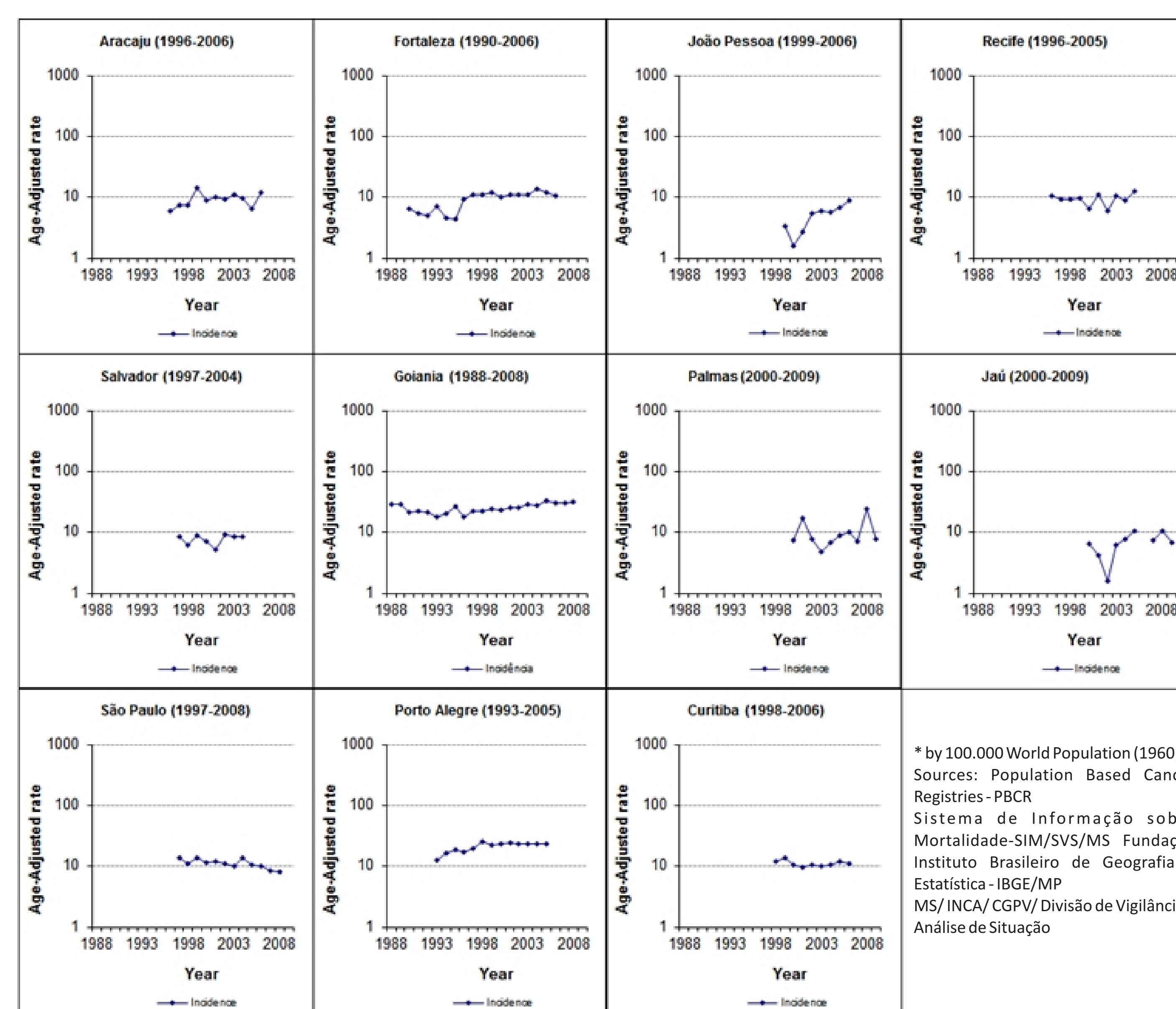**Table 1.** Trends of age-adjusted lung cancer incidence rates, by gender and PBCR

Lung	Incidence						AAPC	CI
	Trend 1			Trend 2				
Males	Year	APC	CI	Year	APC	CI		
Aracaju (1996-2006)	1996-2006	2,0	(-1.6;5.8)				2,0	(-1.6;5.8)
Curitiba (1998-2006)	1998-2006	-3.2*	(-5.2;-1.1)				-3.2*	(-5.2;-1.1)
Fortaleza (1990-2006)	1990-2006	2.1*	(0.3;3.9)				2.1*	(0.3;3.9)
Goiânia (1988-2008)	1988-1993	-7.5*	(-13.2;-1.5)	1994-2008	3.6*	(2.4;4.8)	0.7	(-1.0;2.4)
Jaú (2000-2009)	2000-2009	1.3	(-5.6;8.7)				1.3	(-5.6;8.7)
João Pessoa (1999-2006)	1999-2006	9.0*	(3.1;15.1)				9.0*	(3.1;15.1)
Palmas (2000-2009)	2000-2009	13.6*	(1.4;27.3)				13.6*	(1.4;27.3)
Porto Alegre (1993-2005)	1993-1998	9.5*	(1.7;18)	1999-2005	-3.1	(-7.3;1.3)	2,0	(-1.5;5.5)
Recife (1996-2005)	1996-2005	0.4	(-2;2.9)				0.4	(-2;2.9)
Salvador (1997-2004)	1997-1999	-14.9	(-35;11.4)	2000-2004	-1.7	(-7.5;4.4)	-5.7*	(-10.7;-0.4)
São Paulo (1997-2008)	1997-2008	-7.2*	(-9;-5.4)				-7.2*	(-9;-5.4)
Females								
Aracaju (1996-2006)	1996-2006	3,0	(-2;6.9)				3,0	(-2;6.9)
Curitiba (1998-2006)	1998-2006	-1.1	(-4.1;2.1)				-1.1	(-4.1;2.1)
Fortaleza (1990-2006)	1990-2006	5.9*	(3.2;8.7)				5.9*	(3.2;8.7)
Goiânia (1988-2008)	1988-1993	-6.9	(-14.3;1.1)	1994-2008	5.3*	(2.9;7.7)	1.5	(-1.3;4.3)
Jaú (2000-2009)	---	---	---				---	---
João Pessoa (1999-2006)	1999-2006	21.4*	(7.4;37.1)				21.4*	(7.4;37.1)
Palmas (2000-2009)	2000-2009	3	(-9.2;16.7)				3,0	(-9.2;16.7)
Porto Alegre (1993-2005)	1993-1998	11.4*	(5.4;17.8)	1999-2005	0.2	(-3;3.6)	4.8*	(2.1;7.5)
Recife (1996-2005)	1996-2005	0.6	(-5.4;7)				0.6	(-5.4;7)
Salvador (1997-2004)	1997-2004	1.7	(-6.4;10.6)				1.7	(-6.4;10.6)
São Paulo (1997-2008)	1997-2008	-3.5*	(-5.6;-1.3)				-3.5*	(-5.6;-1.3)

APC, Annual Percent Change; CI, Confidence Interval
AAPC, Average Annual Percent Change – calculated for the entire period of the available information of PBCR;
* APC or AAPC statistically significant (p>0,05)
--- Rates with zero values, was not possible to perform the calculation;
Sources: Brazilian Population Based Cancer Registries - PBCR
Sistema de Informação sobre Mortalidade-SIM/SVS/MS
Fundação Instituto Brasileiro de Geografia e Estatística - IBGE/MP
Divisão de Vigilância e Análise de Situação – CGPV/INCA/MS

Figure 1. The AAPC of age-adjusted incidence lung cancer rates in males, by PBCR

AAPC, Average Annual Percent Change
* AAPC statistically significant (p>0,05)
Sources: Brazilian Population Based Cancer Registries - PBCR
Sistema de Informação sobre Mortalidade-SIM/SVS/MS
Fundação Instituto Brasileiro de Geografia e Estatística - IBGE/MP
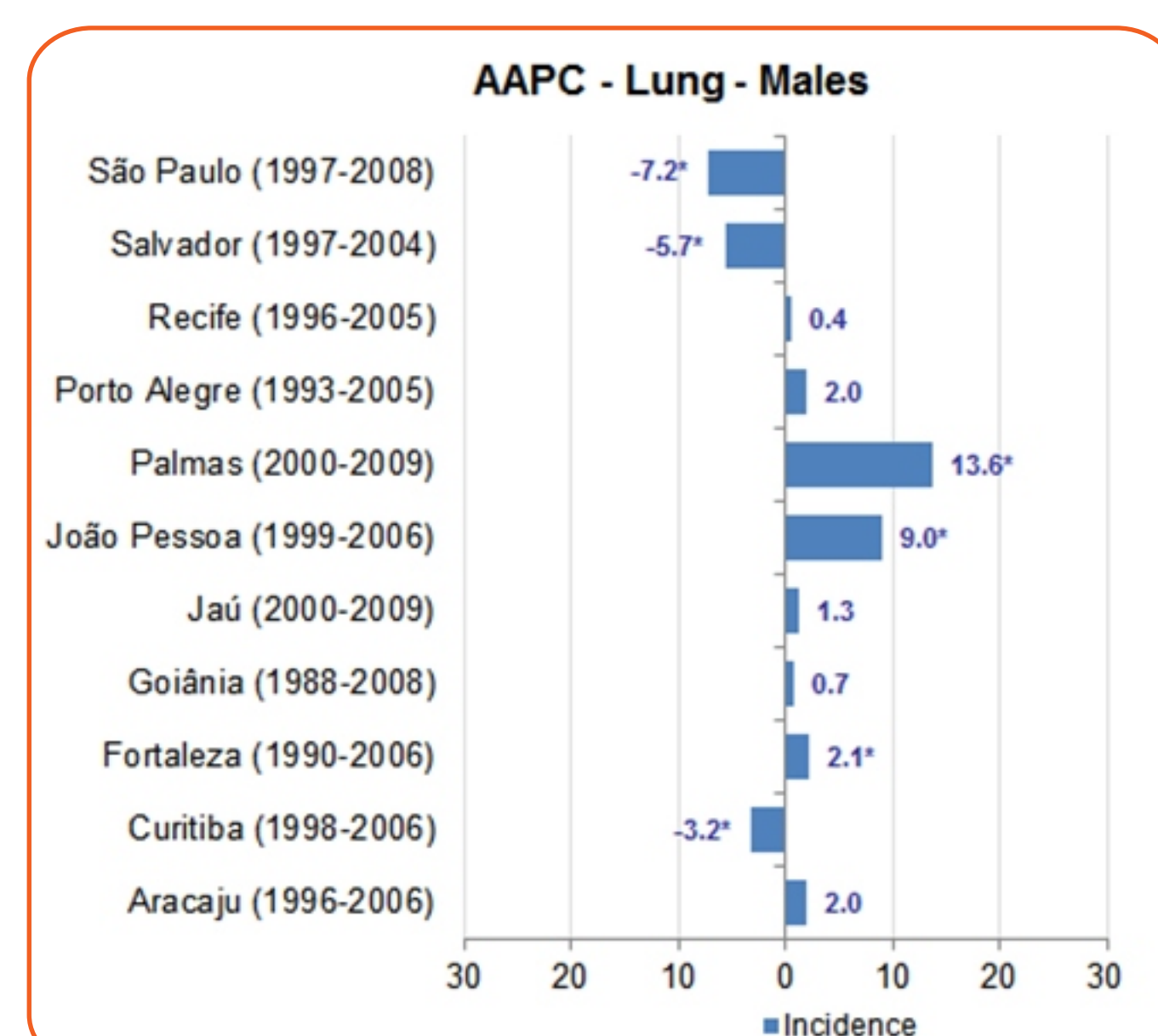Divisão de Vigilância e Análise de Situação – CGPV/INCA/MS
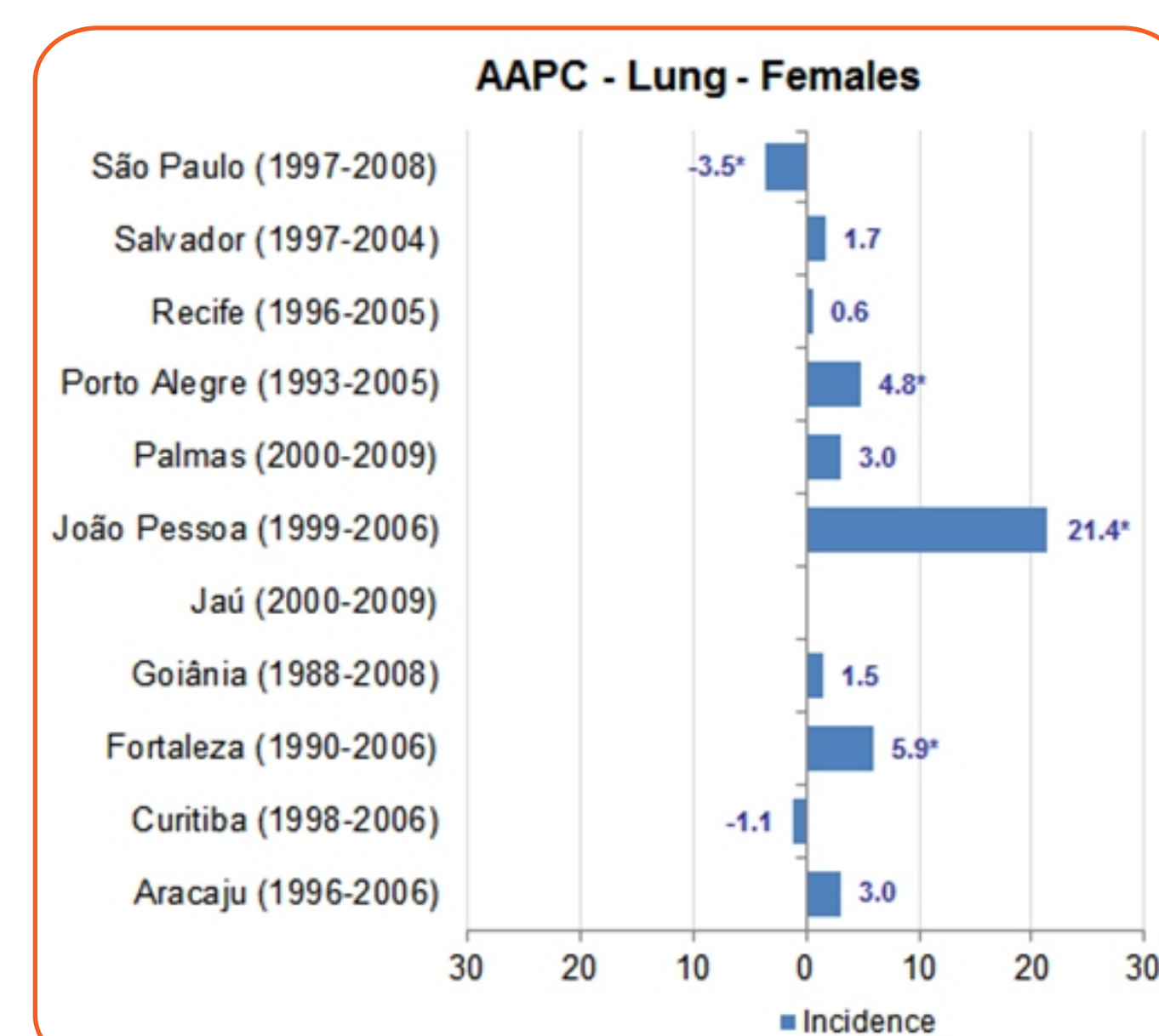

Figure 2. The AAPC of age-adjusted incidence lung cancer rates in females, by PBCR

AAPC, Average Annual Percent Change
* AAPC statistically significant (p>0,05)
Sources: Brazilian Population Based Cancer Registries - PBCR
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* by 100.000 World Population (1960)
Sources: Population Based Cancer Registries - PBCR
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Figure 3. Trends of age-adjusted lung cancer incidence rates* in males, by PBCR

* by 100.000 World Population (1960)
Sources: Population Based Cancer Registries - PBCR
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Figure 4. Trends of age-adjusted lung cancer incidence rates* in females, by PBCR

CONCLUSION/DISCUSSION

The data from population-based cancer registries (PBCR) are vital for evaluation and outcome of interventions. In Brazil, the cancer surveillance has the PBCR as one of its pillars. PBCR has a key role in cancer surveillance and is crucial to strengthen them. Better information contributes to better planning the cancer control actions and to monitor and evaluate its performance. This information should be used to contribute with public polices to improve health conditions of the population.

Projeto Gráfico: Serviço de Edição e Informação Técnico-Científica / INCA