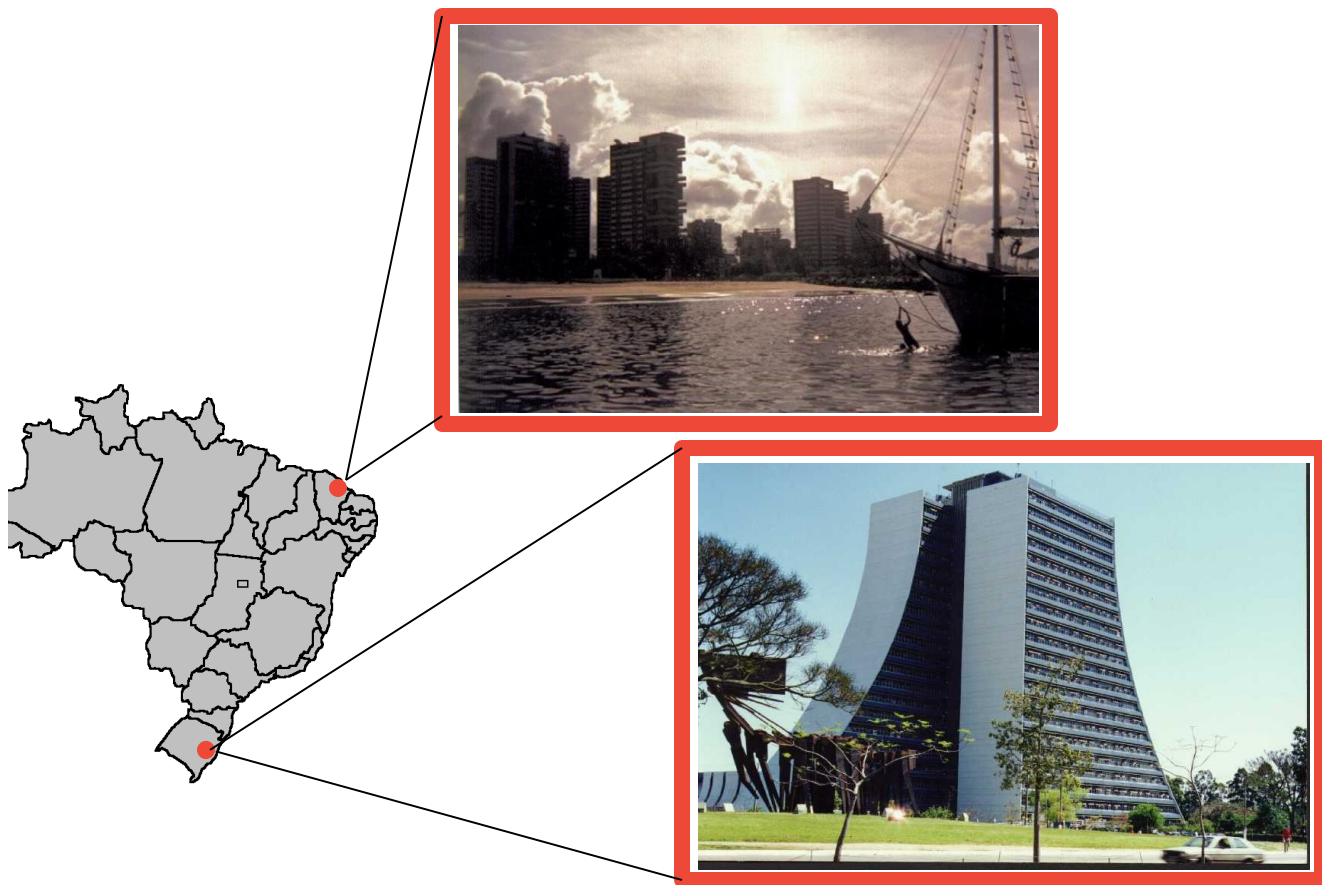


POPULATION-BASED INCIDENCE AND MORTALITY OF COLORECTAL CANCER TRENDS (1990-1999) IN FORTALEZA AND PORTO ALEGRE CITIES



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ETIOLOGY AND RISK FACTORS

- Usually develops slowly over a period of many years;
- 20-25% of cases in individuals with a family history or predisposing illness;
- Incidence and death rates increase with age → 91% of new cases and 94% of deaths occur in individuals older than 50.

Risk Factors

- Smoking
- Alcohol intake
- Medications
- Dietary supplements
- Overweight and obesity

Protection Factors

- Regular physical activity
- Diet high in vegetables and plants foods
- Limited intake saturated fats

EPIDEMIOLOGY

- **Third in importance in terms of incidence and the fourth in mortality in the world;**
- **5-year survival → 40–50%;**
- **Second most prevalent cancer in the world;**
- **An estimated 11,000 new cases of colorectal cancer among men and 14,000 among women, in Brazil in 2006;**
- **4,339 deaths of colorectal cancer among men and 4,995 among women, in Brazil in 2004.**

OBJECTIVE

- **To analyze and to compare the incidence and mortality trends of colorectal cancer, in Fortaleza and Porto Alegre from 1990 to 1999;**
- **To extend the knowledge concerning mortality and incidence of colorectal cancer in Brazil.**

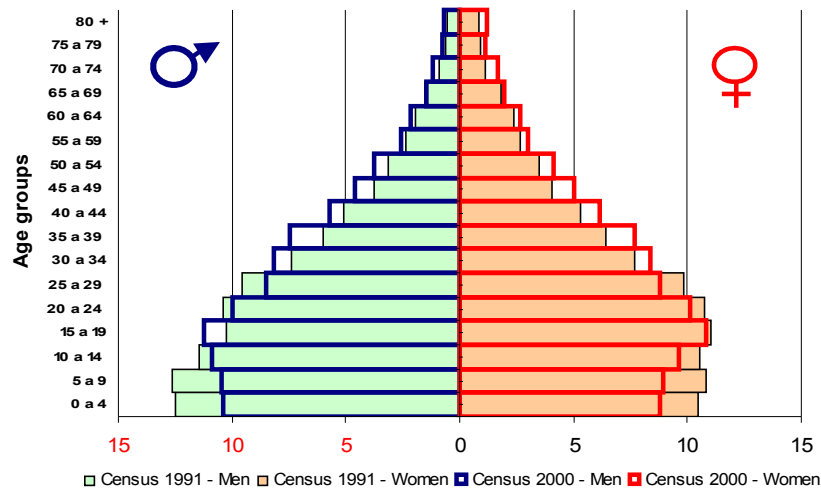
CHARACTERISTICS

- **Fortaleza and Porto Alegre has distinct socioeconomic, demographic, cultural and intake consumption characteristics.**
- **Data available about mortality and incidence, 1990 to 1999.**

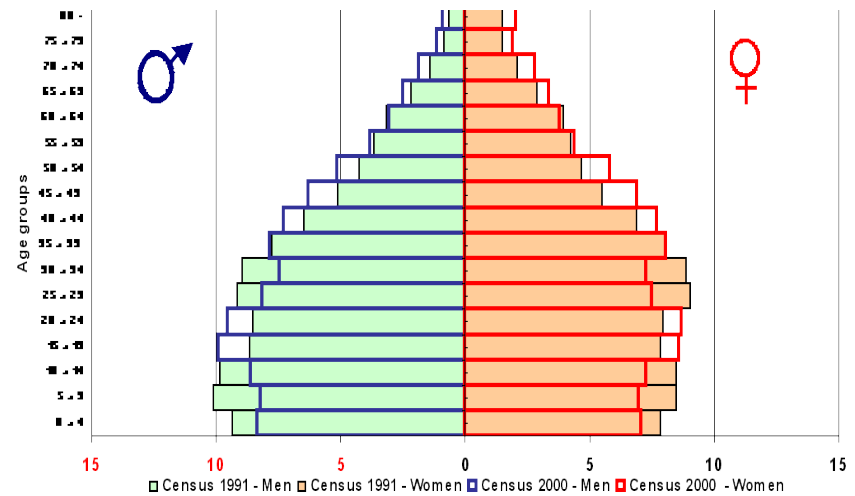
CHARACTERISTICS

Fortaleza and Porto Alegre population pyramids for 1991 and 2000, by age-structure and sex.

Fortaleza



Porto Alegre



Source: Brazilian Institute of Geography and Statistics Foundation – IBGE

CHARACTERISTICS

Overweight and obesity prevalence in Fortaleza and Porto Alegre, by sex, 2002 to 2003

Cities	Sex	Total	Overweight*			Obesity**		
			n	%	CI _{95%}	n	%	CI _{95%}
Fortaleza	Men	869	292	33.6	29.9-37.3	97	11.2	9.0-13.4
	Women	878	218	24.8	22.2-27.5	70	8.0	6.2-9.7
	Total	1747	510	29.2	27.0-31.4	167	9.6	8.1-11.0
Porto Alegre	Men	604	213	35.3	32.1-38.5	74	12.3	9.8-14.7
	Women	735	200	27.2	24.2-30.2	90	12.2	9.9-14.6
	Total	1339	413	30.8	28.5-33.1	164	12.2	10.4-14.1

Source: The Household Survey on Risk Behaviors and Referred Morbidity of Non-communicable Diseases and Damages.

* $25 \text{ kg/m}^2 \leq \text{BMI} < 30 \text{ kg/m}^2$

** $\text{BMI} \geq 30 \text{ kg/m}^2$

CHARACTERISTICS

Distribution of sample households according to income level in Fortaleza and Porto Alegre, 2000

Monthly income (MW)*	Fortaleza	Porto Alegre
≤ 1	48.7	19.0
1 - 5	33.9	46.4
5 - 10	6.6	16.9
≥ 10	4.4	14.6
Without income	6.5	3.0

Total Fortaleza: 11.0 (sum of 5-10 and ≥ 10)
 Total Porto Alegre: 31.5 (sum of 5-10 and ≥ 10)

*MW = units of minimum wages

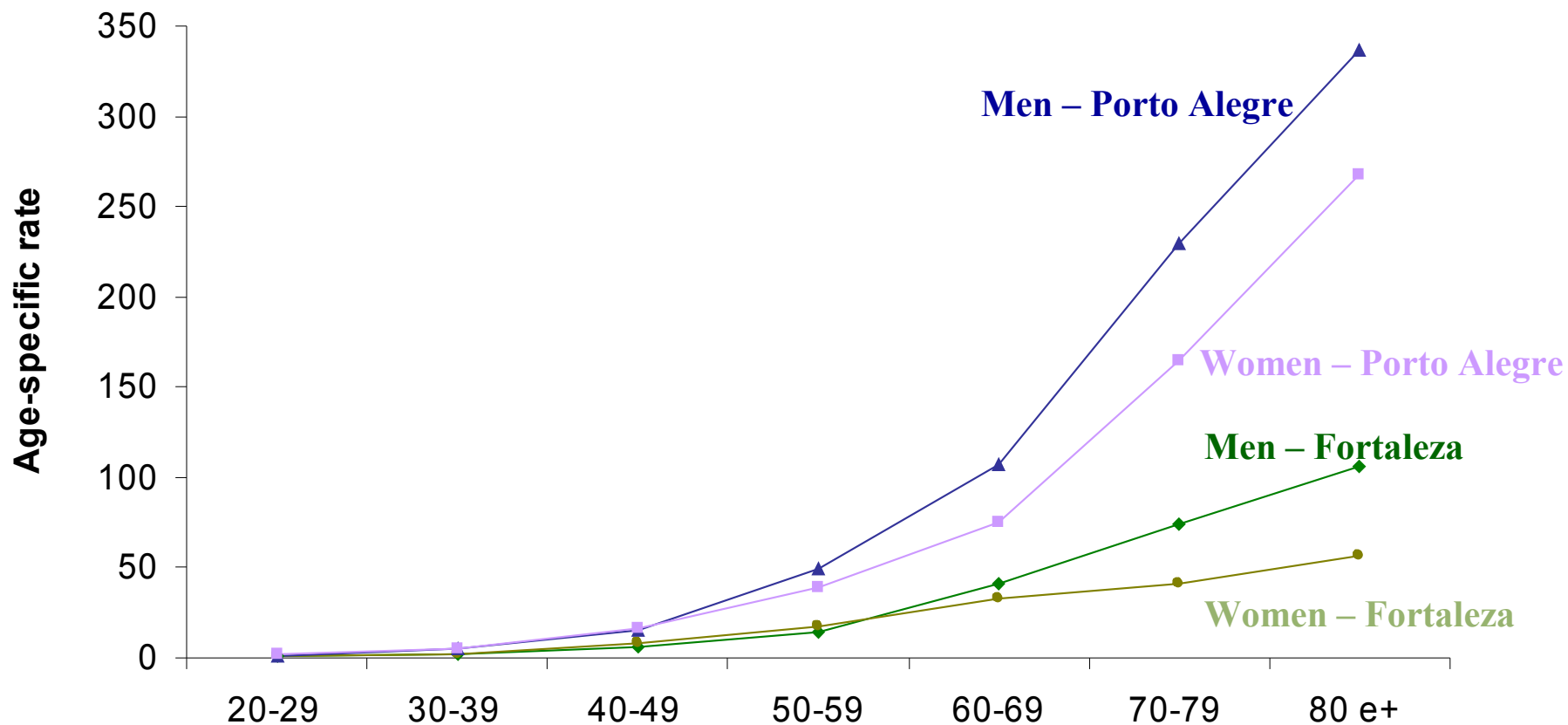
Source: Brazilian Institute of Geography and Statistics Foundation – IBGE

METHODS

- Incidence and mortality rates of colorectal cancer were age adjusted to the World Standard Population and expressed per 100,000 inhabitants;
- The incidence and mortality rates were calculated for age group by sex. To compare incidence and mortality rates of colorectal cancer confidence interval was calculated (CI 95%);
- Incidence data: PBCR of Fortaleza and Porto Alegre, 1990 – 1999;
- Mortality data: Mortality Information System - Ministry of Health;
- Population data: Brazilian Institute of Geography and Statistics Foundation – IBGE;
- An indirect measure of cancer survival, a mortality-to-incidence rate ratio (MR:IR) was calculated by dividing the mortality rate by the incidence rate.

RESULTS

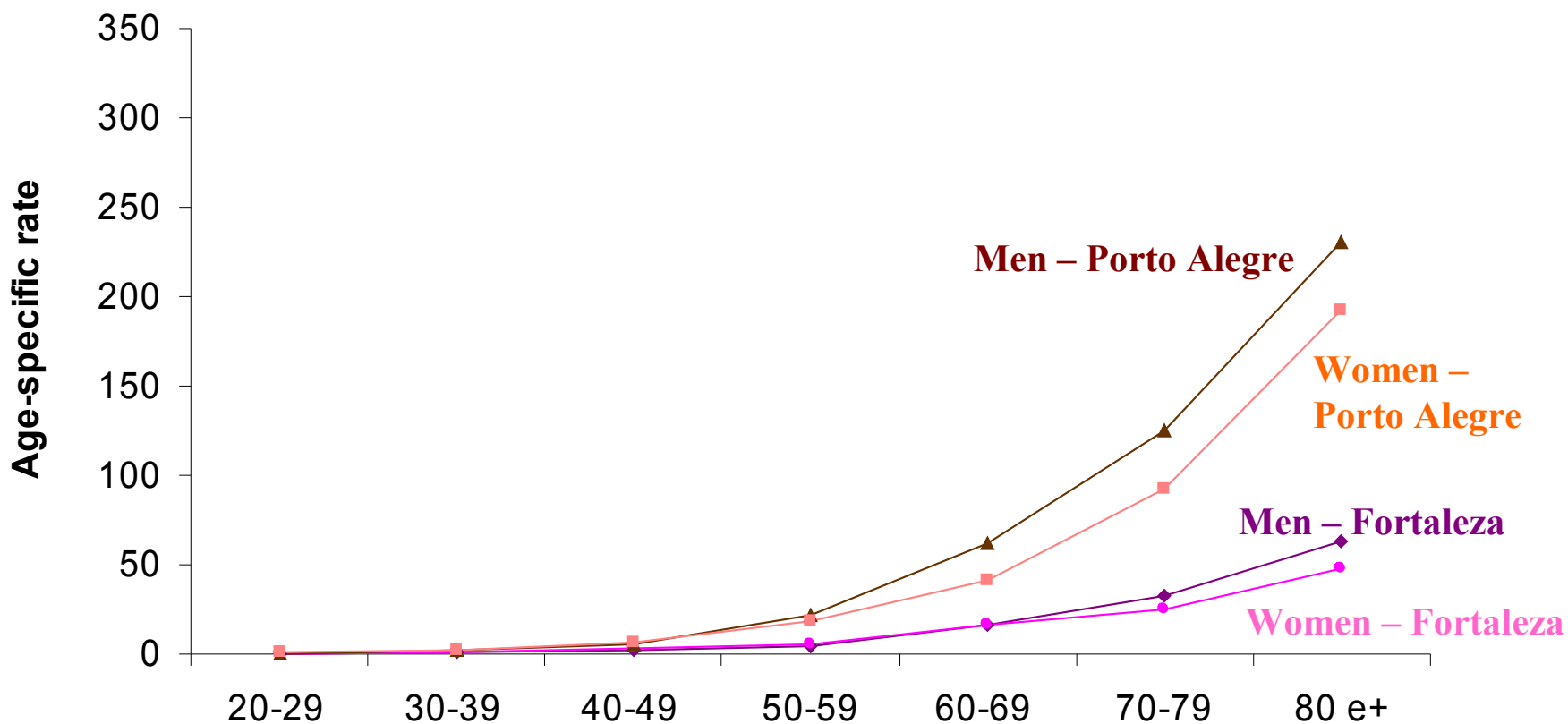
Average age-specific incidence rates* for colorectal cancer by sex, Fortaleza and Porto Alegre, 1990-1999



* Per 100,000 inhabitants

Sources: MP/Brazilian Institute of Geography and Statistics Foundation - IBGE
MS/INCA/Conprev/ Information Department
PBCR of Fortaleza and Porto Alegre

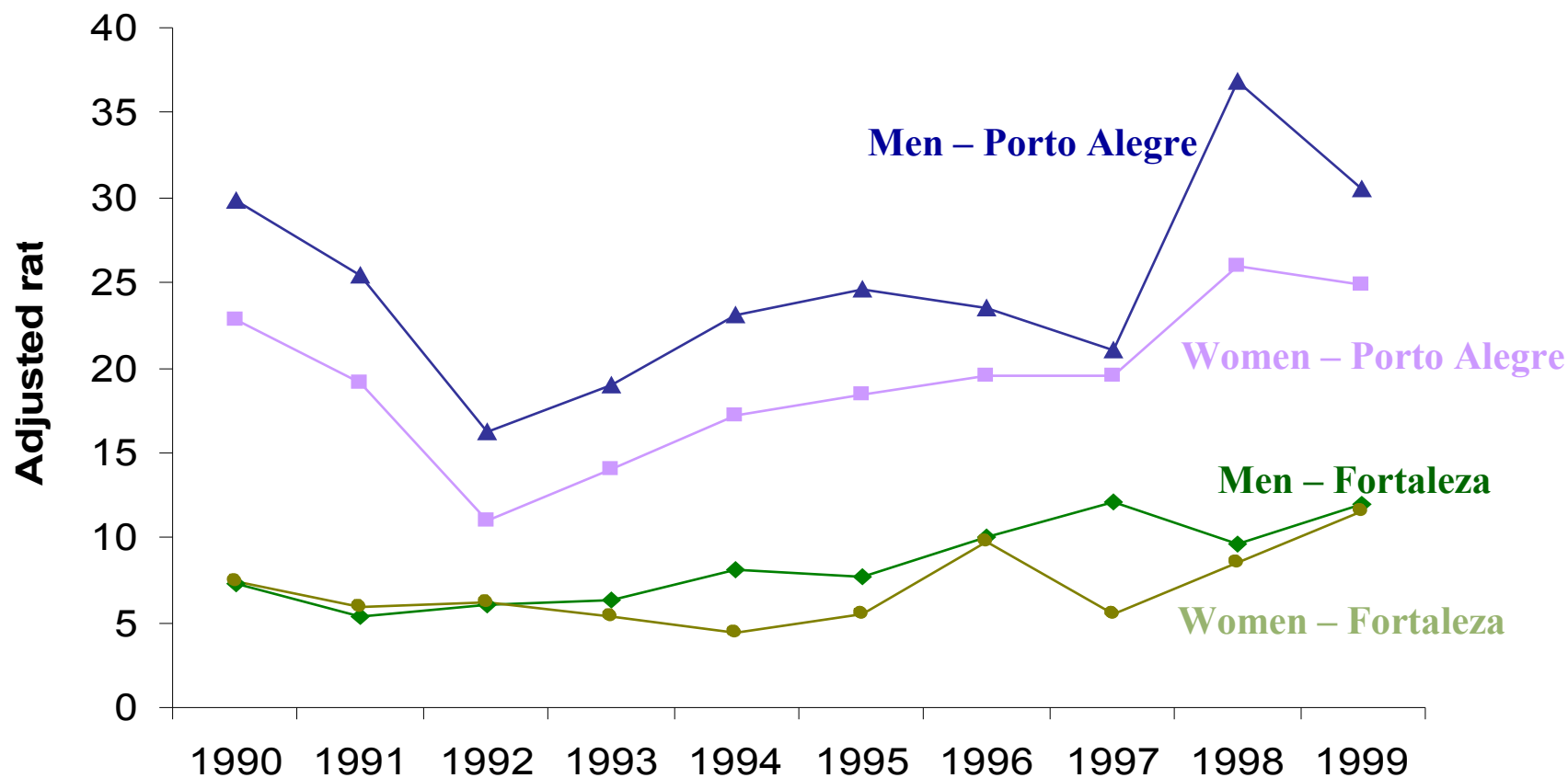
Average age-specific mortality rates* for colorectal cancer by sex, Fortaleza and Porto Alegre, 1990-1999



* Per 100,000 inhabitants

Sources: MP/Brazilian Institute of Geography and Statistics Foundation - IBGE
MS/INCA/Conprev/ Information Department
MS/SVS/DASIS/CGIAE/Mortality Information System - SIM

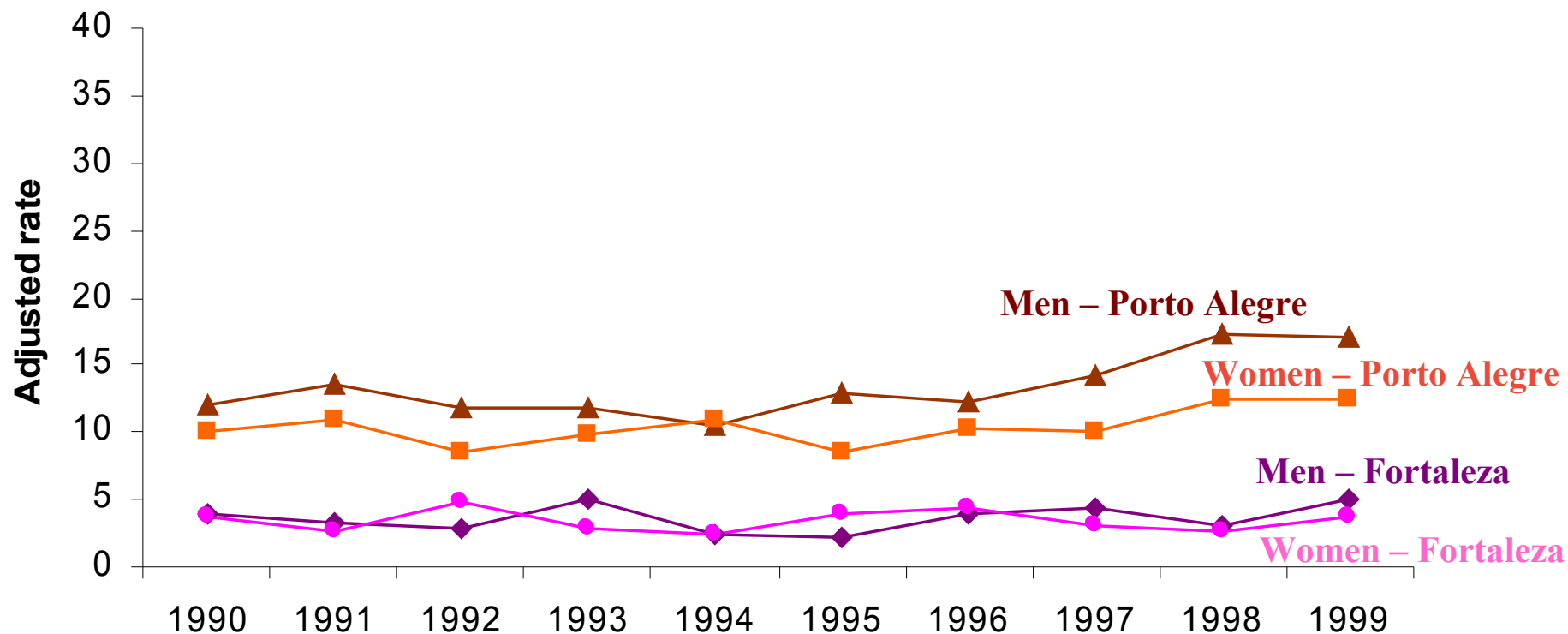
Average age-adjusted incidence rates* for colorectal cancer by sex, Fortaleza and Porto Alegre, 1990-1999



*World Standard Population

Sources: MP/Brazilian Institute of Geography and Statistics Foundation - IBGE
 MS/INCA/Conprev/ Information Department
 PBCR of Fortaleza and Porto Alegre

Average age-adjusted mortality rates* for colorectal cancer by sex, Fortaleza and Porto Alegre, 1990-1999



*World Standard Population

Sources: MP/Brazilian Institute of Geography and Statistics Foundation - IBGE
 MS/INCA/Conprev/ Information Department
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Average age-adjusted incidence rates* and confidence interval for colorectal cancer by sex, Fortaleza and Porto Alegre, 1990-1999

Cities	Men (CI - 95%)	Women (CI - 95%)
Fortaleza	8.6	7.1
	(7.8 - 9.4)	(6.5 - 7.7)
Porto Alegre	25.1	19.9
	(23.7 - 26.5)	(19.9 - 20.9)

*World Standard Population

Sources: MP/Brazilian Institute of Geography and Statistics Foundation - IBGE
MS/INCA/Conprev/ Information Department
PBCR of Fortaleza and Porto Alegre

Average age-adjusted mortality rates* and confidence interval for colorectal cancer by sex, Fortaleza and Porto Alegre, 1990-1999

Cities	Men (CI - 95%)	Women (CI - 95%)
Fortaleza	3.7	3.4
	(3.1 - 4.2)	(3.0 - 3.9)
Porto Alegre	13.4	10.7
	(12.4 - 14.4)	(10.0 - 11.5)

- Proportional mortality of unknown causes

Cities	Men	Women
Fortaleza	14.5	17.5
Porto Alegre	1.3	1.5

*World Standard Population

Sources: MP/Brazilian Institute of Geography and Statistics Foundation - IBGE
MS/INCA/Conprev/ Information Department
MS/SVS/DASIS/CGIAE/Mortality Information System - SIM

Mortality-to-Incidence Rate Ratios for colorectal cancer, by sex and referred period

Colorectal Cancer	Men	Women
World (1993-2001)	0.51	0.52
More developed countries (1993-2001)	0.44	0.46
Less developed countries (1993-2001)	0.61	0.61
Continents		
North America (1993-2001)	0.34	0.35
Oceania (1993-2001)	0.40	0.38
Europe (1993-2001)	0.52	0.53
Central/ South America (1993-2001)	0.51	0.52
Asia (1993-2001)	0.53	0.56
Africa (1993-2001)	0.89	0.88
Brazilian cities		
Fortaleza (1990-1999)	0.43	0.48
Porto Alegre (1990-1999)	0.53	0.54

Sources: MS/INCA/Conprev/ Information Department
Kamangar F, 2006

CONCLUSION

- For both cities were observed an increase in colorectal cancer incidence and mortality-adjusted rates. They are similar for both sexes;
- Porto Alegre has incidence and mortality rates higher than Fortaleza;
- The age-specific incidence rates increased after 50 years old, for men and women;
- The age-specific mortality rates increased after 60 years old, for men and women.