



UNIVERSIDADE DO ESTADO  
DO RIO DE JANEIRO



# Breast cancer control in Brazil

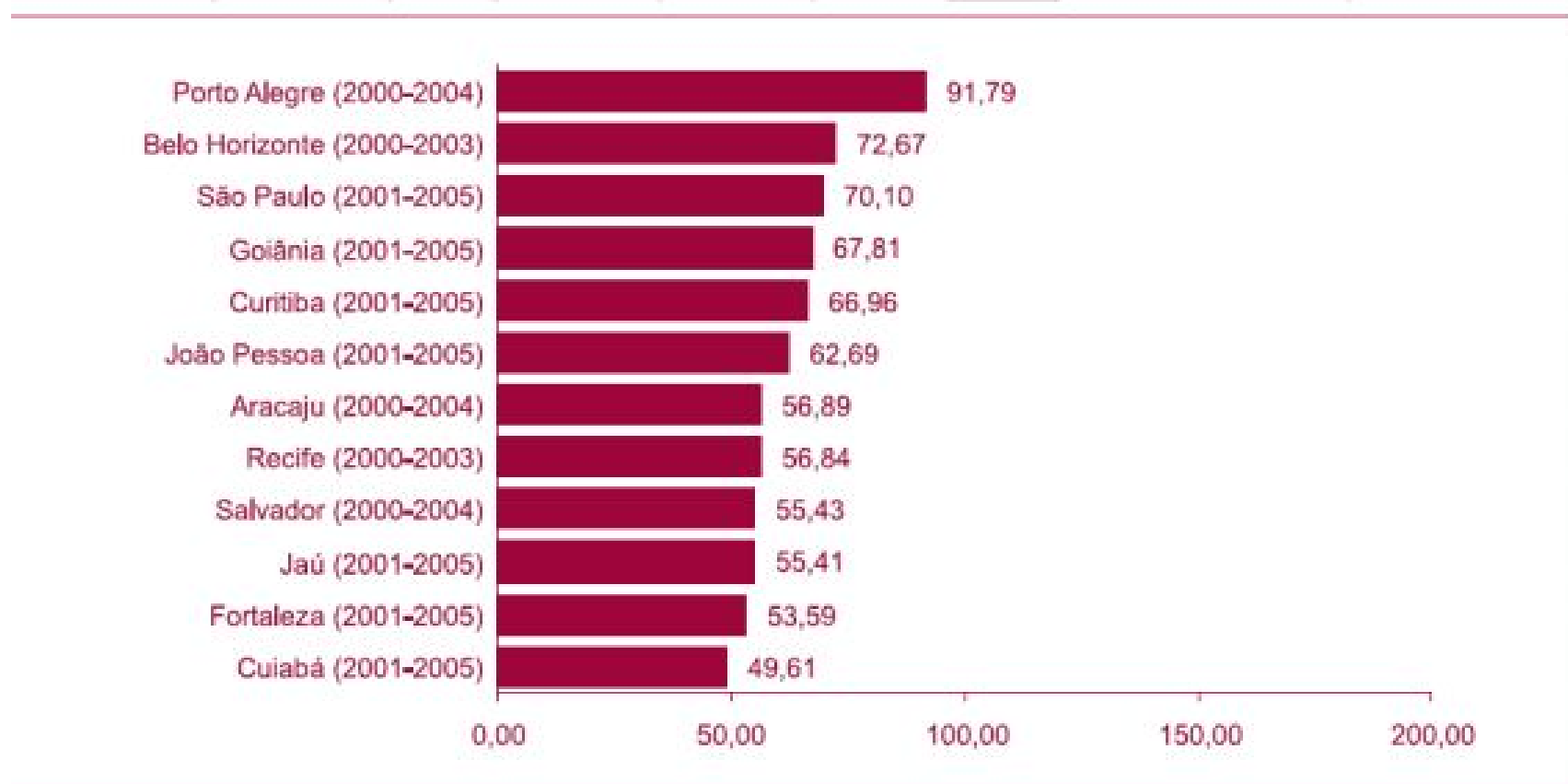
**Gulnar Azevedo e Silva**

**London, May 2014**

# **The burden of breast cancer in Brazil**

# Incidence

## Age-standardized incidence of breast cancer in Brazil, selected cities



Ministério da Saúde/ INCA, 2010. Câncer no Brasil. Dados dos Registros de Câncer de Base Populacional, v IV.

# Incidence

**Age-standardized incidence of breast cancer in Brazil, selected cities, compared to those of higher and lower incidence in the world, 1999-2002**

	Incidence*
USA, Distr Columbia: White	115,2
USA, California, San Franc Bay Area: Non-Hispanic White	110,9
USA, California, Los Angeles County: Non-Hispanic White	110,0
<b>Brazil</b>	
Brasilia	68,7
Cuiabá	51,7
Goiânia	53,8
São Paulo	80,8
Oman: Omani	14,6
China, Jiashan	14,7
China, Zhongshan	15,4

*\*per 100 000 age-standardized World Population (Doll 1966)*

Ministério da Saúde/INCA, 2013. Câncer no Brasil: dados dos Registros de Câncer de Base Populacional, Vol. IV; Curado et al., 2007. Cancer Incidence in Five Continents, Vol. IX. IARC.

# Incidence

**Age-standardized incidence of breast cancer in Brazil, selected cities, compared to those of higher and lower incidence in the world, 2003-2007**

	<b>Incidence*</b>
<b>Belgium</b>	<b>110,8</b>
<b>New Zealand: Maori</b>	<b>107,4</b>
<b>USA, Hawaii: Hawaiian</b>	<b>106,4</b>
<b>Brazil</b>	
<b>Aracaju</b>	<b>59,7</b>
<b>Belo Horizonte</b>	<b>66,8</b>
<b>Cuiabá</b>	<b>51,8</b>
<b>Fortaleza</b>	<b>52,0</b>
<b>Goiânia</b>	<b>69,3</b>
<b>São Paulo</b>	<b>77,7</b>
<b>South Africa: PROMEC</b>	<b>7,3</b>
<b>India, Barshi, Paranda and Bhum</b>	<b>8,3</b>
<b>India, Sikkim State</b>	<b>8,6</b>

*\*per 100 000 age-standardized World Population (Doll 1966)*

Ministério da Saúde/INCA, 2013. Câncer no Brasil: dados dos Registros de Câncer de Base Populacional, Vol. IV; Forman et al., 2013. Cancer Incidence in Five Continents, Vol. X. IARC.

# Incidence

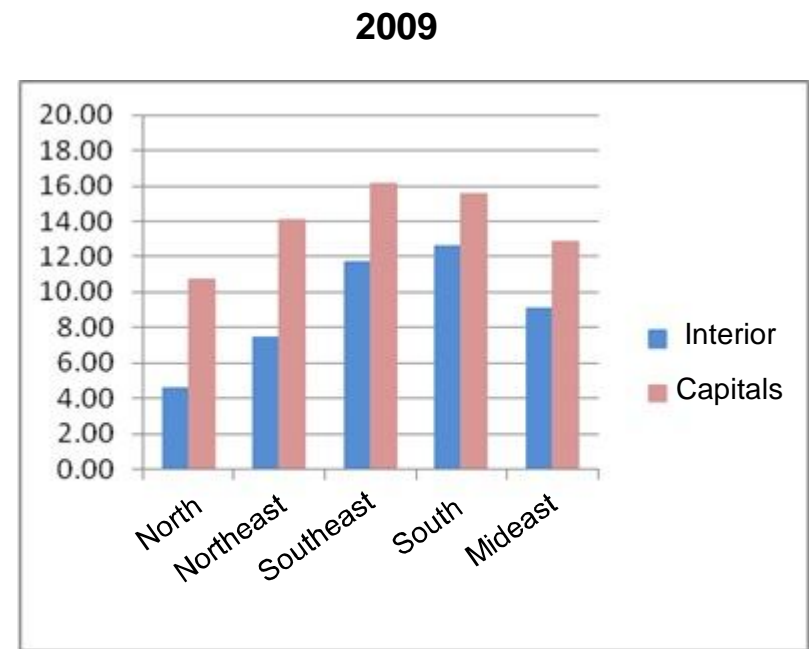
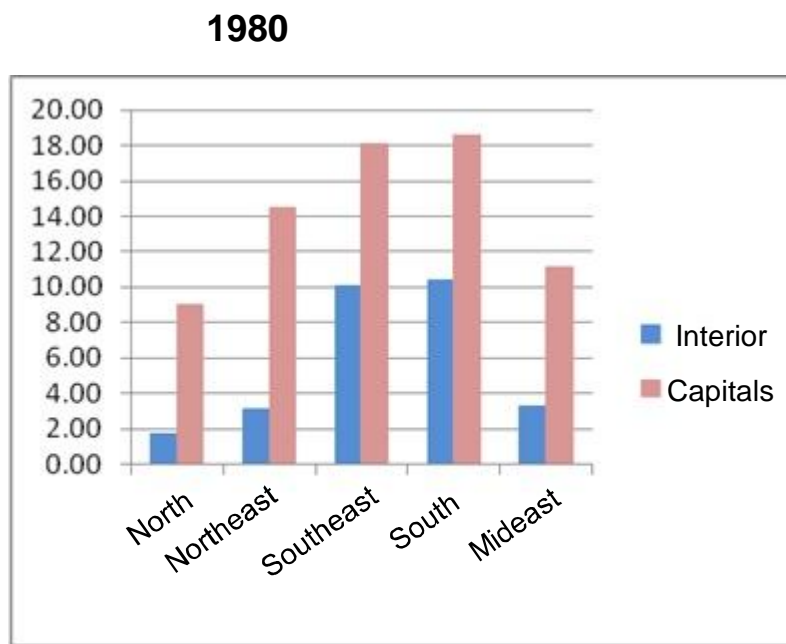
- . Increasing incidence due to strong demographic changes (urbanization process and changes in life style)**
  - increase of life expectancy at birth**
  - significant fertility decline**
  - increase of obesity**

*Overall incidence is still on the increase whereas mortality has began to decline in the capitals of the Southeast and South regions*

# Mortality

. 13 225 deaths in 2011 (15,4% of total deaths from cancer)

. By regions, capitals/interior

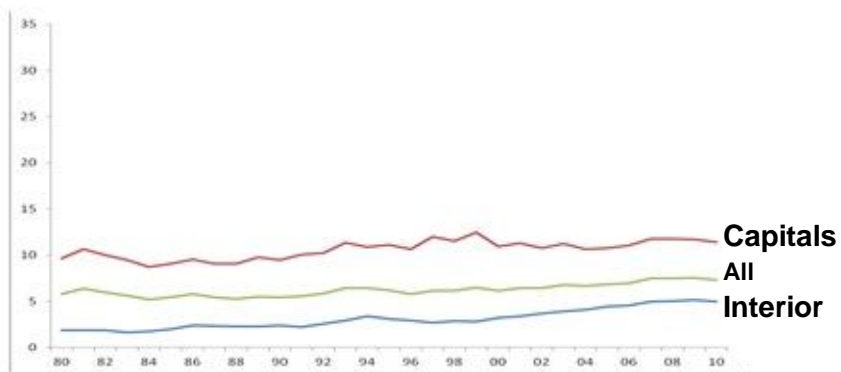


\*per 100000, age-standardized (World Populaton – Doll, 1966)

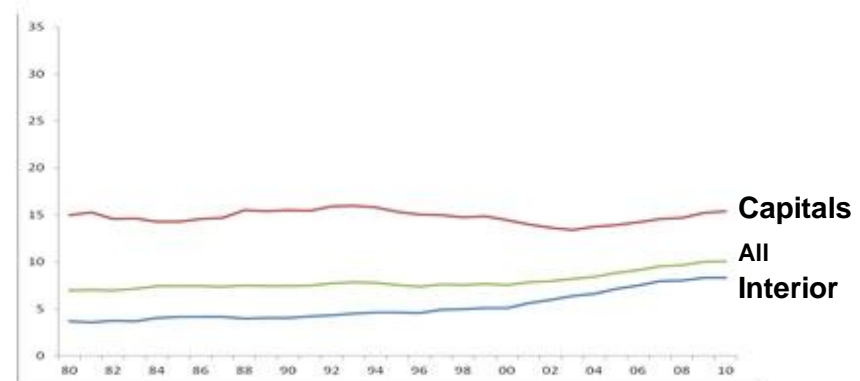
# Mortality

Mortality\* from breast cancer, Brazil , 1980- 2010

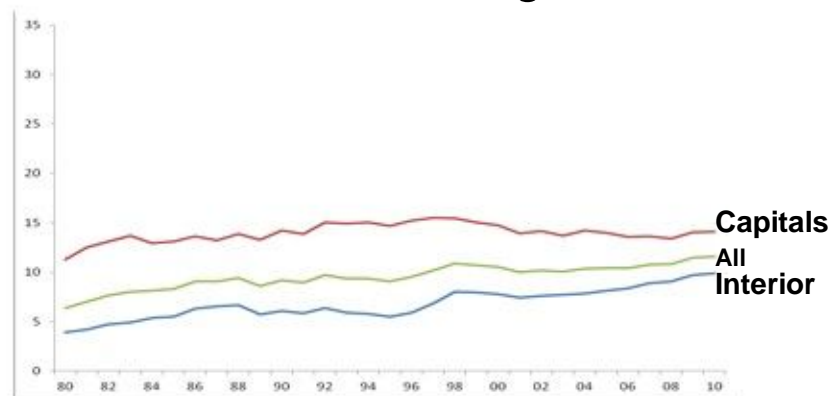
*North region*



*Northeast region*



*Center-West region*



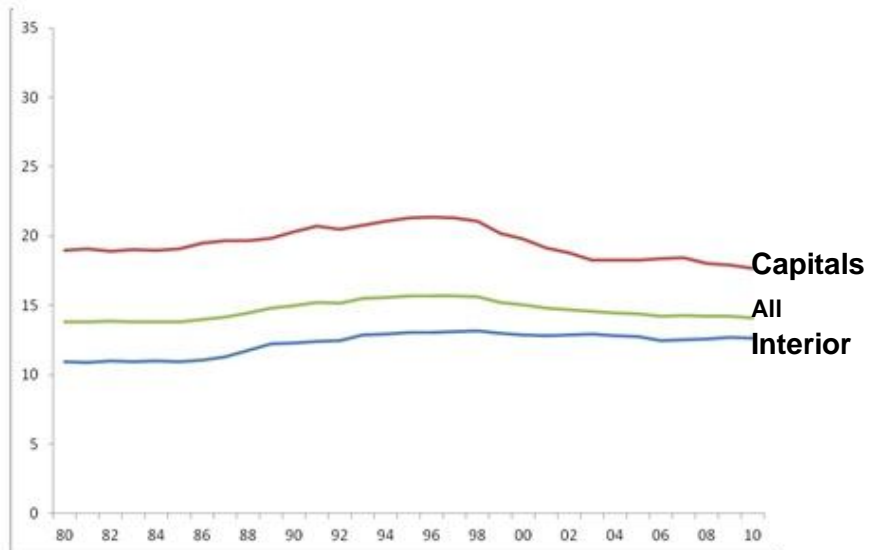
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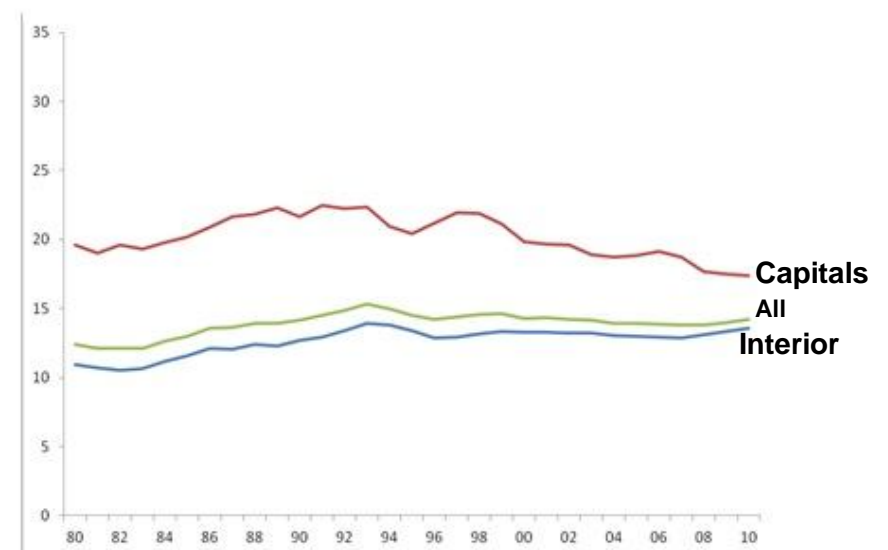
# Mortality

## Mortality\* from breast cancer, Brazil , 1980- 2010

### *Southeast region*



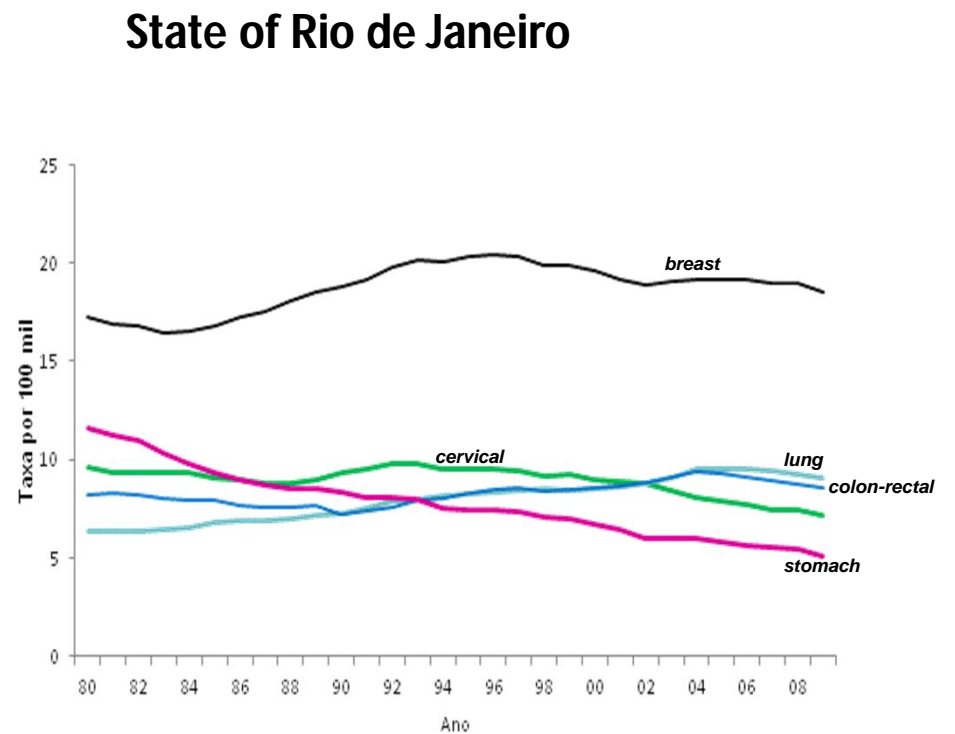
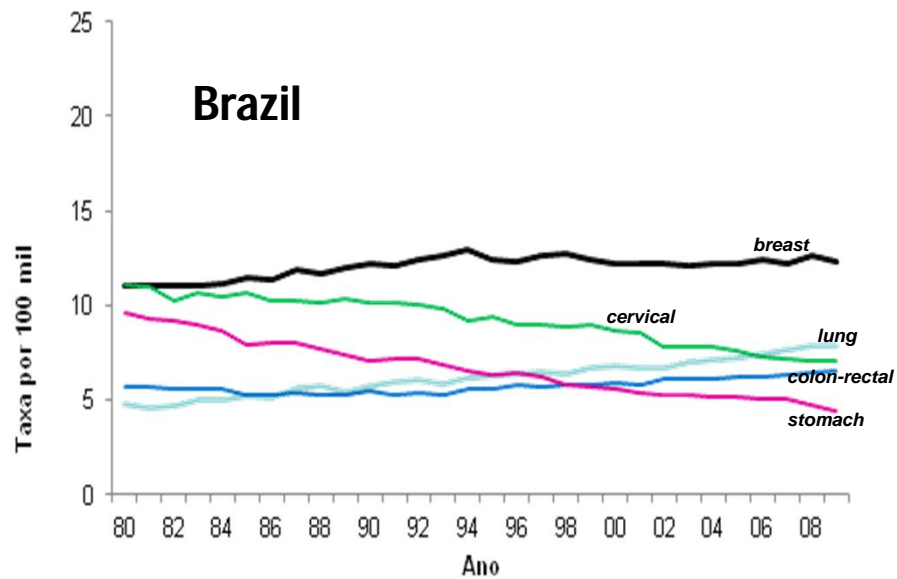
### *South region*



\*per 100000, age-standardized (World Population – Doll, 1966)

# Mortality

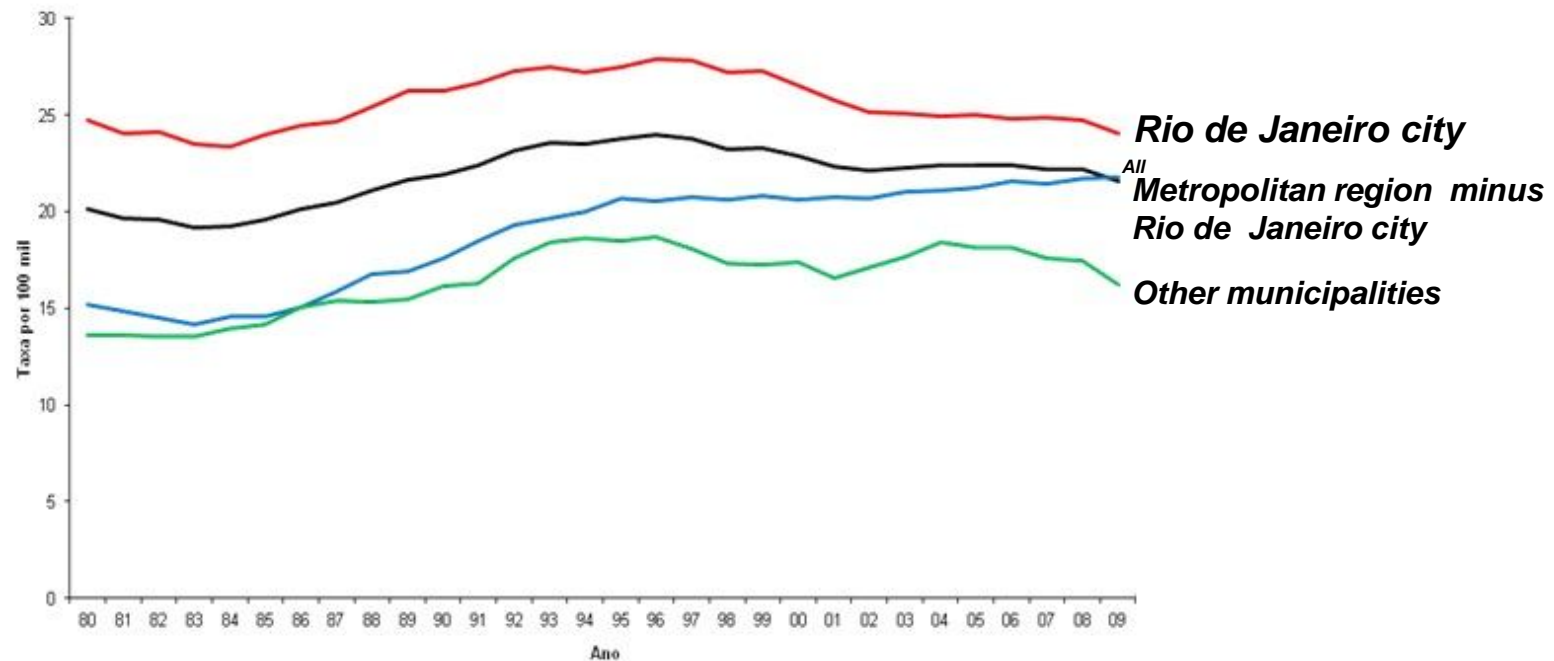
## Mortality\* from main types of cancer in women, Rio de Janeiro State, 1980- 2009



\*rates by 100 000, age-standardised (Brazilian Population CENSO – Brasil 2010).  
Gamarra, Girianelli e Azevedo e Silva, 2013.

# Mortality

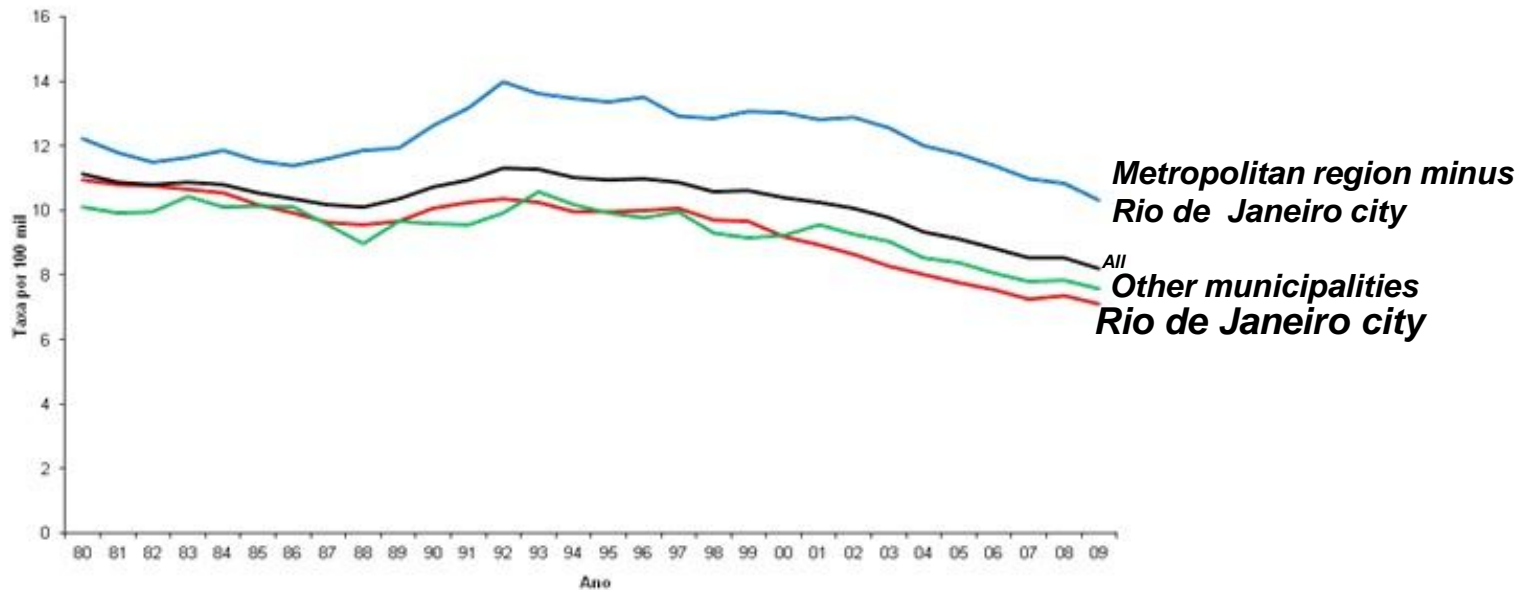
## Mortality\* from breast cancer, Rio de Janeiro State, Brazil , 1980- 2010



\*rates by 100 000, age-standardised (Brazilian Population CENSO – Brasil 2010).  
Gamarra, Girianelli e Azevedo e Silva, 2013.

# Mortality

## Mortality\* from cervical cancer, Rio de Janeiro State , 1980- 2010



\*rates by 100 000, age-standardised (Brazilian population CENSO – Brasil 2010).  
Gamarra, Girianelli e Azevedo e Silva, 2013.

# Mortality

## Mortality\* from breast cancer, Brazil, Southeast and South regions, 1980- 2010

Region	Trend 1			Trend 2			Trend 3		
	Period	APC	95% CI	Period	APC	95% CI	Period	APC	95% CI
<b>Southeast</b>									
capitals	1980-1997	0,9	0,8 a 1,0	1997-2002	-2,8	-3,7 a -1,9	2002-2010	-0,6	-0,9 a -0,2
Interior	1980-2010	0,6	0,4 a 0,8	--	--	--	--	--	--
<b>South</b>									
capitals	1980-1991	1,6	1,1 a 2,2	1991-2010	-1,3	-1,5 a -1,1	--	--	--
interior	1980-2010	2,4	2,0 a 2,8	--	--	--	--	--	--
<b>Brazil</b>									
capitals	1980-1997	0,7	0,6 a 0,8	1997-2003	-2,6	-3,2 a -1,9	2003-2010	0	-0,4 a 0,5
interior	1980-2010	1,1	1,0 a 1,2	--	--	--	--	--	--

# Mortality

- . **Increasing trends in the mortality rates:**

- **higher in the interior**

- . **Declining rates are been observed in capitals of the most developed regions:**

- Southeast region (since 1998)**

- South region (since 1992)**

*Women living outside of the state capitals are not benefiting from early detection and treatment (i.e. not been treated in the early stages of the disease)*

# Screening and early detection of breast cancer in Brazil

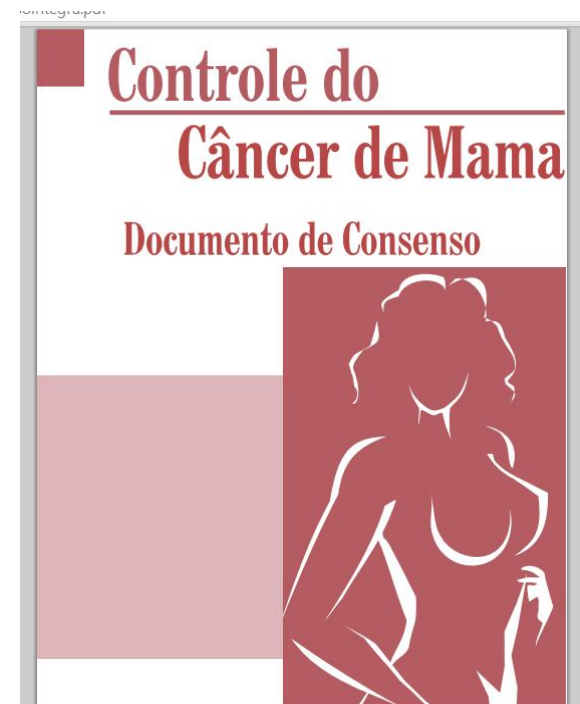
# Early detection

## Breast cancer control in Brazil Ministry of Health (2004)

### Screening recommendations:

40-69 yrs: physical examination annually

50-69 yrs: mammographic exam biannually





# Early detection

## Coverage of self-reported mammography

*IBGE (PNAD)*

50-69 years old

2003: 54,5 %

2008: 71,5 %

Factors associated with performing the exam:

*Oliveira et al., 2011*

. income, education, being married, having had medical consultation, having health insurance

. to live in the metropolitan area trebles the risk

# Early detection

**Mammographic capacity: available with currently installed machines & required to reach 60% coverage, Brazil and regions, 2012**

Region	Female population -2012			No mammographic machines in SUS	Mammographic capacity	
	High risk*	40-49 yrs**	50-59 yrs***		No exams that can be performed with current	No to reach 60% of coverage
Center-West	28.745	156.232	582.924	122	824.476	460.741
Northeast	106.658	531.559	2.217.144	353	2.385.574	1.713.216
North	25.150	135.285	488.053	77	520.366	389.093
Southeast	191.526	938.117	4.222.442	643	4.345.394	3.211.251
South	65.069	325.382	1.452.449	297	2.007.126	1.105.740
Brazil	417.147	2.086.574	8.963.012	1.492	10.082.936	6.880.040

\* 1% female pop >35 years

\*\* 16% of females

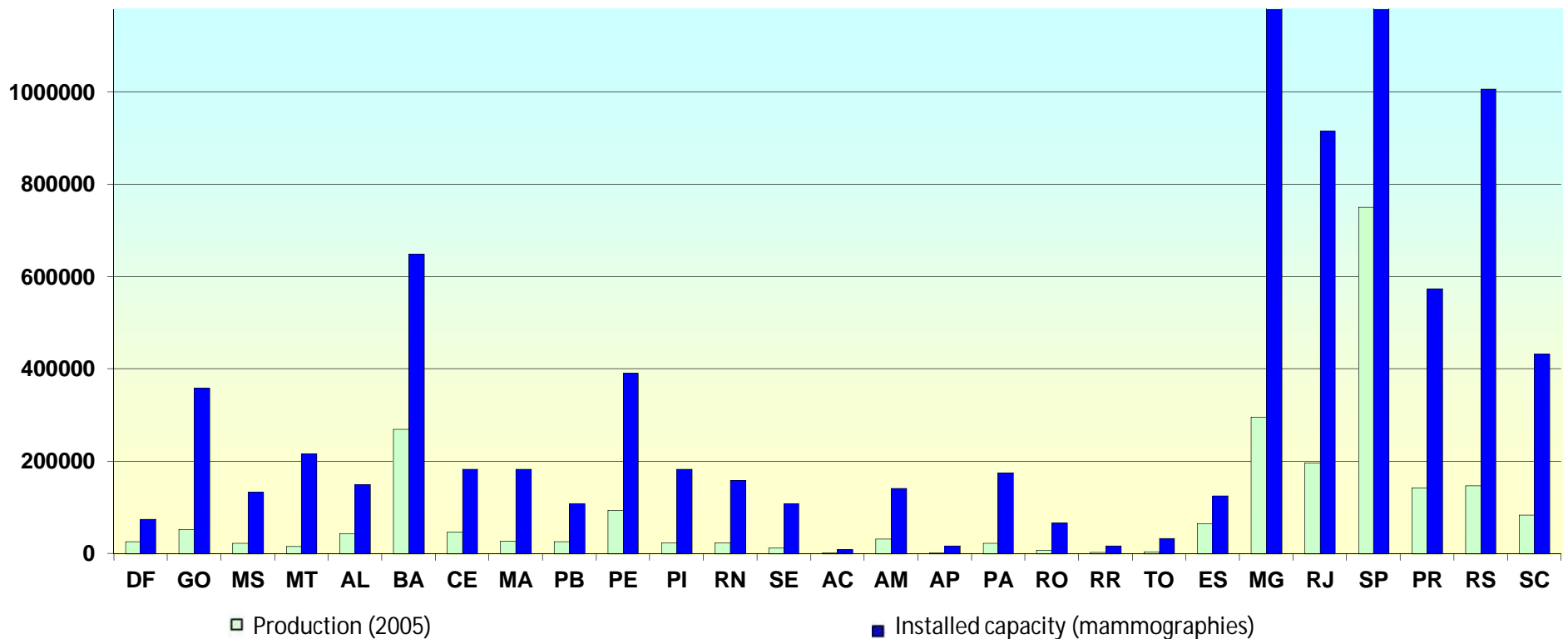
\*\*\* 56% of females

\*\*\*\* No. of mammographic machines \*4 exams/hr \* working day of 8 hrs \* 22 days \*12 mths \* 80% capacity

Adapted from: Ministério da Saúde/INCA, 2006. A Situação do Câncer no Brasil

# Early detection

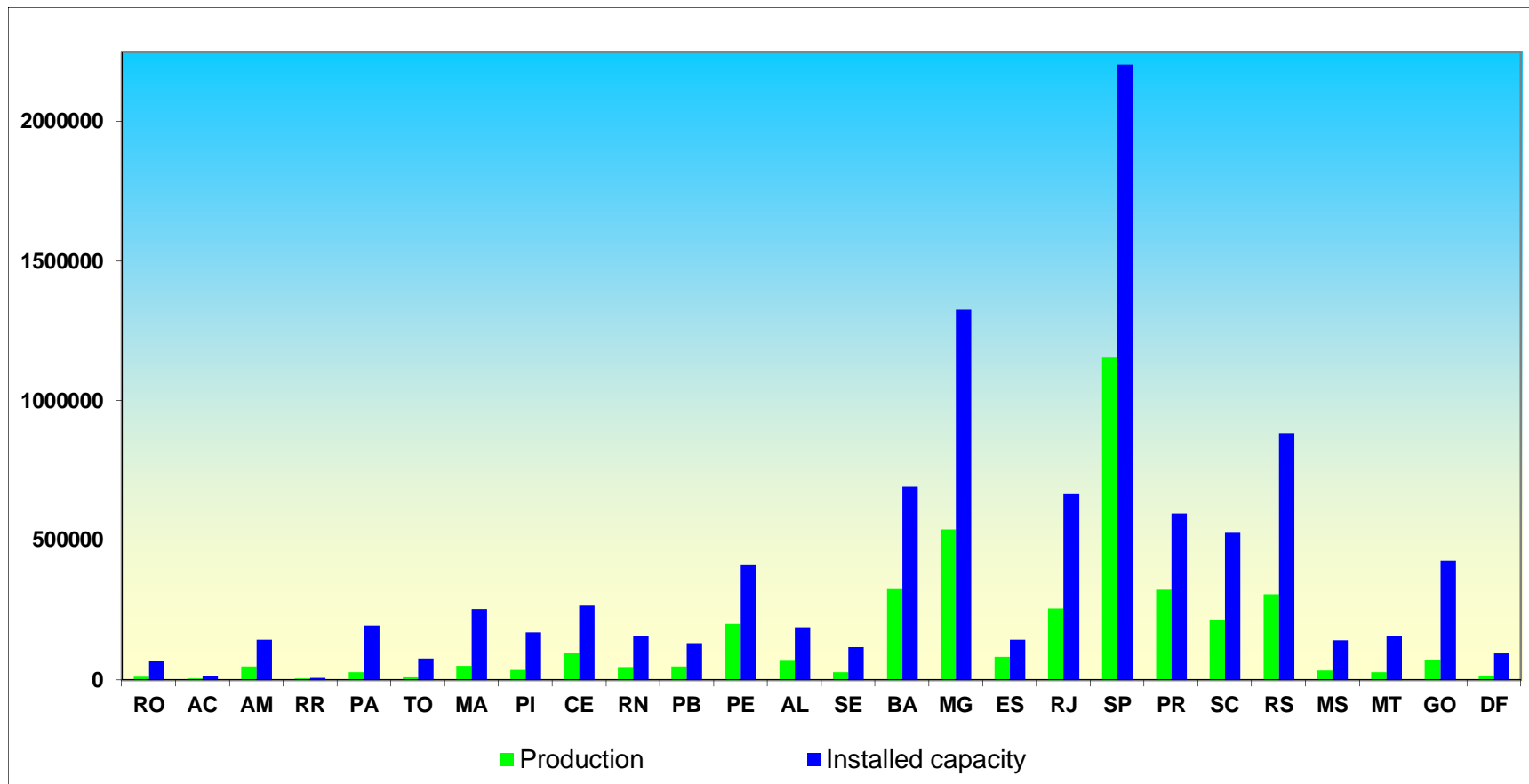
**No. of mammographic exams paid by SUS & No. that can be performed with currently installed equipment in SUS, 2005**



Adapted from: Ministério da Saúde/INCA, 2006. A Situação do Câncer no Brasil

# Early detection

**No. of mammographic exams paid by SUS & No. that can be performed with currently installed equipment in SUS, 2012**



Adapted from: Ministério da Saúde/INCA, 2006. A Situação do Câncer no Brasil

# Early detection

## **Access to early detection of breast cancer in Brazilian Unified Health System : an analysis based on data from Health Information System**

*Azevedo e Silva, Bustamante-Teixeira, Tomazelli, Aquino e Santos Silva. Cad Saúde Pública, 2014, in press.*

### **Aims:**

- (i) estimate the coverage of mammographic screening;
- (ii) assess the extent to which abnormal mammographic findings are being further investigated;
- (iii) examine whether the number of surgeries performed is appropriate given current estimates of breast cancer incidence.

### **Methods:**

. The analysis was carried out using data from the Unified Health System (SUS) SISMAMA, SIA and SIH - for the year 2010, by macro region and age-group.

. Ratios were calculated in order to assess the correspondence between the registered numbers of mammographies, biopsies and surgeries in the SUS and estimated new cases of breast cancer among women SUS dependent (about 70% of Brazilian population).

# Early detection

## Access to early detection of breast cancer in Brazilian Unified Health System (SUS): an analysis based on data from Health Information System

*Azevedo e Silva, Bustamante-Teixeira, Tomazelli, Aquino e Santos Silva. Cad Saúde Pública, 2014, in press.*

### Coverage\*(%) of mammography among the target population – SUS dependent women, 2010

	<i>Region</i>					
	<i>North</i>	<i>Norhteast</i>	<i>Southeast</i>	<i>South</i>	<i>Center-west</i>	<i>Brazil</i>
50-59 year old	11,4	19,4	40,6	47,6	18,7	32,2
60-69 years old	8,3	13,7	32,6	38,0	13,6	25,0

*\*Estimated based on number of mammograms registred in SUS/ femaie population SUS dependent*

# Early detection

**Coverage\*(%) of mammography among the target population – SUS dependent women, 2010**

	<i>Region</i>					
	<i>North</i>	<i>Norhteast</i>	<i>Southeast</i>	<i>South</i>	<i>Center-west</i>	<i>Brazil</i>
50-59 yeasr old	11,4	19,4	40,6	47,6	18,7	32,2
60-69 years old	8,3	13,7	32,6	38,0	13,6	25,0
<b>40-49 years old</b>	<b>9,5</b>	<b>17,6</b>	<b>33,8</b>	<b>39,4</b>	<b>15,5</b>	<b>26,4</b>

*\*Estimated based on number of mammograms registred in SUS/ femaie population SUS dependent.*

*Azevedo e Silva et al. Cad Saúde Pública, 2014, in press.*

# Early detection

## Results

### ***Number of mammographies/ Number of women from the target population:***

- low in all age groups analyzed
- the values may be overestimated:
  1. including screening and diagnostic mammographies
  2. duplicated exams were not taken into account

### ***Number of biopsies/ Number of screened cases which demand diagnosis***

0.27 = 50-59 years old and 0.63=60-69 years old

*Did many cases undergo surgery without biopsy?*



# Early detection

## Results

**The ratio of Number of surgeries/ Estimated cases is higher than the ratio of Number of detected cases/ Estimated new cases**

- . Are there a subset of women that underwent MMG out of the SUS and the surgery in the SUS?
- . Is it possible that some cases diagnosed and operated on as malignant neoplasms were indeed benign neoplasms?
- . Are there a number of women undergoing surgery in advanced stages?
- . Are there an excess of surgeries out of the target population? (which would increase the chancer of overdiagnosis)

# Early detection

## Conclusions

- ***The low coverage of the mammography screening, the inadequate follow-up of suspected lesions and the insufficient access to surgery lead to a very low impact of the screening actions in the mortality of breast cancer in Brazil***
- ***The improvement of the specific indicators based on well planned measures to monitor the cost-effectiveness of mammography screening should be regarded as a priority of public health***

# Challenges

- . **Improving the access to screening, diagnosis and treatment**
  - **Ensuring the follow-up of all women with altered results**
  - **Extending the offer of exams for obtaining early diagnoses**
- . **Organizing specialized services of surgery, radiotherapy and chemotherapy in all regions (and not only in the urban centers)**

***Control efforts aimed at reducing mortality from breast cancer must be implemented within a rigorous evaluation framework with constant monitoring of their impact at a population level***

# Partnership between IMS/UERJ and LSHTM

## **Studies are being planned:**

### ***The evaluation of the early detection of breast cancer***

1. Analysis of the follow-up of women with lesions detected in mammography exams through linkage of different SUS databases  
(with the participation of two PhD students)

2. Survival analysis using data from PBCR and Mortality Health System among screened women (SIM) (with one MSc student)

### ***Investigation of factors associated to late detection***

A methodology is being developed using a case-case design to compare factors associated with having a diagnosis in III-IV stages compared to I-II stages  
(downstaging studies)

Study population: patients admitted in the two larger centers of breast cancer surgery in Rio de Janeiro city  
(with one MSc and one PhD student)

[gulnar@ims.uerj.br](mailto:gulnar@ims.uerj.br)



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