PROJECTIONS OF CANCER INCIDENCE IN GRANADA, SPAIN, 2017

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registro de cáncer de granada

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Background

- **Updated cancer incidence data is difficult to obtain,** due to registration delay (usually 3-5 years, depending on many factors).
- This information is important for public health managers who require **accurate estimation of current cancer incidence** for surveillance and cancer control.

Objective

To estimate cancer incidence in the province of Granada for the year 2017 by analysing the past behaviour of the disease to determine its evolution to the present.

The province of Granada is located in the south-east of Spain, with 916,000 inhabitants in 2017.

The Granada Cancer Registry started in 1985.

Methods

Sources of information

- **Granada Cancer Registry**: all incident cases of cancer, excluding non-melanoma skin cancer, residing in the province of Granada and diagnosed in 2004-2013.
- **National Statistics Institute of Spain**: Population data from the period 2004-2013.

Webpages: cancergranada.org / ine.es

Methods

Anatomical cancer sites analysed

Sex	Anatomical site	ICD-10 *
Men	Colon-rectum	C18 – C20
	Prostate	C61
	Lung	C33 – C34
	Bladder	C67, D09, D41
	Stomach	C16
Women	Colon-rectum	C18 – C20
	Breast	C50
	Lung	C33 – C34
	Ovary	C56
	Corpus uteri	C54
	Skin melanoma	C43

Total cancer (C00-C96), excluding non-melanoma skin cancer (C44), was considered.

* **ICD-10**: International Classification of Diseases 10th Revision

Methods

Generalized Linear Model (GLM) (family Poisson, link log) **by anatomical site and sex**:

$$\log(\text{CASES}) = \alpha + \beta_0 \text{YEAR} + \sum_{i=1}^{18} \beta_i \text{AGE}_i + \log(\text{POPULATION})$$

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$$\log(a) - \log(b) = \log\left(\frac{a}{b}\right)$$

$$\log\left(\underbrace{\frac{\text{CASES}}{\text{POPULATION}}}_{\text{RATE}}\right) = \alpha + \beta_0 \text{YEAR} + \sum_{i=1}^{18} \beta_i \text{AGE}_i$$

We estimated, using R software, the number of new cases, the crude and age-standardized incidence rates to the European (old) population (ASR-E) per 100,000 inhabitants.

Results by sex.

Granada, 2017.

In 2017, 4,707 new cases of cancer (excl. non-melanoma skin cancer) were estimated (58% in men), showing an increase of 13% since 2013.

	Observed number of cases in 2013	Estimated number of cases in 2017
Men	2,397	2,744
Women	1,786	1,963
Both sexes	4,183	4,707

Results by anatomical site.

Granada, 2017.

Sex	Anatomical site	Number of estimated cases	Crude rate per 100,000 men	ASR-E per 100,000 men
Men	Prostate	590	130.0	101.1
	Colon-rectum	419	92.4	69.4
	Lung	342	75.3	56.8
	Bladder	298	65.7	48.8
	Stomach	73	16.1	12.1
	All cancer sites but non-melanoma skin	**2,744**	**604.4**	**467.8**

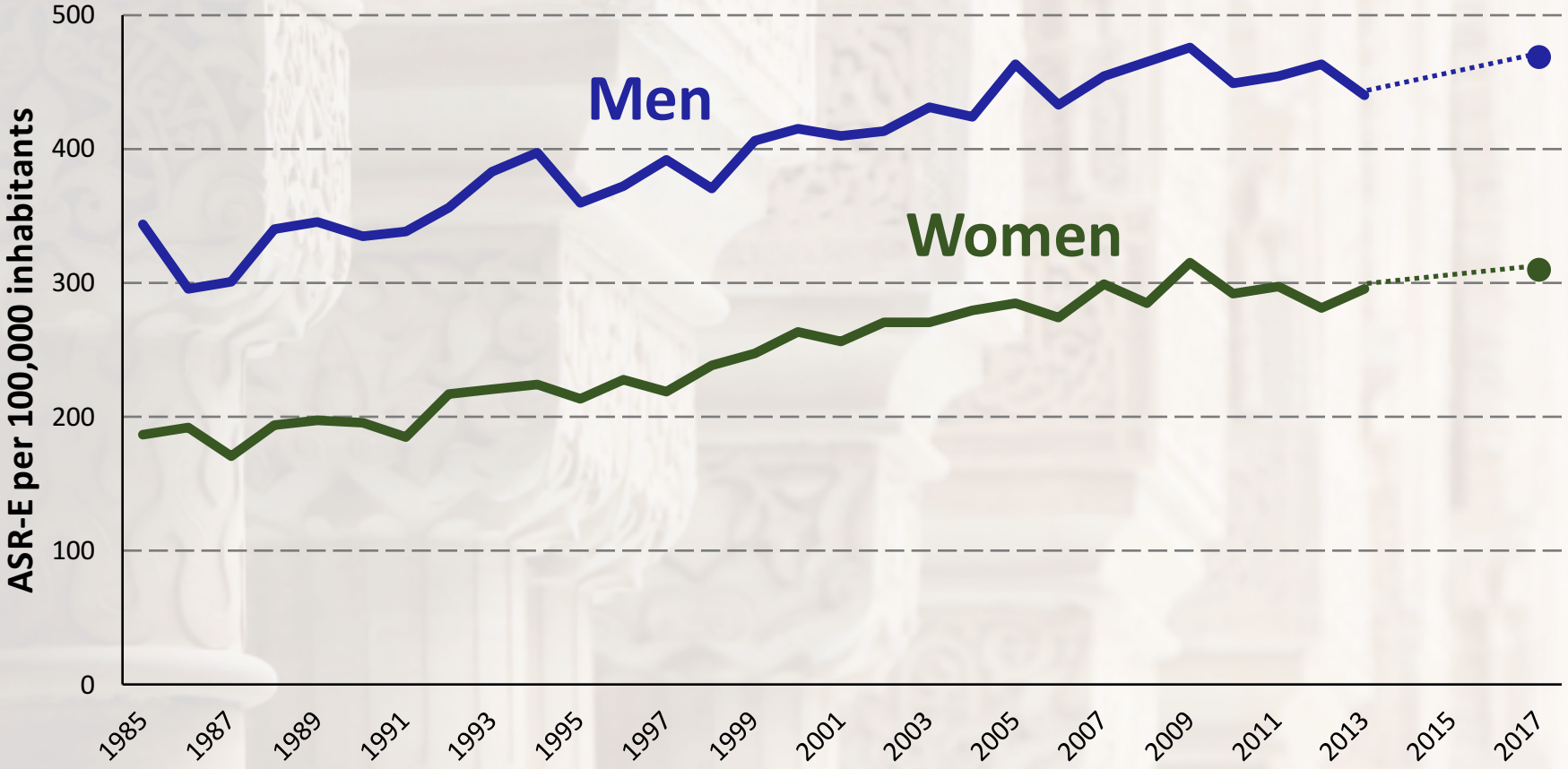
Results by anatomical site.

Granada, 2017.

Sex	Anatomical site	Number of estimated cases	Crude rate per 100,000 women	ASR-E per 100,000 women
Women	Breast	550	119.0	93.6
	Colon-rectum	244	52.7	33.4
	Corpus uteri	131	28.3	21.0
	Lung	72	15.5	11.0
	Skin melanoma	66	14.3	11.5
	Ovary	52	11.3	8.8
	All cancer sites but non-melanoma skin	**1,963**	**424.6**	**307.8**

Results

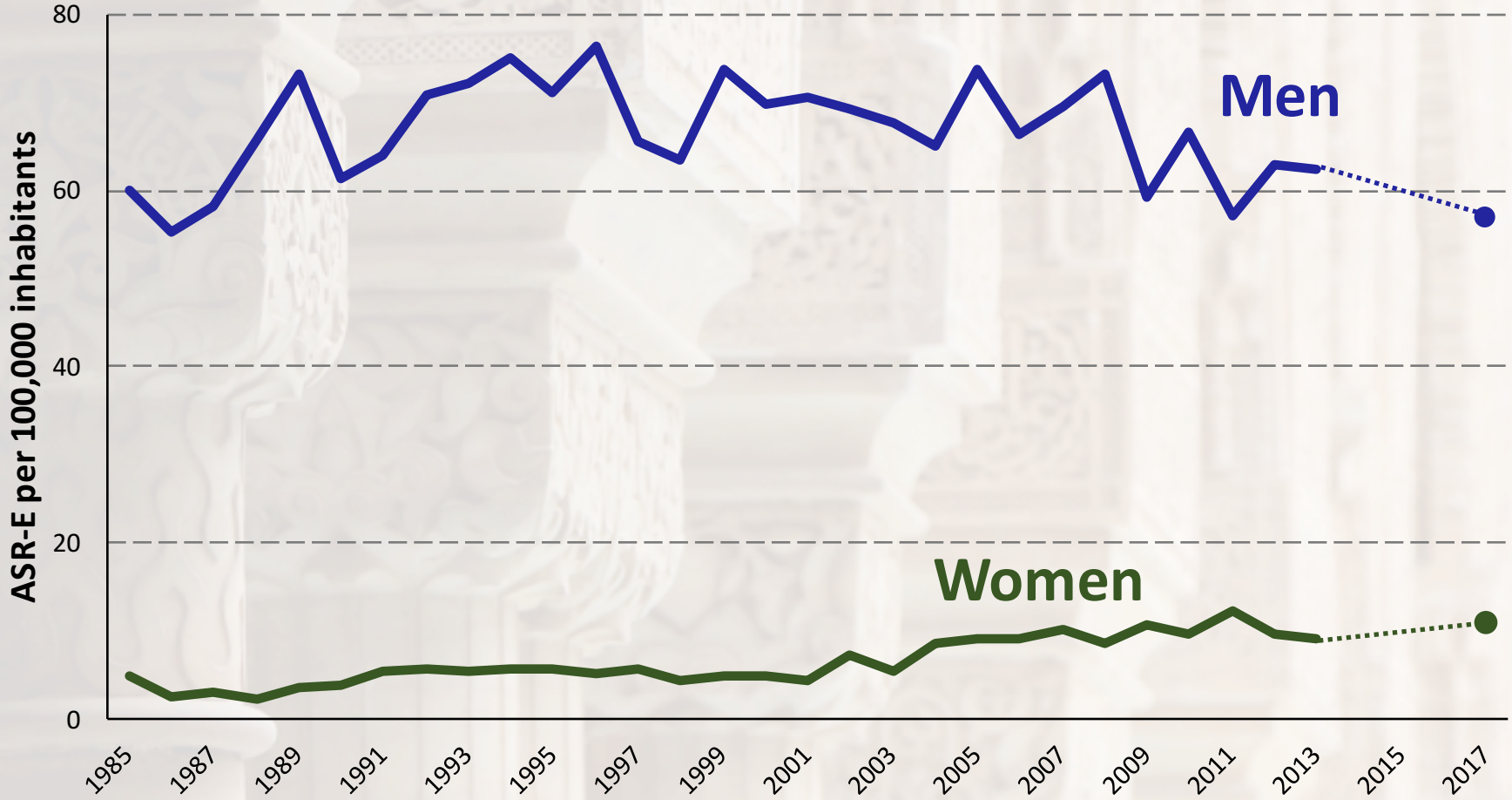
Total cancer, excluding non-melanoma skin, incidence.
Granada, 1985-2017.



Sex	N	Crude rate	ASR-E
Men	2,744	604.4	467.8
Women	1,963	424.6	307.8

Results

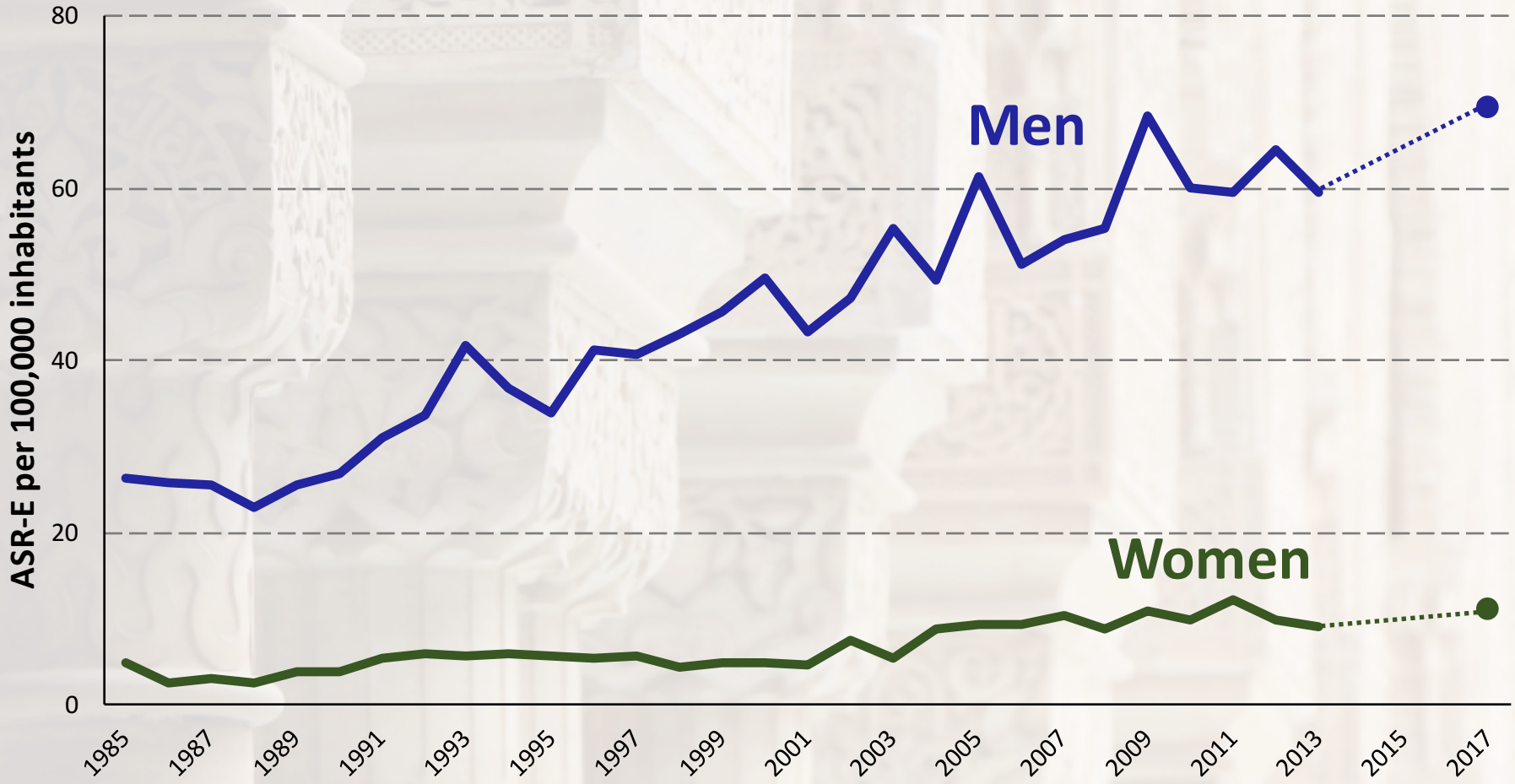
Lung cancer incidence. Granada, 1985-2017.



Sex	N	Crude rate	ASR-E
Men	342	75.3	56.8
Women	72	15.5	11.0

Results

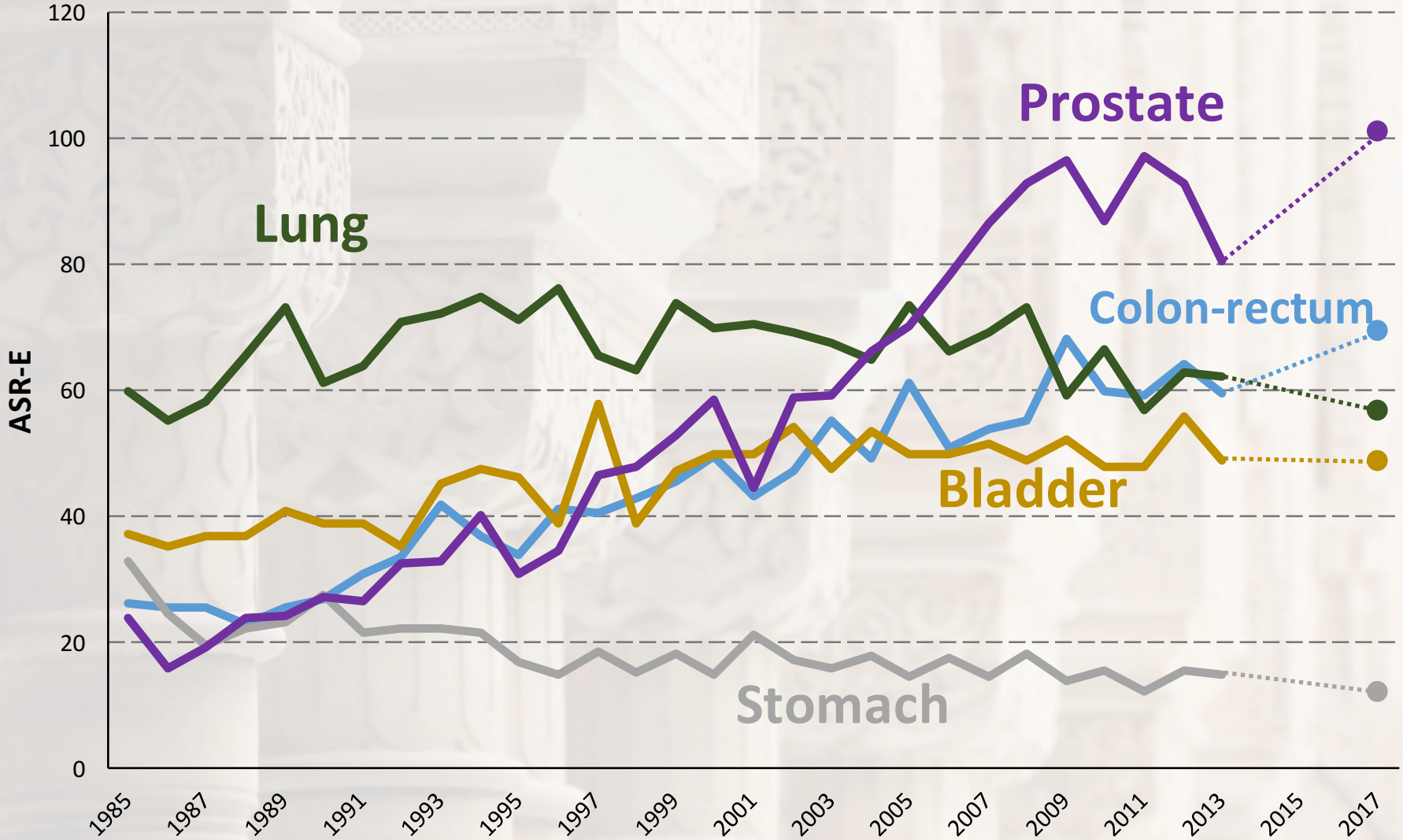
Colon-rectum cancer incidence. Granada, 1985-2017.



Sex	N	Crude rate	ASR-E
Men	419	92.4	69.4
Women	244	52.7	33.4

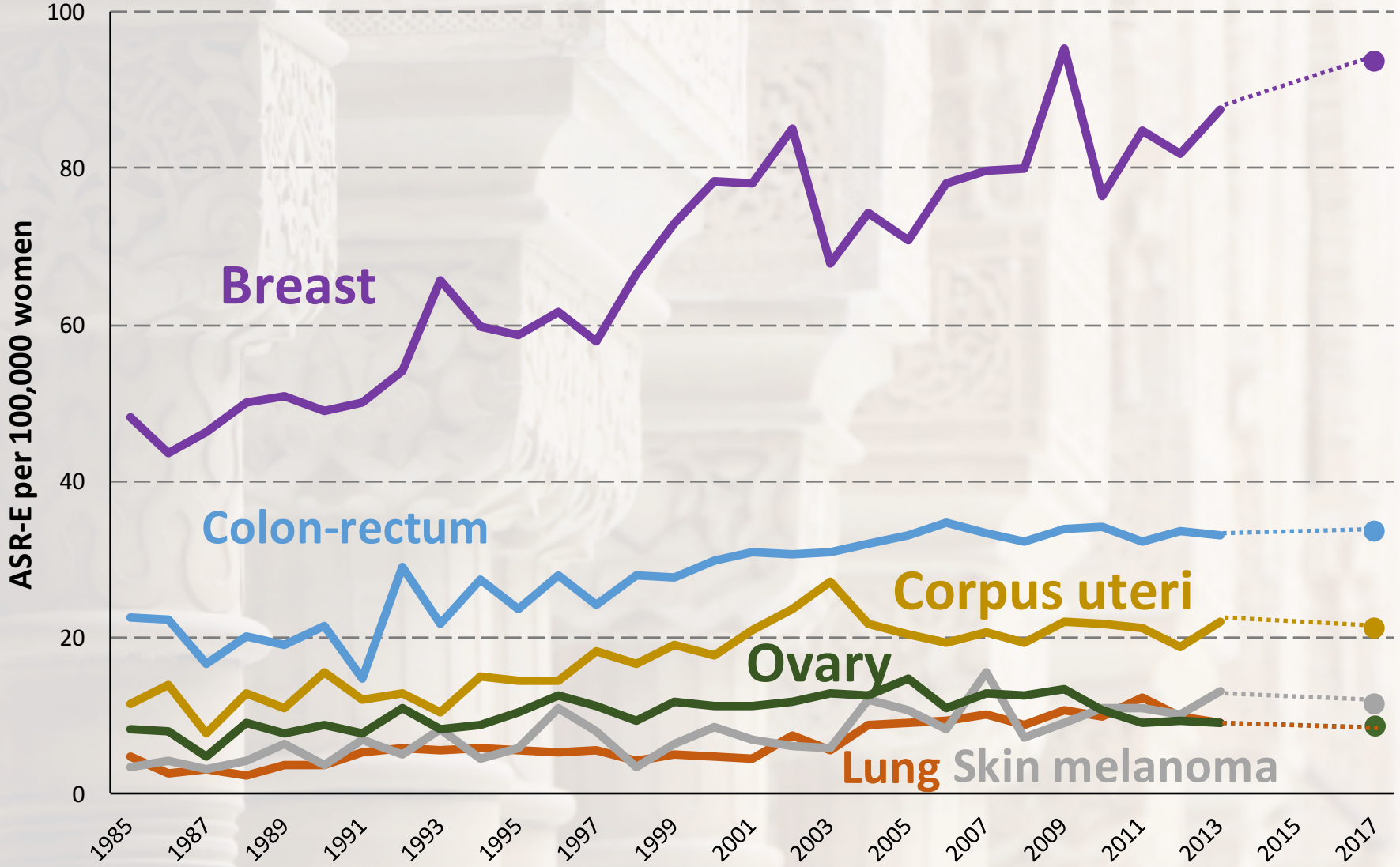
Results

Cancer incidence. Granada, 1985-2017.



Results

Cancer incidence. Granada, 1985-2017.



Strengths and limitations

Strengths:

- We used the **most recent incidence data of Granada**, until 2013.
- The model takes into account population growth and **past trends** of each anatomical cancer **site**.
- We use **real population** data for 2017 instead of projections of population that would add some bias.

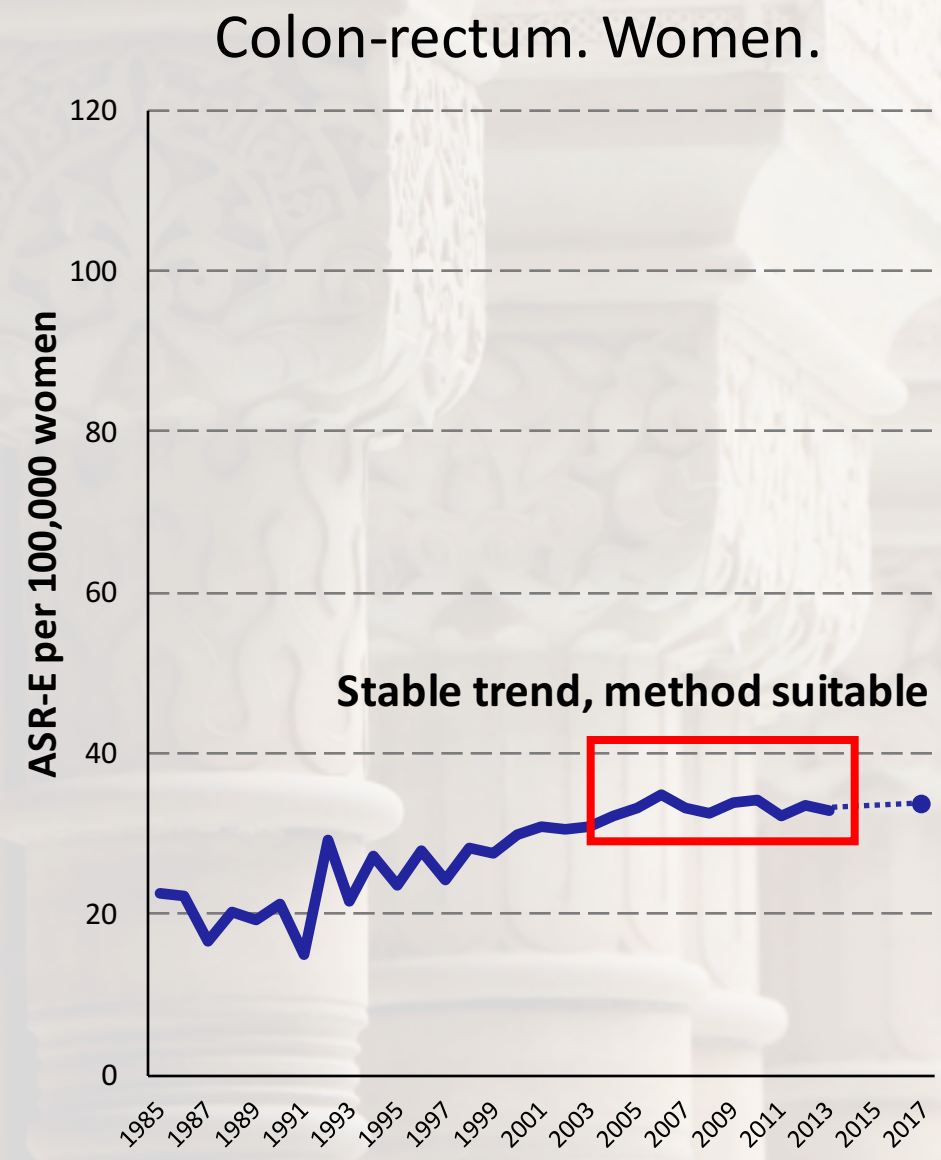
Strengths and limitations

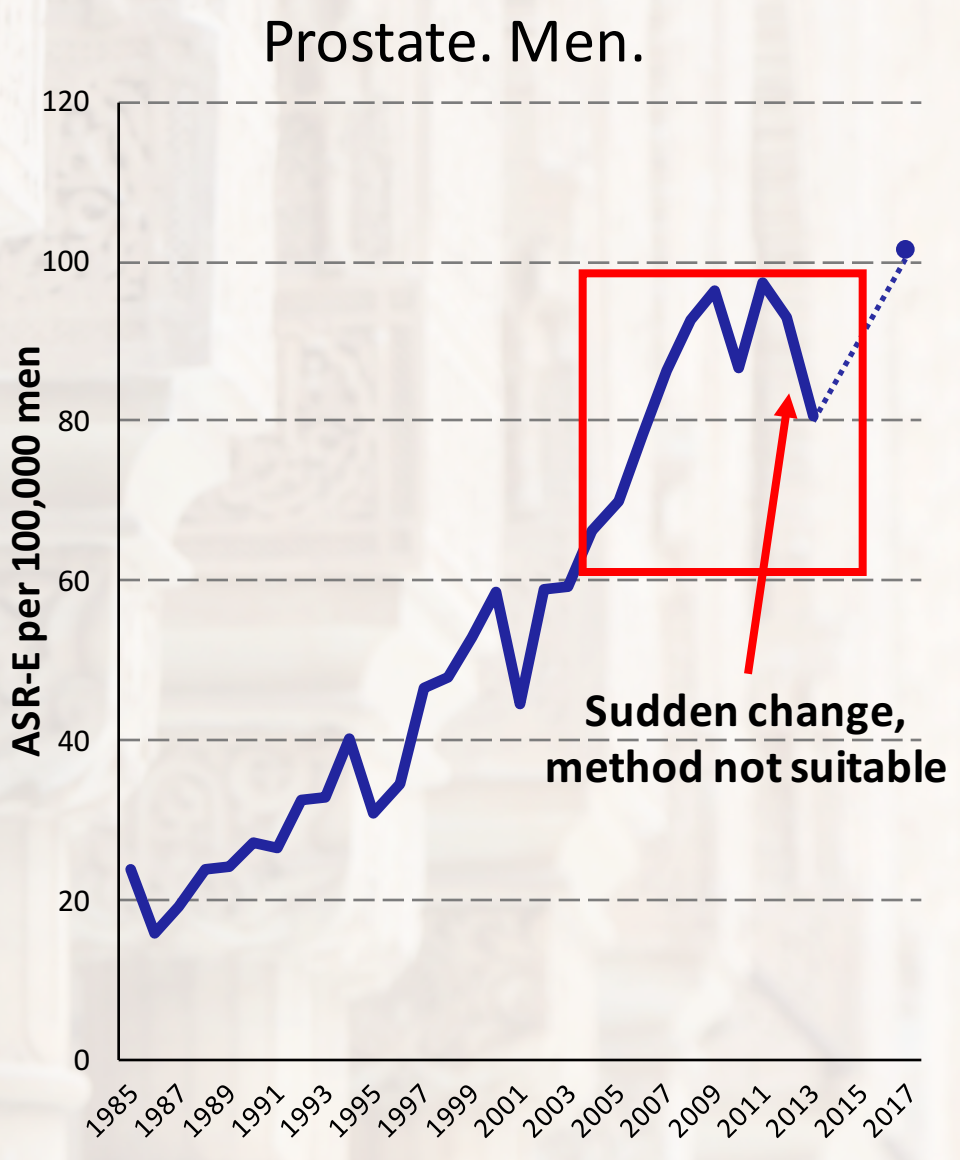
Limitations:

- The method does not identify changes of trends assuming a constant rate over time.

  We have to take with caution the results for anatomical cancer sites with recent changes in temporal trends (e. g. Prostate cancer in men).

Strengths and limitations





Discussion

- **Increasing** trends of **prostate**, **breast** and **colon-rectum** cancer, and **decreasing** incidence trends of **lung cancer** cases among men.
- These projections provide **updated information about cancer burden in Granada**, that can be very useful for epidemiologic surveillance, cancer control and health policy making.

Thank you!

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