CICLO SEMINARI Sinergie tra l'Italia e l'Europa nella Lotta contro il cancro Garantire l'Accesso Universale a Cure Oncologiche e Ridurre le Disuguaglianze

Ridurre le disuguaglianze sociali nel campo dell'oncologia: il progetto EU-Canlneq

19 November 2025, online

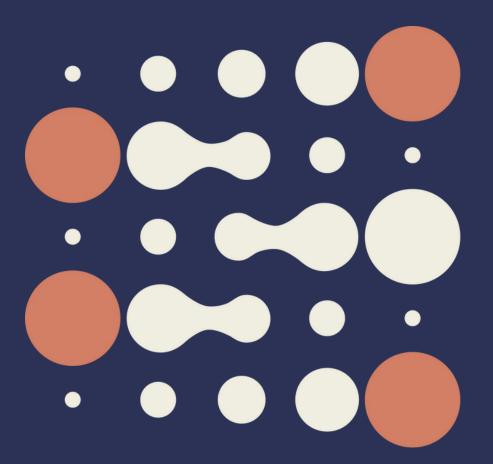
Dr Salvatore Vaccarella, Dr Valentina Lorenzoni, Dr Serra Kerman, Dr Amine Youcef Ali, IARC

Dr Wilma Nusselder, Erasmus MC

International Agency for Research on Cancer







Le disuguaglianze socio-economiche nel tumore

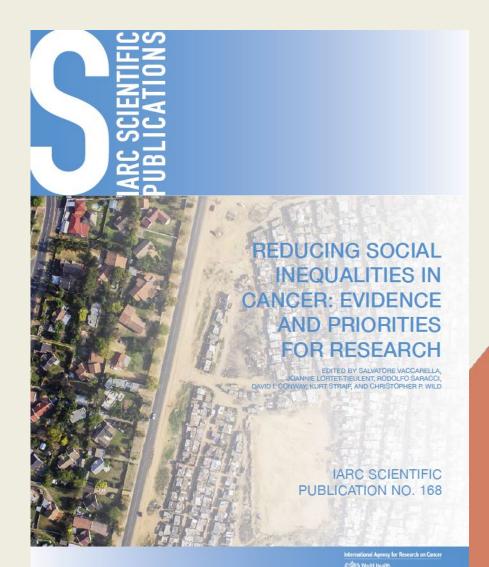
- I fattori socioeconomici sono uno dei principali determinanti del cancro tra e all'interno dei Paesi.
- Le disuguaglianze sociali possono influenzare tutte le fasi del percorso del cancro.
 - La mortalita' e' l'indicatore «ultimo» del cancro e della salute, racchiude l'impatto cumulativo delle disuguaglianze lungo l'intero percorso del cancro.
 - È necessario misurare, mappare, monitorare e confrontare le disuguaglianze socioeconomiche nel cancro tra i diversi Paesi.

The Global Agenda, EU & IARC

- Commission on Social Determinants of Health,2008
- Rio Declaration on Social Determinants of Health - 2011
- WHA endorsement 2012
- SDGs 2015
- WHA Cancer Resolution 2017
 - Explicit call for monitoring and addressing inequality
- EU's Beating Cancer Plan
 - The Cancer Inequalities Registry

The IARC Scientific Publication N. 168 on social inequalities and cancer, 2019

- Available evidence, research priorities and global context
- Recommendations to reduce social inequalities in cancer

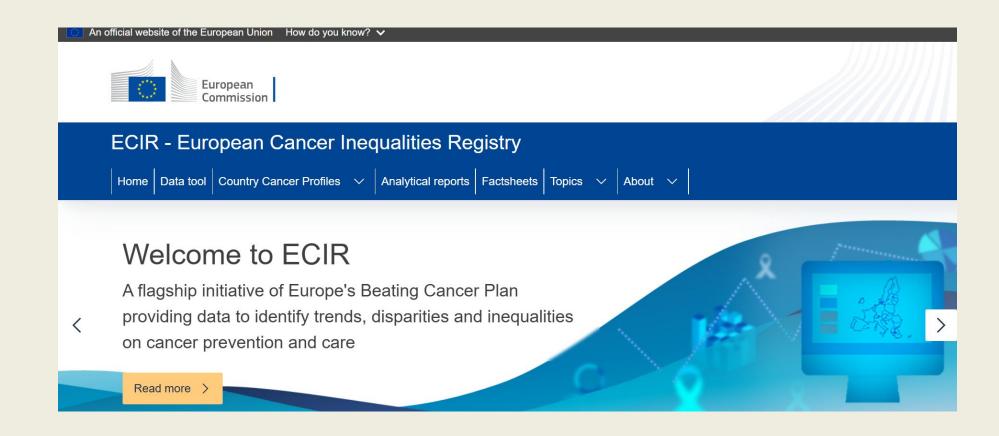


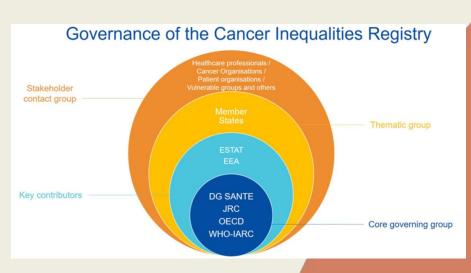
Contribution of >70 international, multidisciplinary experts

http://publications.iarc.fr/580

European Cancer Inequalities registry

The European Cancer Inequalities Registry (ECIR), a key initiative under Europe's Beating Cancer Plan, is tackling disparities head-on by tracking cancer trends and identifying inequalities across EU Member States and regions. This data-driven approach is essential for understanding where the biggest challenges lie and help guide strategic investments at EU, national, and regional levels.





Obbiettivo generale del progetto EU-Canlneq

EU-CanIneq (IARC-WHO/Erasmus MC) coordina un quadro di ricerca per sviluppare ed ampliare indicatori rilevanti delle disuguaglianze socioeconomiche nella mortalità per cancro nell'UE

integrato nello European Cancer Inequalities Registry

CANCER MORTALITY BY EDUCATION LEVEL

For 27 EU countries + Norway & Iceland



FOCUS ON THE SOCIOECONOMIC AXIS

One of the most important factors explaining cancer variability within and between countries

Key features of

EU-Canlneq



- COLLECTION & LINKAGE OF HIGH-QUALITY DATA
- DEVELOPMENT OF METHODS TO PRODUCE ESTIMATES OF CANCER MORTALITY BY EDUCATIONAL LEVEL FILLING TEMPORAL AND GEOGRAPHICAL GAPS



INTELLIGENCE ON CANCER AND CANCER INEQUALITIES
TO IDENTIFY POSSIBLE EXPLANATION FOR OBSERVED
INEQUALITIES



OVERVIEW OF THE PROJECT



A core of observed, harmonized data, for 16 MS Based on the linkage of cancer mortality/census

Extrapolation methods developed to fill temporal/geographical gaps



To critically discuss the results and provide possible explanations

Country-specific factsheets

To produce estimates of cancer mortality by educational level for 27 EU countries + Norway and Iceland





DATI E METODI USATI PER LE STIME 2015-2019

ERAINHE dataset: a core of observed, harmonized data about cancer mortality for 16 Member

States based on the linkage of cancer mortality/census data

Publicly available data on cancer mortality, population distribution and educational attainment from the World Health Organization (WHO) mortality database and the Eurostat database and IARC/GCO database

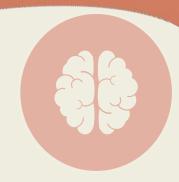
	Periods available	Group
Finland	1990-1995; 1995-2000; 2000-2005; 2005-2010; 2011-2015; 2016-2018	Α
Sweden	1991-1994; 1995-1999; 2000-2004; 2005-2009; 2010-2014; 2015-2017	Α
Denmark	1995-1999; 2000-2004; 2005-2009; 2010-2014; 2015-2019	Α
Belgium	1991-1997; 2001-2006; 2006-2011; 2011-2015; 2016-2017	Α
France	1990-1995; 1995-1999; 1999-2004; 2004-2007	С
Austria	1991-1992; 2001-2002; 2011-2013; 2013-2014; 2015-2019	Α
Italy	2012-2015; 2019; 2020	Α
Spain	2002-2006; 2007-2011; 2012-2015; 2016-2019	Α
Estonia	2000-2005; 2006-2011; 2012-2015; 2016-2019	Α
Lithuania	2001-2005; 2006-2009; 2011-2014; 2015-2019	Α
Poland	2001-2003; 2010-2012	В
Czechia	1998-2003	В
Hungary	1988-1991; 1999-2002; 2010-2012; 2015-2019	Α
Sio renia	1991-1995; 2002-2006	В
Norw y	1990-1995; 1995-2001; 2001-2006; 2006-2009	Α
Slovikia	2013-2014; 2015-2019	В

- A. Countries with at least 3 recorded observations over time
- B. Countries with 1 or 2 recorded observations only
- C. Countries with no observations for certain cancer sites (but with information for total cancer)

Methodology

Development of extrapolation methods to fill temporal/geographical gaps

METHODS USED TO OBTAIN ESTIMATES FOR 2015-2019 in the 16 countries with observed data



Three different methods were used depending on the amount of data available:

Only a small

number of

recorded

observations

Relatively large number of recorded observations over time A.

Regression models (log-linear when rates are decreasing, otherwise linear) were fitted to the observed ASMRs on calendar time and projecting the rates assuming continuation of the past trend until 2015-2019

B.

The average percent change for the mortality rate from the GCO-IARC database was applied to the last observation available in the ERAINHE dataset

No observations for certain cancer types, but with information on total cancer mortality

For each educational group, the share of total cancer mortality for the relevant cancer type was based on the proportion estimated from countries within the same geographical region and applied to total cancer mortality in the last period of observation in that country; thereafter, method B was applied



METHODS USED TO OBTAIN ESTIMATES FOR 2015-2019 in the 13 countries without observed data

World Health Organization (WHO) Mortality Database*

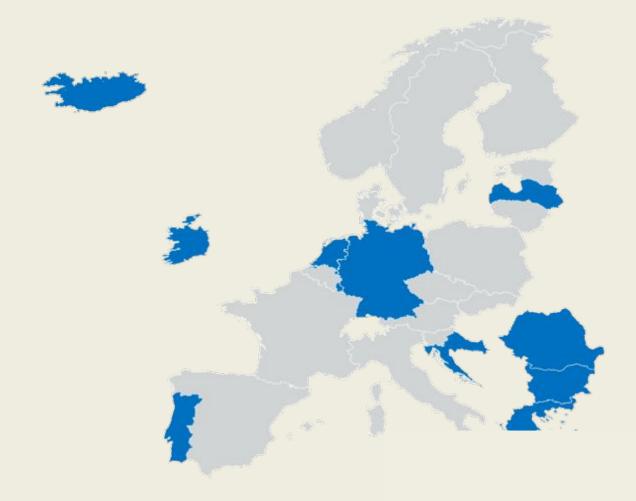
-cancer mortality,
overall and for the six
cancer type by age and
gender

ERAINHE data

Back calculation approach

Eurostat database*

-population distributionby educational level foreach gender-population by age andgender



https://platform.who.int/mortality/themes/theme-details/topics/indicator-groups/indicator-group-details/MDB/other-malignant-neoplasms

https://ec.europa.eu/eurostat/databrowser/view/demo pjangroup custom 11728949/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/edat lfs 9903 custom 10784414/default/table?lang=en

REPORT METODOLOGICO

A Methodological Report has been prepared and made available on the ECIR website to provide details about data and approaches used to produce estimates, sensitivity analyses performed to evaluate the robustness of the approaches and possible limitations.

The analyses were based on a core of observed harmonized data on cancer mortality for 16

members states (FRAINHE dataset).
The Methodological Report was informed by suggestions & comments of Member State representatives



https://cancer-inequalities.jrc.ec.europa.eu/countryspecific-factsheets#synthesis

STIME DI MORTALITA' PER TUMORE IN 2015-2019

Estimates of cancer mortality by educational level for 27 EU countries + Norway and Iceland were obtained for all cancers and for six cancer types (lung, colorectum, stomach, breast, cervical and prostate) and presented as age-standardized mortality rates (ASMR) for the age range 40-79 years.

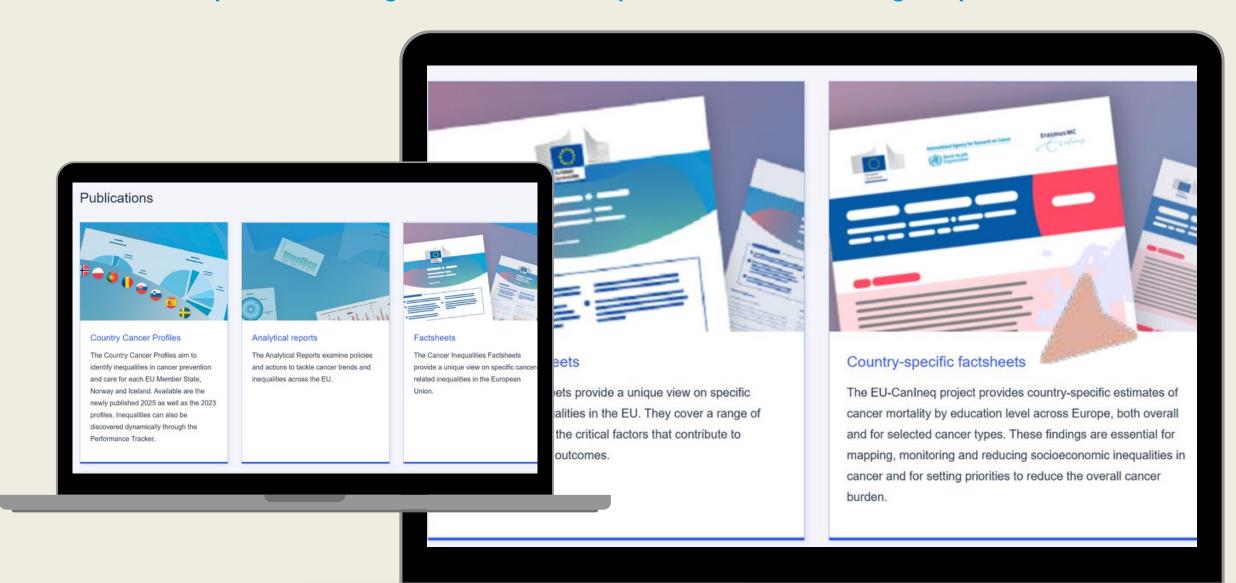


Country-specific factsheets were developed for 27 MS plus Iceland and Norway and delivered in February 2025:

- Based on estimates of cancer mortality rates produced using the approaches developed.
- Considering available data on the characteristics of the health system, cancer care, and distribution of risk factors in each country.
- Before being published, they were circulated among MS representatives and feedback received were integrated to better

Country-specific factsheets are available on the ECIR- European Cancer Inequalities Registry website:

https://cancer-inequalities.jrc.ec.europa.eu/country-specific-factsheets



Le schede-paese forniscono stime della mortalità per cancro e delle disuguaglianze per livello di istruzione (2015–2019), per sesso, **totale tumori e sei sedi specifiche**.

Offrono una **lettura critica** dei risultati alla luce del contesto nazionale (fattori di rischio, sistema sanitario, organizzazione delle cure).

Permettono di mappare le disuguaglianze tra Paesi e supportano lo sviluppo di politiche mirate.



International Agency for Research on C



Country Factsheet Series

ocio-economic inequalities in cancer mortality cross the EU27. Norway and Iceland Austria

y messages

In Austria, total cancer mortality rates in 2015-2019* were higher in men than in women and were lower than the European average for both sexes. Rates varied greatly across educational levels, according to a social gradient, i.e., with a progressive increase as educational levels decreased. The social gradient was observed for all cancer types among men, and was especially strong for lung cancer. Among women, a social gradient in mortality rates was found for lung and cervical cancer. Hence, despite the generally free access to cancer services, and the existence of a strategic goal to reduce cancer within the National Cancer Framework Programme, inequalities

ducational inequalities in total cancer mortality

Austria, mortality rates for total cancer** in 2015off were 3% per 100,000 among men and 26 to 200,000 among women and varied greatly according per so social gradient. Men with primary education had ancer mortality rates approximately 60% higher han men with terfary education (46.3 vs 29.0 populimately 20% higher cancer mortality rates approximately 20% higher cancer mortality rates compared to those with tertiary education (281 vs The difference in rates between primary and tertiary education (i.e., inequality gap) was lower than the European average*** but similar to that of certain Western/Southern countries, such as The Netherlands, and smaller compared to Eastern countries, such as Czechia, Slovakia and Hungary.

*In Autrin, betimples zern obsised untig the method for group A countries. See methodologisat rooms at the east and the Methodologisat report for more information.
**Id account contribute
**If a country of a collaboration robbing 27 Ear Member classe - Namesy and pretent

Among women, small differences in rates were observed across educational groups for colorectal cancer, but for stornach cancer rates were highest ameng those with primary education. Socio-economic and sex inequalities in exposure to rak factors, i.e., poor deep, physical inactivity, obesity, hazardous alcohol direkting, amoking and to Helicobacter pylon infection at young ages (for stornach cancer), which are more prevalent among those with lower educational attainment (2.4), may partly explain the observed inequalities in colorectal and stomach cancer. Moreover, differential participation rates to colorectal cancer screening, which are lower among men with lower educational attainment, might have also led to the observed inequalities in colorectal cancer mortality (in 2019, 2.14% of men grad 50–75 years with at most lower secondary education reported they rever had colorectal cancer screening with the with torisity education, However, in women, lower participation rates are found among high, compare to low, educated (2019, 24.8% ISCED 0–2, 17.9% ISCED 3–3.4, 19.5% ISSED 5–8), this possibly contributing to explain the simplest most son-response colorial cancer.

Breast cancer

Breast cancer showed the second highest mortality rate among women, after lung cancer, which was slightly lower compared to the corresponding furopean average. There was no clear social gradient, with relatively similar rates for women with different ducational levels. This pattern may be due to a balanced combination of different factors across educational groups, including exposure to breast cancer risk factors and screening activities. Participation rate in the organised breast cancer screening programme in 2020-2021 was around 40% in the eligible population of women aged 45-69 years [23].

Prostate cancer

Prostate cancer was a large contributor to total cancer mortality among men in Austria, although rates were lower than the furropean severage. There was a clear social gradient in mortality with rates decreasing as education level increased, possibly due to inequalities in stage at diagnosis, and disparities in access to treatment or treatment cotions (61).



Figure 2.b. Cancer-specific mortality by sex and education level: colorectum



Figure 2.c. Cancer-specific mortality by sex



Figure 2.d. Cancer-specific mortality by sex and



Figure 1. Total cancer mortality by sex and education level

tional inequalities in mortality by cancer site

mentally rates were approximately two in men compared to women in both in was a clear social gradient for lung granner is a large coentrolutor to in total cancer mortality. Sex and sociodifferences in lung cancer mortality in be partly explained by differences in single over past decedes, with a generally leince of smoking in lew educated (22%) high declared group (15%) (1) Despit single with primary and purpose 14-20%, these remain among the highest sogle with primary education in Austria to times more likely to smoke 20 or more day compared to their more educated day compared to their more educated



Figure 2.a. Cancer-specific mortality by sex education level: lung

verage rates for colorectal and stom sortality in Austria were below

although in men, rates were approximately two those in women. For both colorectal and stoma cancers, a clear social gradient was observed in me

tow rates, in companion to the and to other cancer types, and so other cancer types, and so other cancer types, and social gradient, g as educational attainment ferences across educational attainment ferences across educational be related to variations in the circumstancer screening and participation, reported incover among those with lower till no 2019, 55% of women with responsed to 87% of women with responsed to 87% of education levels (2). Human vaccination and HPV-based mented equitably, have the the disease burden and help

ological notes:

projections based on finear regression models: Method for group 8 countries, for countries with 1 recorded observations only incomplete data comb with trands from other databases. Method for group C countries, for countries with no observations for certain connecr sites integration of

in the same geographical area:

"Back-calculation" method, for countries without available data in the ERANHE dataset contrinsion or population a mortality data from different databases information on educational inequalities in cancer fro countries in the same geographical area.

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References:

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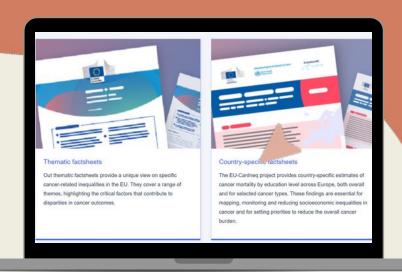
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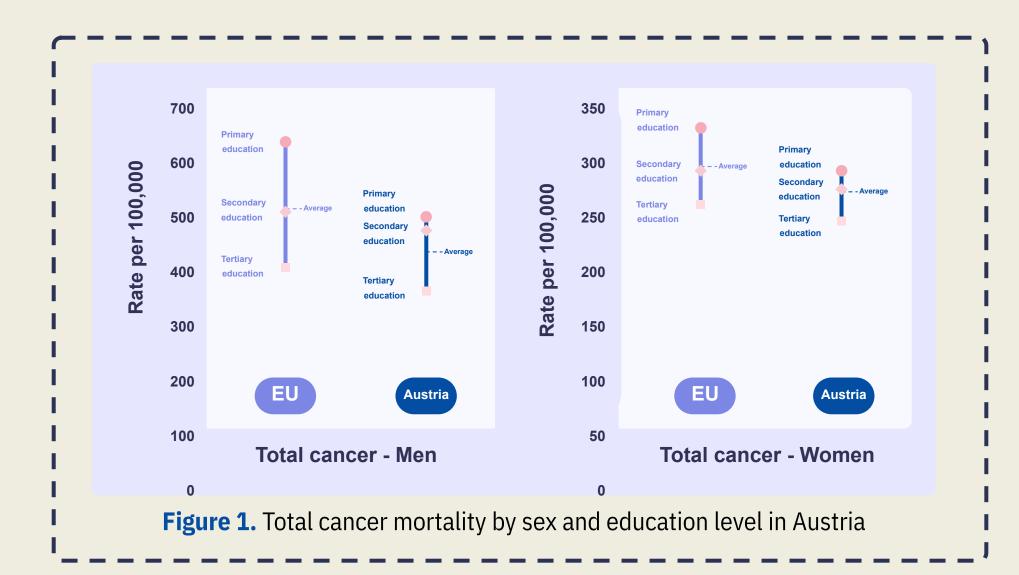
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Comparing national and European data

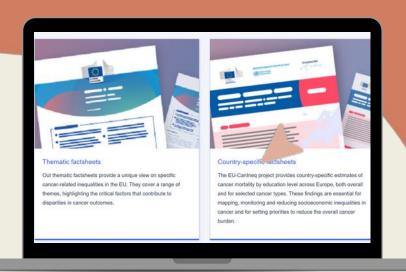




- Compare country-specific estimates
 on cancer mortality with the
 corresponding average European
 values.
- Comparison with other countries in the same geographical area.
- Understanding sex differences.

The European average is obtained as a simple average of data about the 29 countries included in the analysis

Assessing inequality gaps across cancer types



Assessment of **the inequality gap** (i.e., the difference between cancer rates among primary educated and cancer rates among tertiary educated).

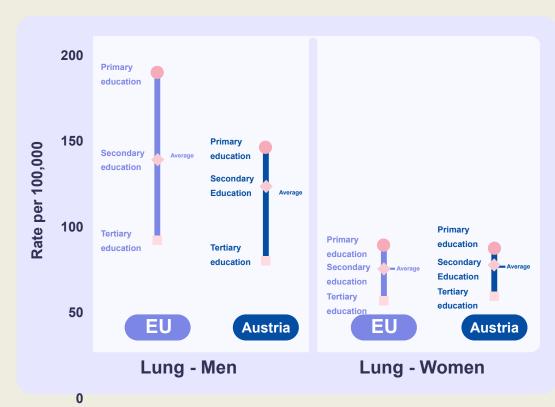


Figure 2.a. Cancer-specific mortality by sex and education level in Austria: lung

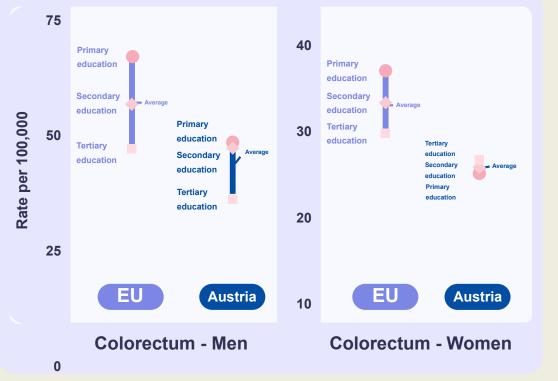


Figure 2.b. Cancer-specific mortality by sex and education level in Austria: colorectum

- Benchmarking with the European average.
- Understanding sexdifferences.
- Comparing different cancer types.

RISULTATI PRINCIPALI

- •In media, nell'UE i tassi di mortalità per cancro risultano disproporzionatamente elevati tra gli uomini con istruzione primaria, con 625 decessi per 100.000 rispetto ai 340 decessi per 100.000 tra gli uomini con istruzione terziaria.
- Tra le **donne con istruzione primaria**, i tassi di mortalità per cancro sono stimati in 337 decessi per 100.000, rispetto ai 244 per 100.000 tra quelle con istruzione terziaria.
- Nel complesso, le disuguaglianze educative nella mortalità per cancro risultano più marcate nei **Paesi baltici e dell'Europa orientale**.
- Tra le donne, elevati livelli di disuguaglianza socioeconomica per il cancro sono stati osservati anche nei Paesi del Nord Europa.

SPIEGAZIONI POSSIBILI PER LE DISUGUAGLIANZE

Observed socioeconomic inequalities in cancer mortality may derive from the accumulation of inequalities at any stage of the cancer continuum.

- For cancer types that have a socially and strong patterned risk factor and a relatively bad prognosis (i.e., lung, stomach), socioeconomic inequalities in the accumulation of risk be factors may more important.
- For some cancer types (i.e., prostate, cervical), inequalities in access to screening, early diagnosis, and treatment may be more relevant.
- For other cancer types (i.e., colorectal, breast), both inequalities in the accumulation of risk factors and in access to screening may play a role.

Risk Factors Screening Early Diagnosis Diagnosis Treatment Survival End of Life Care

L'IMPORTANZA DEL GRADIENTE SOCIALE

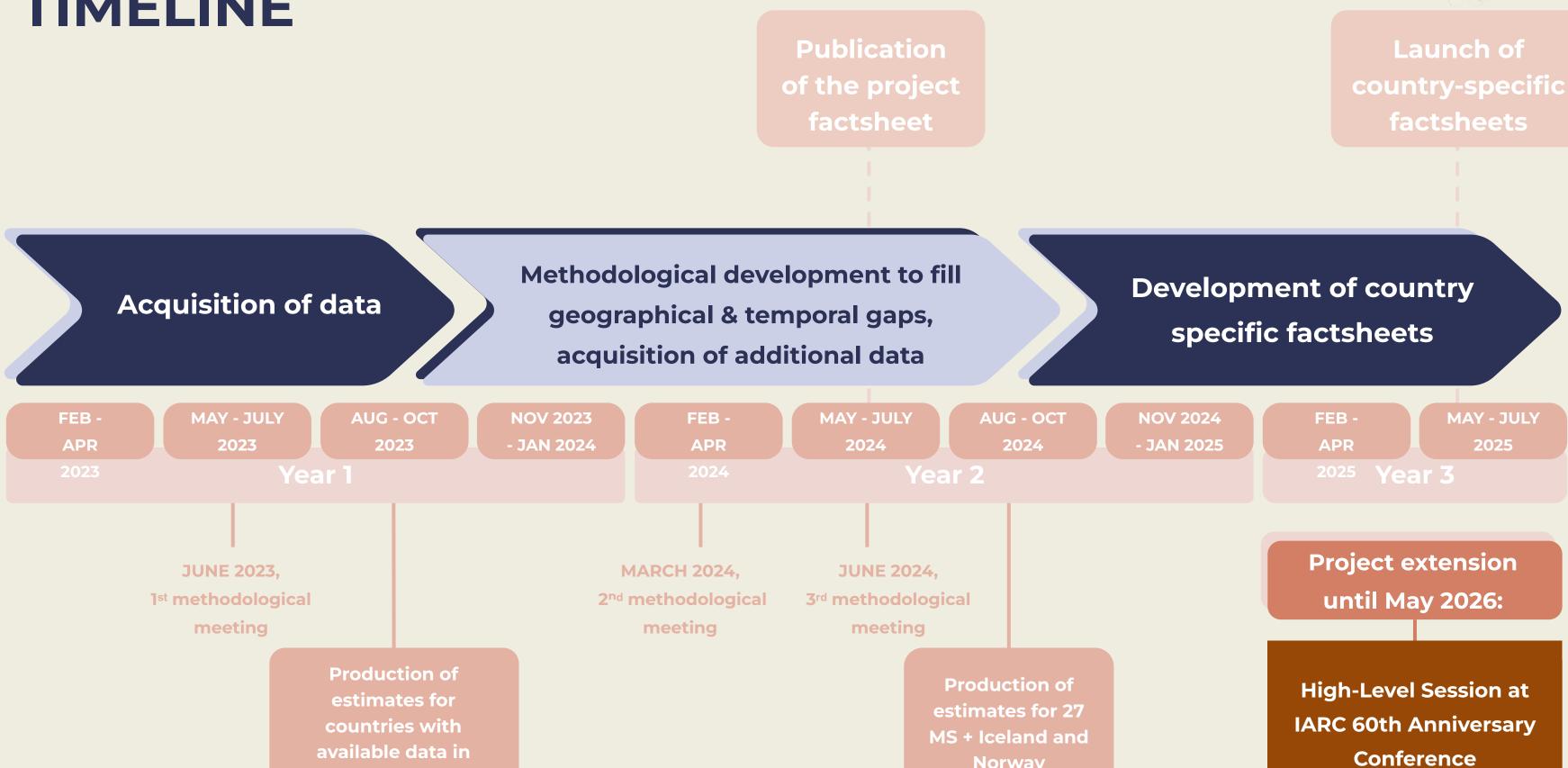
- There is a clear **socioeconomic gradient** in cancer mortality across countries and cancer types.
- This means that **cancer inequalities affect everyone**, not only disadvantaged groups.
- It implies that reducing cancer mortality requires tackling socioeconomic inequalities.
 - Reducing cancer mortality requires addressing socioeconomic inequalities as a core component of cancer control.

CONCLUSIONI

- L'impatto del cancro non è distribuito in modo equo. La **posizione** socioeconomica è chiave, sia tra che all'interno delle popolazioni.
- Le disuguaglianze socioeconomiche nel cancro sono ampie, ovunque e per tutti i tumori.
 - Le persone più svantaggiate pagano il prezzo più alto.
- Le strategie "one-size-fits-all" non riducono le disuguaglianze ma possono addirittura ampliarle.
- Per ridurre l'impatto del cancro è indispensabile affrontare queste disugnadianze

TIMELINE

ERAINHE



Norway

ce (

IARC 60th Anniversary International conference

Cancer research into action

19-21 Maggio 2026

• Send your abstract! Thematic focus

Discovery and innovation for cancer prevention Every breakthrough starts with a question.

Translating research into Public Health action Science only changes lives when it reaches the people it is meant to serve.

Science-policy interface for global change Progress happens when evidence drives action.

