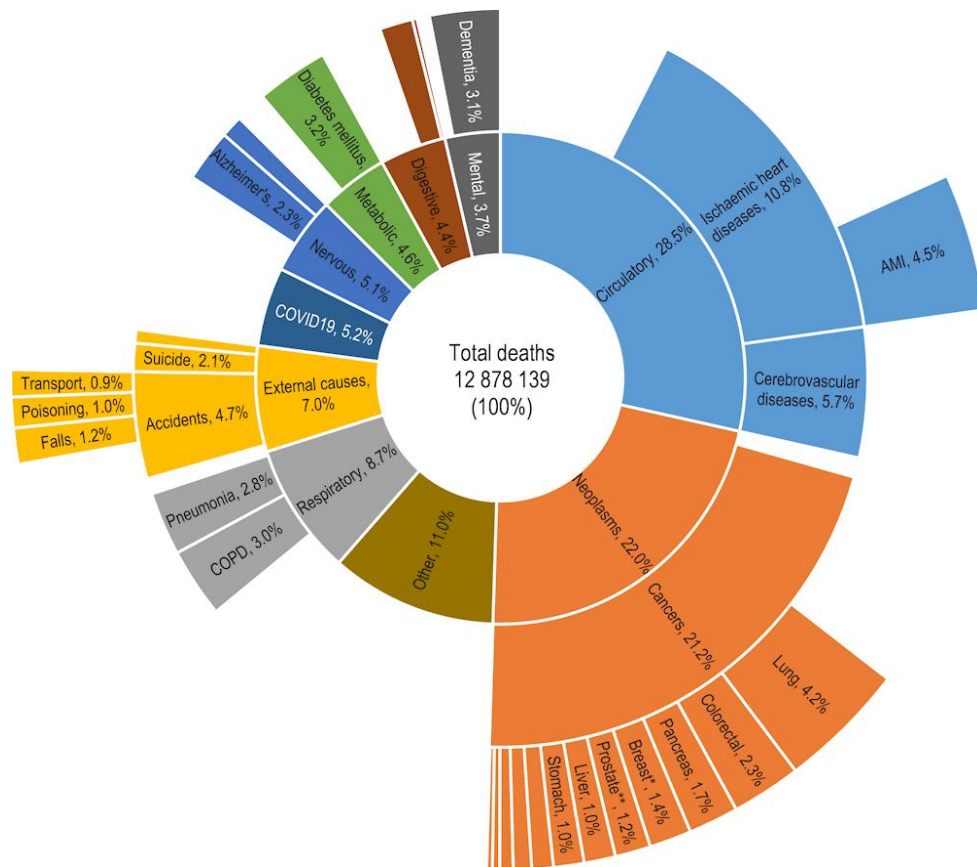


Temporal trends in epidemiology and patient characteristics of 36 cancers: a protocol for a multinational population-based cohort study using OMOP-standardised databases to investigate CANcer (OMOPCAN)

Irene López Sánchez, Anna Palomar-Cros, Agustina Giuliodori, Laura Granés, Laura Pérez-Crespo, Berta Raventós, Edward Burn , Anton Barchuk, Annelies Verbiest, Caroline Eteve-Pitsaer, Danielle Newby, Elin J Rowlands, Espen Enerly, Gargi Jadhav, Harlinde De Schutter, Jason C Hsu, Jelle Evers, Josip Vrancic , Laia Peruchet- Noray, Lillian Sung , Loretta Kiss, Maaïke Van Swieten, Mario Šekerija, Mees Mosseveld, Patricia L Mabry, Raivo Kolde, Samuel Patnoe, Seng Chan You, Subin Kim, Sulev Reisberg, Thi Kim Hien Nguyen, Toni Lehtonen, Tor Åge Myklebust , Zsolt Bagyura, Asieh Golozar, Elena Roel, Talita Duarte-Salles

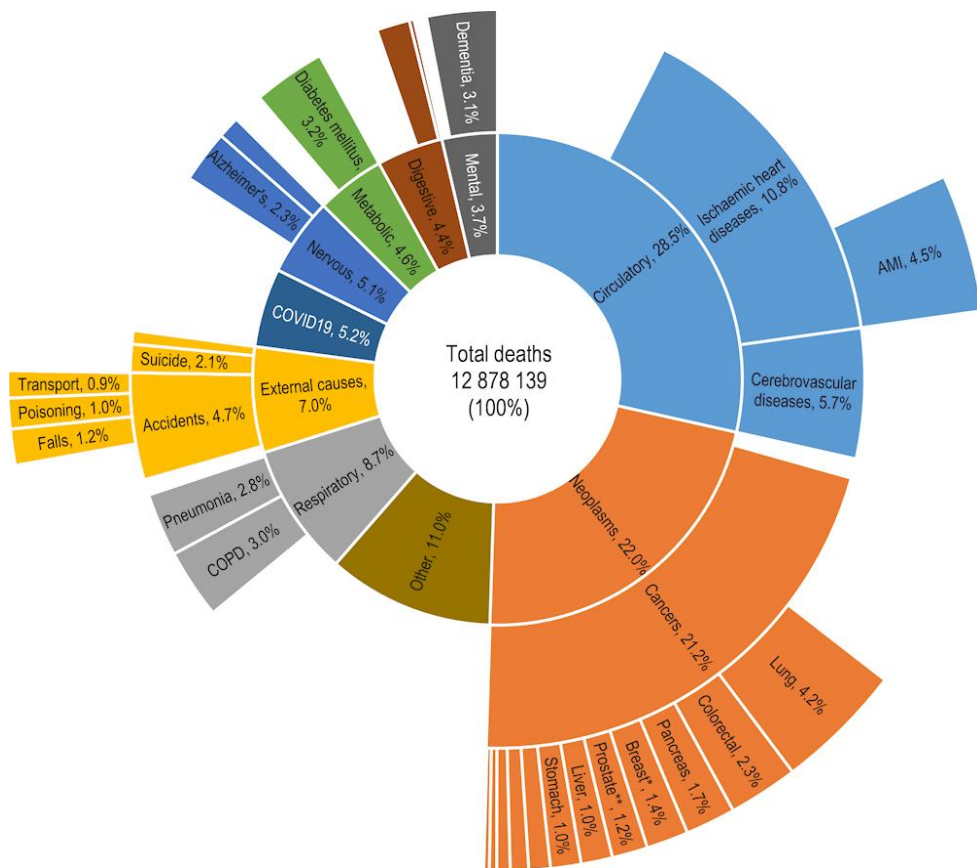
September 29th 2026

Introduction



Main causes of mortality across 37 OECD countries, 2023 (or nearest year).
Source: OECD Health Statistics 2025, based on the WHO Mortality Database.

Introduction



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International Agency for Research on Cancer



World Health Organization



CONCORD
Global surveillance
of cancer survival

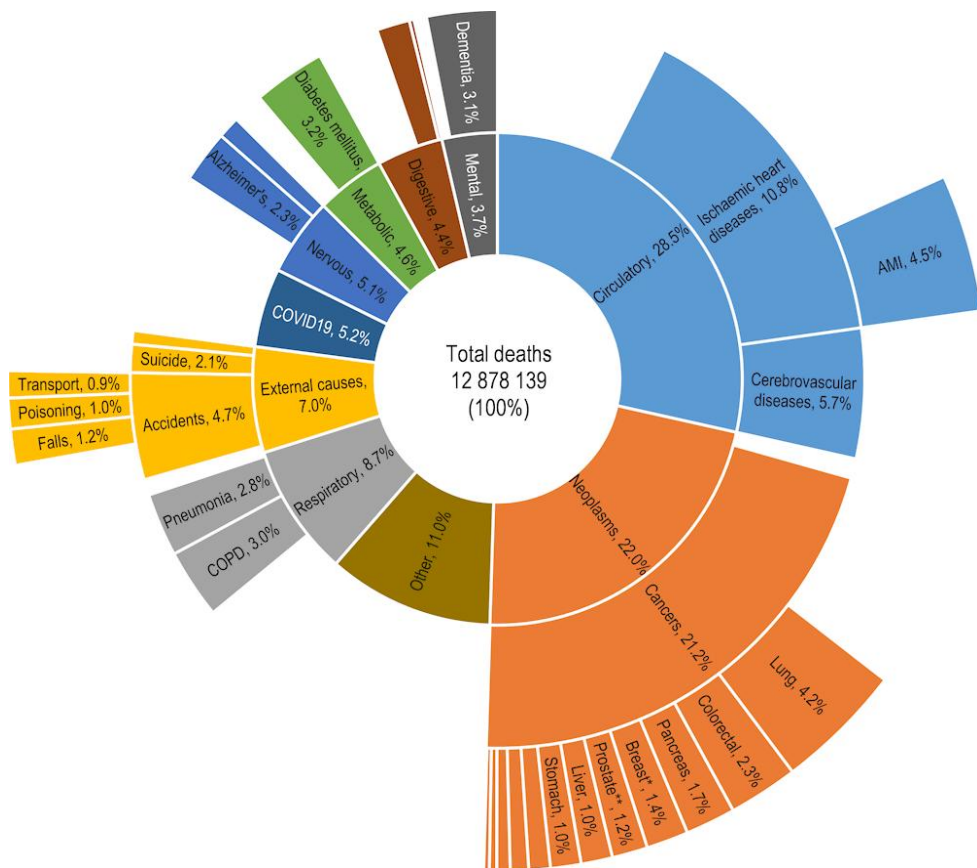


CancerWatch



European Network
of Cancer Registries

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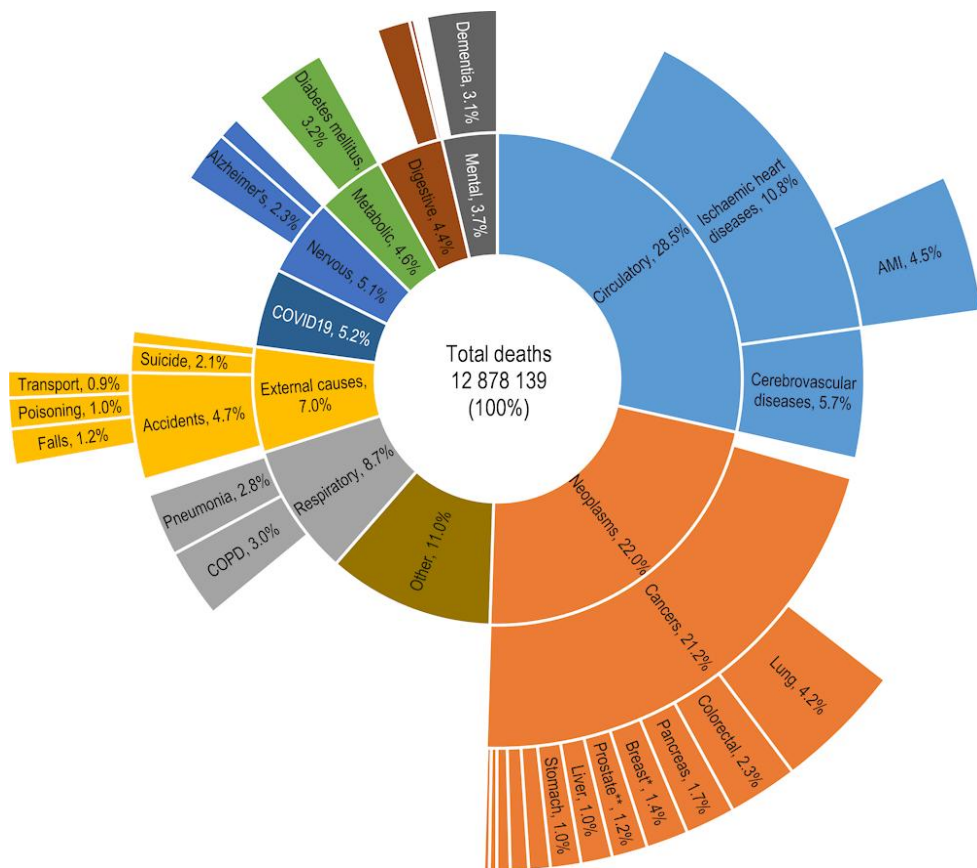


European Network
of Cancer Registries

Cancer registries

Patient demographics
Tumor characteristics
Stage of disease
Treatment
Outcomes

Introduction



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Cancer registries

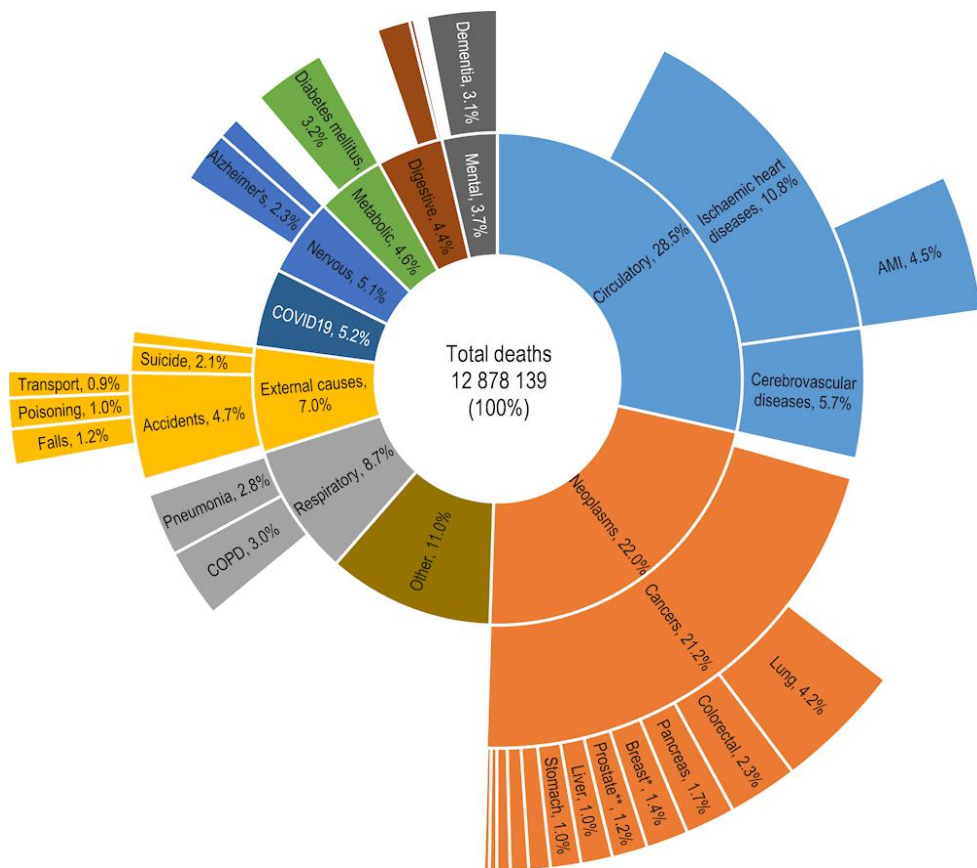
Patient demographics
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EHRs/Claims

Comorbidities
Medication use
Risk factors
Long-term outcomes

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+

OMOP Common Data Model

Objectives

The main aim is to **characterise patients** and **estimate time trends** in **incidence, prevalence and survival** of **36 cancers** (including solid and hematologic cancers) through a **multinational** network cohort study.

1) Describe **demographic, clinical characteristics and medication use** before and after diagnosis



Age: 10-year age bands and 0-19, 20-49, >50 years old

Sex: Female/Male

Smoking status

Menopausal status

Comorbidities

Medication use

+

Large Scale Characterisation (*drug_exposure* and *condition_occurrence* OMOP tables)

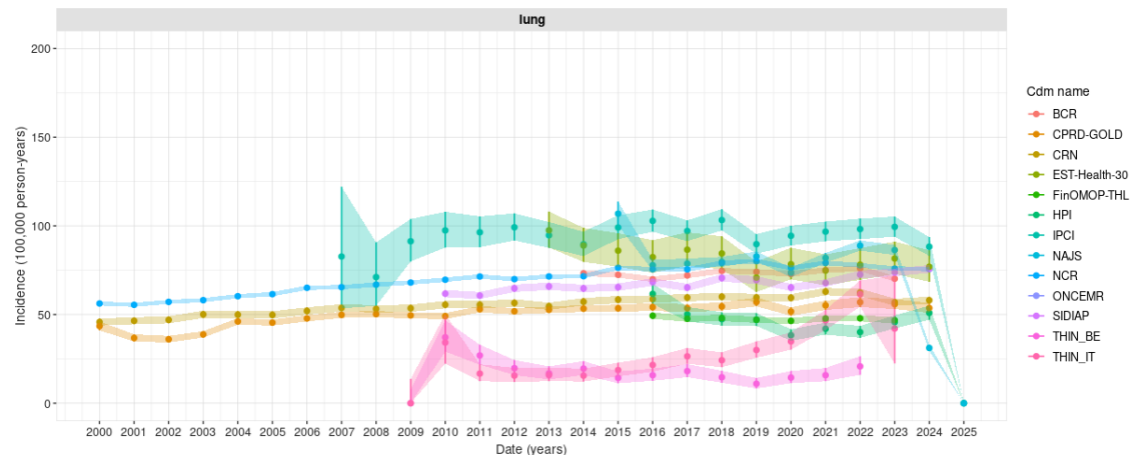
When available! (X cancer registries)



Objectives

The main aim is to **characterise patients** and **estimate time trends** in **incidence, prevalence and survival** of **36 cancers** (including solid and hematologic cancers) through a **multinational** network cohort study.

- 1) Describe **demographic, clinical characteristics and medication use** before and after diagnosis
- 2) Estimate crude and age-standardised **incidence rates**
- 3) Estimate 5-year partial **prevalence**

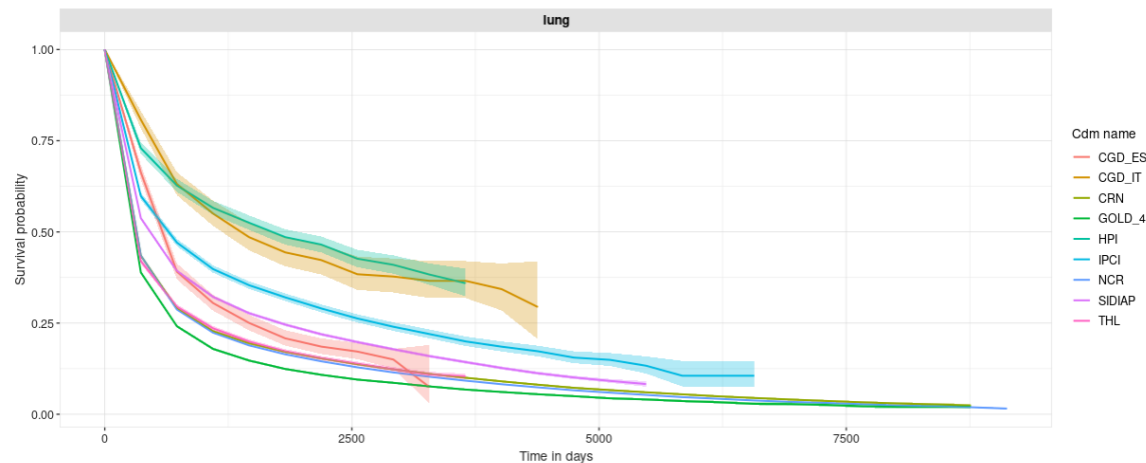


*This analysis will not be performed for secondary care databases

Objectives

The main aim is to **characterise patients** and **estimate time trends** in **incidence, prevalence and survival** of **36 cancers** (including solid and hematologic cancers) through a multinational network cohort study.

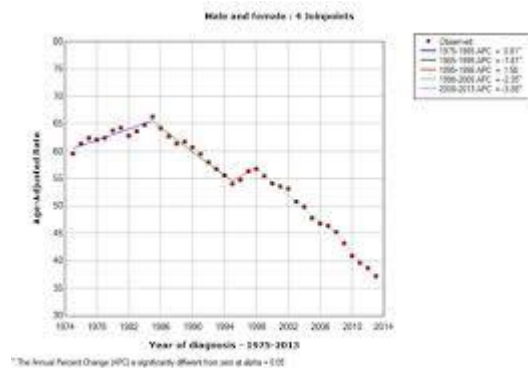
- 1) Describe **demographic, clinical characteristics and medication use** before and after diagnosis
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- 4) Estimate age-standardised overall and yearly 1-, 5- and 10- year **survival rates**



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- 5) Analyse **time trends** in incidence and survival



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- 5) Analyse **time trends** in incidence and survival

* All results will be reported by database, calendar year, age, sex and relevant comorbidities for cancer sites (incidence and survival)

Through a federated approach, this project will serve as a **proof of concept** for using real-world databases mapped to the OMOP CDM to monitor cancer epidemiology over time and characterise patients' clinical history and outcomes.

Cancer Definitions

Lip, oral cavity and pharynx



- Lip, oral cavity
- Salivary glands
- Oropharynx
- Nasopharynx
- Hypopharynx

Digestive organs



- Oesophagus
- Colorectal (Colon, Rectum, Anus)
- Liver
- Pancreas
- Gallbladder

Female organs



- Breast
- Vulva
- Vagina
- Cervix uteri
- Corpus uteri
- Ovary



Other cancers



- Brain
- Thyroid
- Kaposi sarcoma

Lymphoid haematopoietic and related tissue



- Hodgkin lymphoma
- Non-Hodgkin lymphoma
- Multiple myeloma
- Leukaemia

Respiratory system and intrathoracic organs



- Larynx
- Lung
- Mesothelioma

Male organs



- Penis
- Prostate
- Testis

Skin

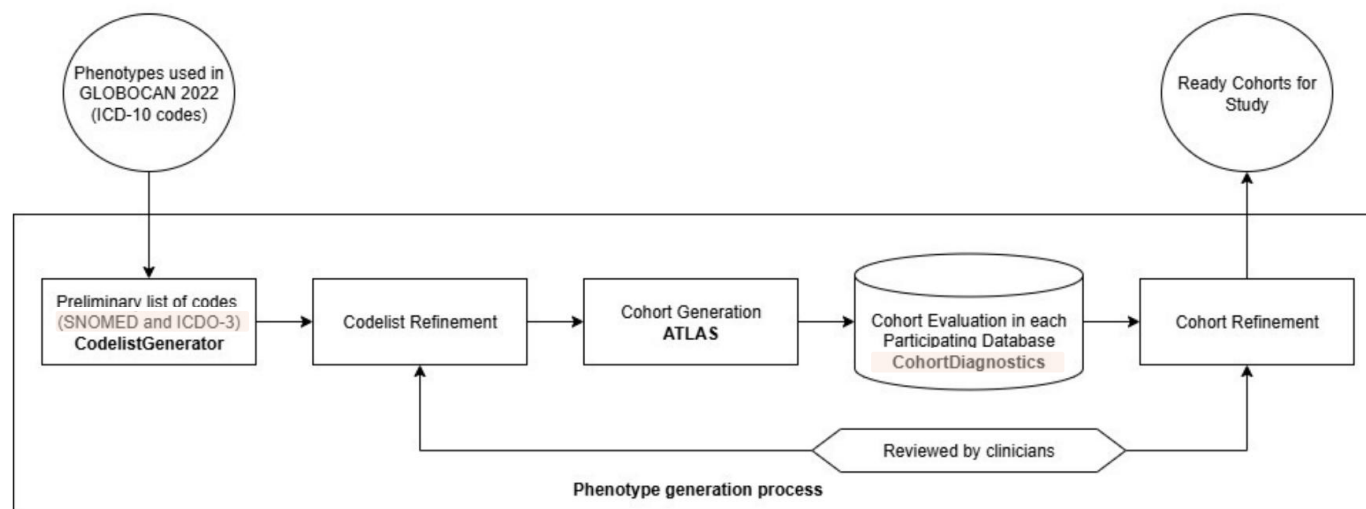


- Melanoma of skin
- Non-melanoma of skin cancer

Urinary tract



- Kidney
- Bladder



Study period

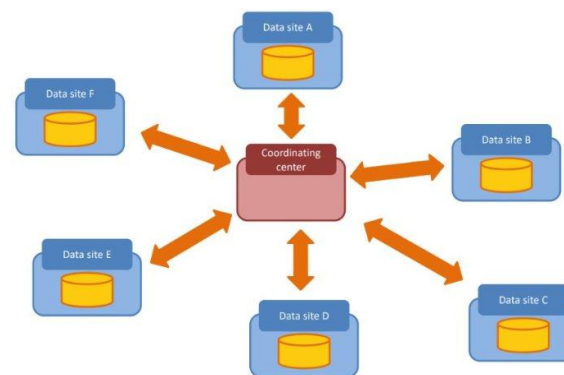
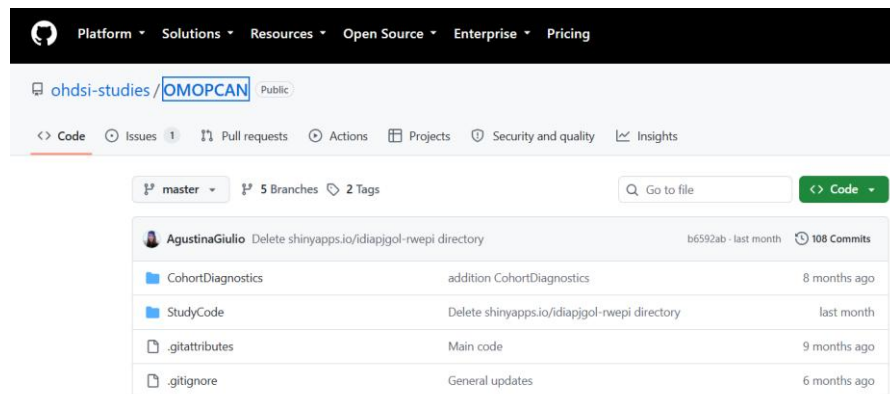
It will start on **1st of January of 2000** or earliest date of available data in each of the databases, and span up to the **31st December 2024** or last date of available data in each database.

Study population

Individuals registered in each database, with **one year of prior history** observed in the database (except cancer registries and hospitals).

Participants with **prior history of a diagnosis of cancer** (any, excluding non-melanoma skin cancer) will be excluded for **survival estimation**.

Analytical code



Participant databases as of September 2026

Databases, Country	Type of data	Run 1 st version of analytical code	Databases, Country	Type of data	Run 1 st version of analytical code
CPRD GOLD , UK	EHR	✓	HUS , Finland	EHR	✓
IPCI , The Netherlands	EHR	✓	OncEMR , US	Claims	✓
SIDIAP , Spain	EHR	✓	HealthPartners , US	Claims	✓
THIN Belgium	EHR	✓	CRN , Norway	Registry	✓
THIN Spain	EHR	✓	GCR , Switzerland	Registry	
THIN Italy	EHR	✓	NCR , The Netherlands	Registry	✓
THIN Romania	EHR	✓	BCR , Belgium	Registry	✓
YUHS , South Korea	EHR		EH30 , Estonia	Integrated EHR & Registry	✓
TUMCRD , Taiwan	EHR	✓	THL , Finland	Integrated EHR & Registry	✓
SickKids , Canada	EHR	✓	NAJS , Croatia	Integrated EHR & Registry	✓
SUCD , Hungary	EHR	✓			

Next steps

- 1) Currently reviewing the results from the first run
- 2) Run **2nd version** of the code (+ age standardisation, medication use cancer registries, etc.)
Oct '26
- 3) Review results
- 4) Write manuscripts (lead by datapartners)
 - Temporal trends in early-onset cancer incidence
 - Survival trends ovarian cancer (NCR)
 - More to be discussed...

Interactive dashboards per cancer group

The screenshot shows a web-based interactive dashboard titled "Interactive shiny for OHDSI Network cancer study". It features a navigation bar with tabs: Summary, Cohort counts, Characteristics & LSC, Incidence, Prevalence, and Survival. The main content area displays the title "Temporal trends in epidemiology and patient characteristics of 36 cancers: A multinational population-based cohort study using OMOP databases to investigate CANCER (OMOPCAN)". Below the title, there are sections for Objectives, Data partners, Design, Setting, Outcomes, and Data analyses, each providing detailed information about the study's goals, data sources, methodology, and planned analyses.

Interactive shiny for OHDSI Network cancer study

Temporal trends in epidemiology and patient characteristics of 36 cancers: A multinational population-based cohort study using OMOP databases to investigate CANCER (OMOPCAN)

Objectives: Cancer registries remain the gold standard for global cancer monitoring, yet complementing them with electronic health records and claims can significantly enhance the understanding of the cancer burden by providing a more complete picture of the patient journey. The main aim of this project is to serve as a proof-of-concept for using real-world data mapped to the Observational Medical Outcomes Partnership (OMOP) common data model (CDM) to monitor cancer epidemiology over time and characterise patients' clinical history and outcomes.

Data partners: SIDIAP, CPRD GOLD, IPCI, THIN Spain, THIN Belgium, THIN Italy, THIN Romania, NCR, CRN, GCR, HealthPartners, EST-Health-30, YUHS, TMU, SUCD, NAJS, OncEMR, SickKids, THL, CRB.

Design: This study will be conducted as a multinational observational cohort study through a network of real-world data sources mapped to the OMOP CDM.

Setting: Electronic health records (EHR) from primary and secondary care, health insurance claims and cancer registry data will participate.

Outcomes: Annual incidence rates, 5-year partial prevalence and one-, five- and ten-year survival rates.

Data analyses: We will estimate crude and age-standardised incidence rates (IR) and five-year partial prevalence of cancer. We will estimate annual and overall IR by dividing incident cancer cases by person-years at risk. For each specific cancer type, individuals will contribute to the denominator until cancer diagnosis, death, or end of the study period. We will estimate annual five-year partial prevalence (also referred to as limited-duration prevalence), defined as the number of individuals alive on December 31st of each year who were diagnosed with a specific cancer within the previous 1825 days. One-, five-, and ten-year crude and age-standardised survival rates will be calculated as the probability of being alive one, five, or ten years after diagnosis, respectively, per year, overall and stratified by pre-defined subgroups. We will use jointpoint modelling to examine the overall time trends in cancer incidence and survival. Finally, we will summarise the demographic characteristics and overall follow-up at time of diagnosis, with counts and percentages for categorical variables and median and interquartile ranges (IQR) for continuous variables.

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Thank you!