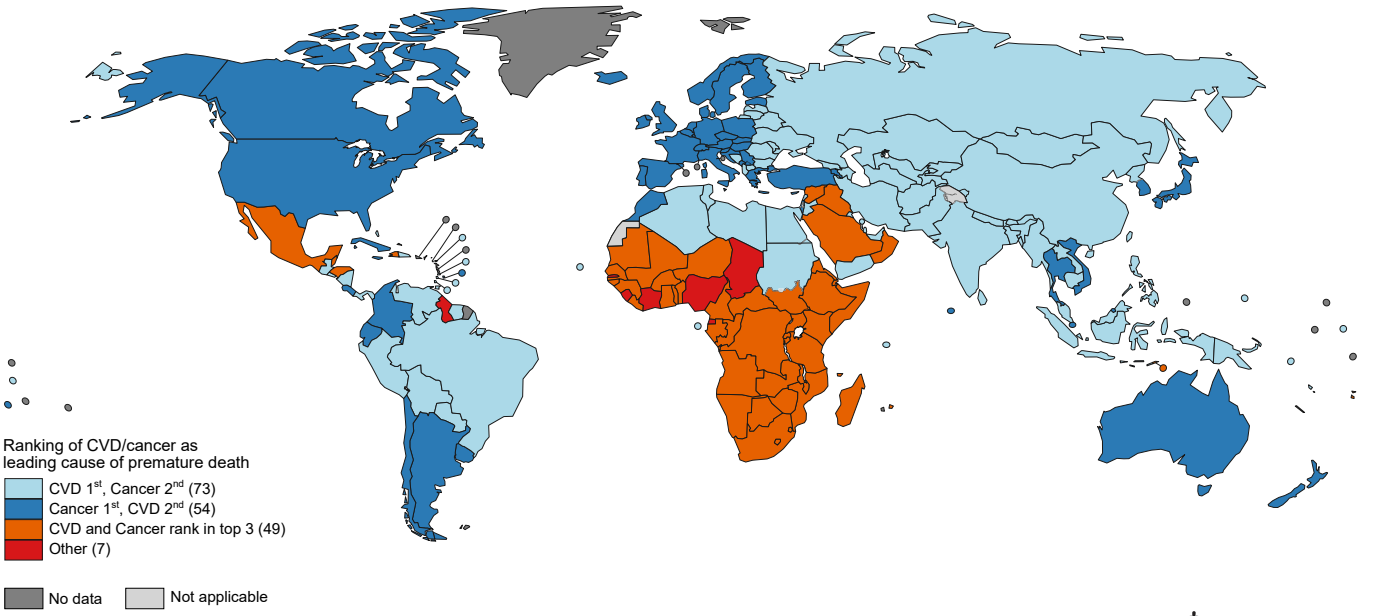
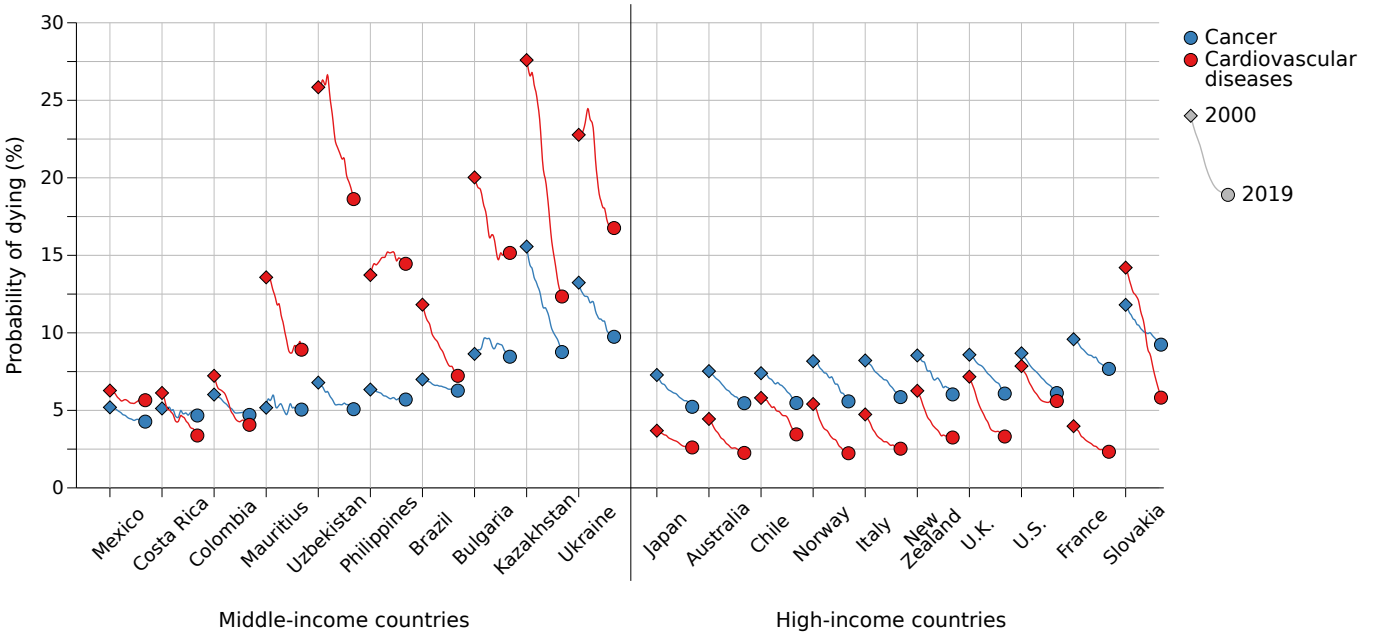


The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data source: GHE 2016
Map production: CSU
World Health Organization

World Health Organization



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With long-standing expertise in cancer registration and descriptive epidemiology, the Section of Cancer Surveillance (CSU) serves as a reference to the global cancer community in the provision of national cancer indicators, developed through a collaborative research programme. The research activities are complemented by support and advocacy for local data collection, and a key aim of CSU is the provision of measurable improvements in the coverage, quality, and networking capacity of population-based cancer registries (PBCRs) in low- and middle-income countries (LMICs). The core priorities of CSU are:

- to consolidate the role of IARC as a definitive source of data and statistics describing the global cancer burden in children, adolescents, and adults;
- to ensure that locally recorded high-quality cancer data are available to governments in LMICs, to inform priorities for national cancer control;
- to describe and interpret the changing magnitude and the transitional nature of cancer profiles around the world; and
- to advocate the health, social, and economic benefits of cancer prevention, through a systematic quantification of the future impact of effective interventions.

With the start of the new IARC Medium-Term Strategy 2021–2025 and the new organizational structure as of 1 January 2021, CSU was renamed as the Cancer Surveillance Branch. A brief summary of CSU activities during the 2020–2021 biennium is provided here.

Cancer registry support and collaboration

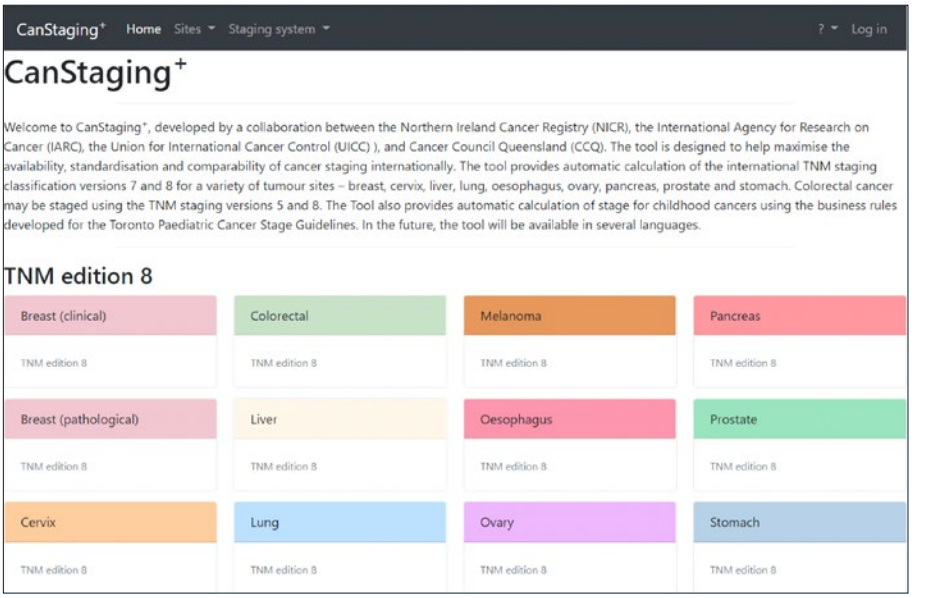
CSU provides the Secretariat for the International Association of Cancer Registries (IACR; http://www.iacr.com.fr), the professional society dedicated to fostering the aims of PBCRs worldwide through meetings, advocacy, and developing registry standards and tools. An IACR survey revealed the operational impact of the COVID-19 pandemic on PBCRs in the early months of the crisis; two thirds of the respondents reported disruptions. With international travel on hold, the 42nd IACR Annual Scientific Conference was held virtually over 3 days in October 2021; this free event was attended by more than 400 members worldwide. A major focus was facilitating the recording of comparable cancer staging data internationally.

The Global Initiative for Cancer Registry Development (GICR; https://gicr.iarc.fr/) brings together agencies committed to working collaboratively to improve surveillance worldwide. A virtual IARC–GICR course on tumour–node–metastasis (TNM) staging and the Essential TNM was held for participants from 11 Eastern Mediterranean countries in November 2020. The CanStaging⁺ tool was launched by IARC in August 2021 (Figure 1) (Ervik et al., 2021) as part of the International Cancer Benchmarking Partnership (ICBP SURVMARK-2), and a Perspective was published in *The Lancet Oncology* (Soerjomataram et al., 2021b). Several ICBP SURVMARK-2 studies sought to better understand variations in staging, histology, and registry practices in the context of international survival comparisons (Cabasag et al., 2020a, 2021; Myklebust et al., 2020; Andersson et al., 2021a; Araghi et al., 2021a; Morgan et al., 2021a). CSU participated in the IARC/WHO Committee for the International Classification of Diseases for Oncology (ICD-O), tasked with updating the ICD-O-3 morphology included in revised editions of the *WHO Classification of Tumours* (also known as the WHO Blue Books), and disseminating the resulting changes to the registry community. Finally, the call for data for Volume XII of the joint IACR–IARC publication *Cancer Incidence in Five Continents* (covering diagnoses made during 2013–2017) was launched in July 2021, combined with the SURVCAN-4 call for selected registries.

The GICR*Net* continued to expand its network of IARC–GICR Regional Trainers. To compensate for the limited opportunities to meet in person during the biennium, 14 e-learning modules were developed together with Vital Strategies and the African Cancer Registry Network (AFCRN), supported by Bloomberg Philanthropies. In July 2021, the second IARC–GICR Summer School was held virtually in collaboration with the National Cancer Center of the Republic of Korea. The introduction of GICR Partner Countries provided greater focus on registries, and there are strong prospects for further improvement. In addition, regional support was increased through the integration of IARC–GICR Collaborating Centres to complement the work of the Regional Hubs.

From June 2020, IARC entered into a bilateral agreement with St. Jude Children's Research Hospital (USA) to implement the Targeting Childhood Cancer through the GICR (ChildGICR) project, an

Figure 1. Screenshot of the CanStaging⁺ tool (https://canstaging.org/). © IARC.



extension of the GICR programme to build national childhood cancer surveillance capacity in LMICs via implementation, education, and research. Networking workshops involving local stakeholders were held virtually in four target countries: Georgia, Mexico, South Africa, and Viet Nam. An educational highlight was the online ChildGICR Masterclass that started in April 2021. Over 12 weeks, 22 GICR*Net* participants worked together with global leaders to jointly co-develop educational materials on the principles of childhood cancer registration (Figure 2); the participants continue to actively network to build regional capacity.

In collaboration with WHO regional offices, CSU developed several position papers discussing surveillance data to inform policies in Latin America (Piñeros et al., 2021a) and the Eastern Mediterranean (Znaor et al., 2021a). CSU also developed roadmaps for the surveillance of cervical cancer (Figure 3) (Piñeros et al., 2021b) and childhood cancer (Piñeros et al., 2021c), to complement the scale-up of the respective WHO signature initiatives. Collaborative studies examining the status of registration in China (Wei et al., 2020) and the Russian Federation (Barchuk et al., 2021a) were published. CSU also participated in the *Lancet Oncology* Commission on sustainable care for children with cancer (Atun et al., 2020).

The Global Cancer Observatory: linking research to action

CSU disseminates global cancer statistics through the Global Cancer Observatory (https://gco.iarc.fr/), an interactive web-based platform comprising multiple subsites. The Cancer Today subsite was updated with the GLOBOCAN estimates of national incidence, mortality, and prevalence in 185 countries for 2020. Studies reviewing data sources and methods and regional variations in cancer profiles worldwide (Sung et al., 2021) were published, the latter in *CA: A Cancer Journal for Clinicians*, which retains the highest impact factor of all journals ranked by the International Scientific Indexing (ISI) server.

The Cancer Tomorrow subsite provides tools to predict future cancer incidence and mortality up to 2040, and it was updated to incorporate user-defined trends-based projections of the future burden. The Cancer Causes subsite provides estimates of population attributable fractions (PAFs) for major risk factors, to assist national decision-makers in setting priorities for cancer prevention; alcohol consumption was added in 2021, based on a recent collaborative publication (Rumgay et al., 2021). In collaboration with WHO regional offices, updates of the alcohol-related burden were disseminated in various media formats (Figure 4). The Cancer Survival subsite has been continuously updated over the biennium to incorporate recent site-specific results from numerous studies published as part of ICBP SURVMARK-2 (Cabasag et al., 2020a, 2021; Araghi et al., 2021a; Rutherford et al., 2021).

In collaboration with the Association of the Nordic Cancer Registries (ANCR), a complete revamp of the NORDCAN website was undertaken; NORDCAN 2.0 (https://nordcan.iarc.fr/) enables dynamic comparisons of cancer statistics for the Nordic countries, supported by the Nordic Cancer Union (NCU). Harnessing some of the same technology, the Cancer Over Time subsite was launched in November 2021 to enable joint analyses of cancer incidence and mortality trends in about 60 countries around the world.

Descriptive studies: a focus on impact, to aid decision-making

CSU expanded its research programme to ask questions that support the commitments of countries to tackle

Figure 2. Trainers participating in the online ChildGICR Masterclass, in April 2021. Over a period of 12 weeks, working groups developed the necessary teaching materials to cover seven key topics in childhood cancer registration. © IARC.

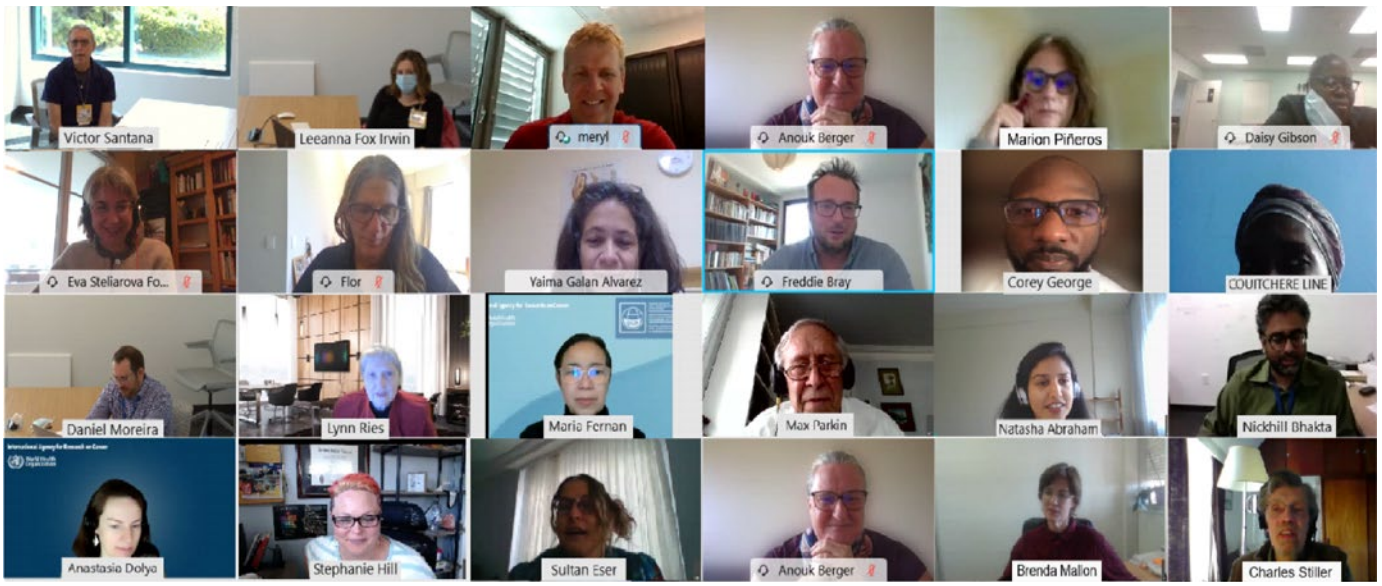
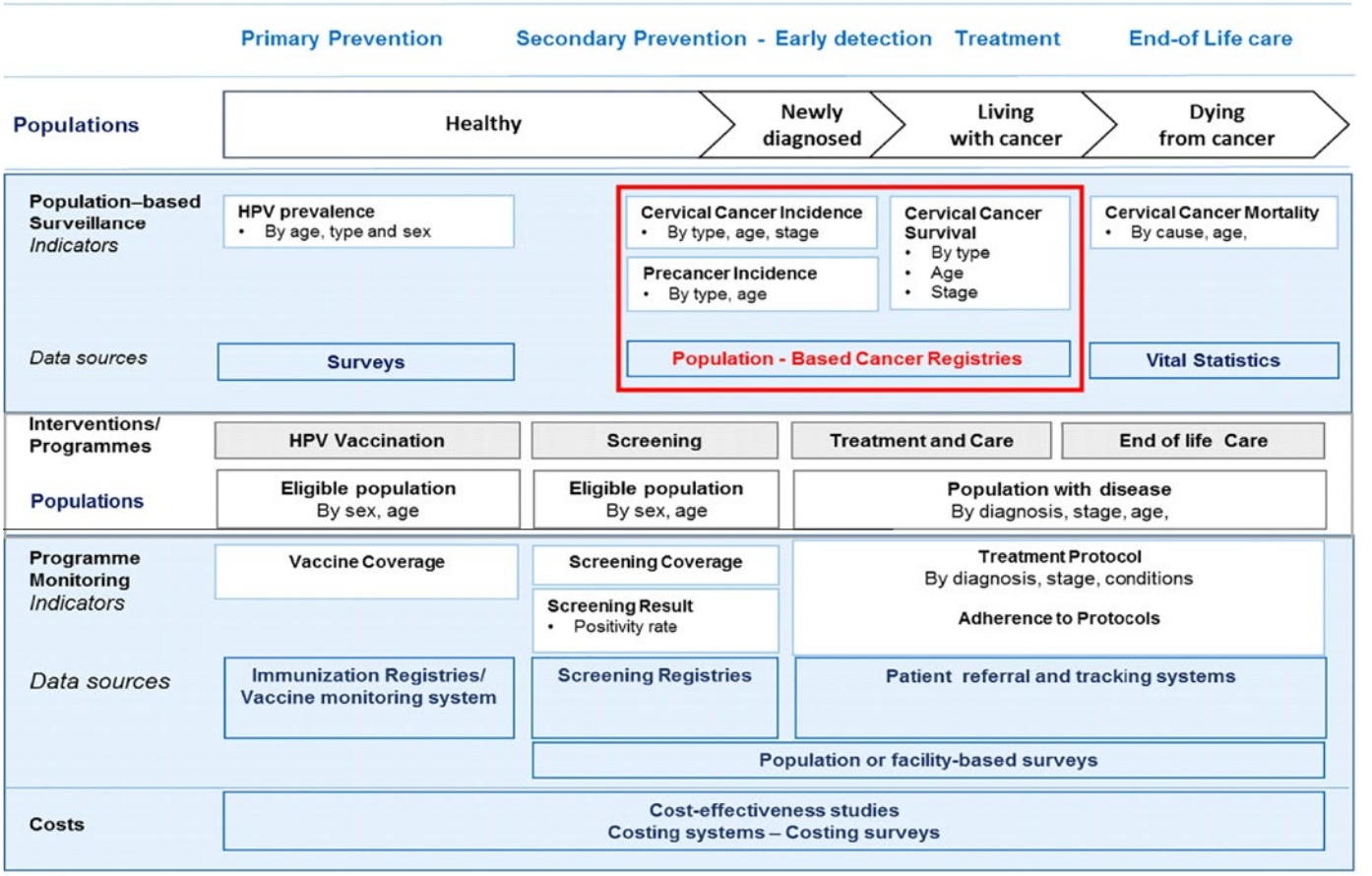


Figure 3. A framework for the surveillance and monitoring of a scaled-up cervical cancer control programme, including the central role of population-based cancer registries. Reproduced with permission from Piñeros et al. (2021b). © 2020 The Authors. Published by Elsevier Inc.



the rising cancer burden. A focus was the measurement of the impact of the COVID-19 pandemic on the health of nations and on the outcomes of current and future patients with cancer. CSU participated in the COVID-19 and Cancer Global Taskforce and in spring 2021 became a founding partner of the COVID-19 and Cancer Global Modelling Consortium (https://ccgmc.org/), with a remit to co-develop tools and provide evidence to aid decision-making during and after the pandemic (Figure 5).

CSU continued to highlight cancer transitions worldwide. Cancer is expected to surpass cardiovascular disease as the leading cause of premature death in most countries during this century (Bray et al., 2021a). Furthermore, a recent study compared trends in premature death from cardiovascular disease and cancer during 2000–2019 in 20 diverse countries to examine whether the countries will meet Target 3.4 of the United Nations Sustainable Development Goals: a reduction by one third in premature deaths from noncommunicable diseases by 2030. National progress was highly variable and tended to be more apparent in high-income countries compared with middle-income countries, and for the control of cardiovascular disease compared with cancer (Bray et al., 2021b).

With IARC's unique focus on cancer prevention, several studies have highlighted the long-term beneficial impact of preventive interventions. As well as predicting the future burden up to 2070, CSU recently quantified the long-term impact on global cancer incidence of a reduction in the prevalence of tobacco smoking, overweight and obesity, and human papillomavirus (HPV) infection in different settings (Soerjomataram and Bray, 2021). Recent estimates of the impact of tobacco use and alcohol consumption on the cancer burden sought to advocate the prioritization of their control; CSU has shown that optimal implementation of evidence-based tobacco control policies could prevent 1.65 million new cases of lung cancer in Europe by 2037 (Gredner et al., 2021). CSU also estimated that almost 750 000 (~ 4%) of the new cases of cancer worldwide in 2020 could be attributed to alcohol consumption (Figure 4) (Rumgay et al., 2021a); this figure could be reduced by various control strategies, including increasing alcohol taxation.

CSU continued to develop in-depth collaborative assessments of the descriptive epidemiology of specific cancer types, including cancers of the oral cavity (Miranda-Filho and Bray, 2020) and gastrointestinal tract (Arnold et al., 2020a, 2020b; Rumgay et al., 2021b; Rutherford et al., 2021), and sex-specific cancers (Bray et al., 2020a; Znaor et al., 2020a). CSU also published the results of several studies examining the current

and future burden of cervical cancer in relation to scaling up the WHO global initiative to eliminate cervical cancer as a public health problem (Arbyn et al., 2020a; Brisson et al., 2020; Canfell et al., 2020; Pilleron et al., 2020; Bonjour et al., 2021; Ryzhov et al., 2021; Stelzle et al., 2021; Znaor et al., 2021b), as well as the impact of overdiagnosis on thyroid cancer incidence and mortality (Li et al., 2020a, 2020b, 2021a; Miranda-Filho et al., 2021a; Vaccarella and Dal Maso, 2021; Vaccarella et al., 2021a). Specific in-country studies examined the current and future patterns of cancer in the Islamic Republic of Iran (Roshandel et al., 2020, 2021), Thailand (Sangrajrang et al., 2020), Ukraine (Ryzhov et al., 2020), and Uruguay (Musetti et al., 2021).

In line with the emerging priority areas as set out in the IARC Medium-Term Strategy 2021–2025, CSU developed two teams in 2021 that aim to develop and expand cancer research activities that focus on social inequalities (Lortet-Tieulent et al., 2020) and on descriptive economics.

Figure 4. Infographic on alcohol and cancer produced as part of the release of the publication on the global cancer burden attributable to alcohol. © IARC.

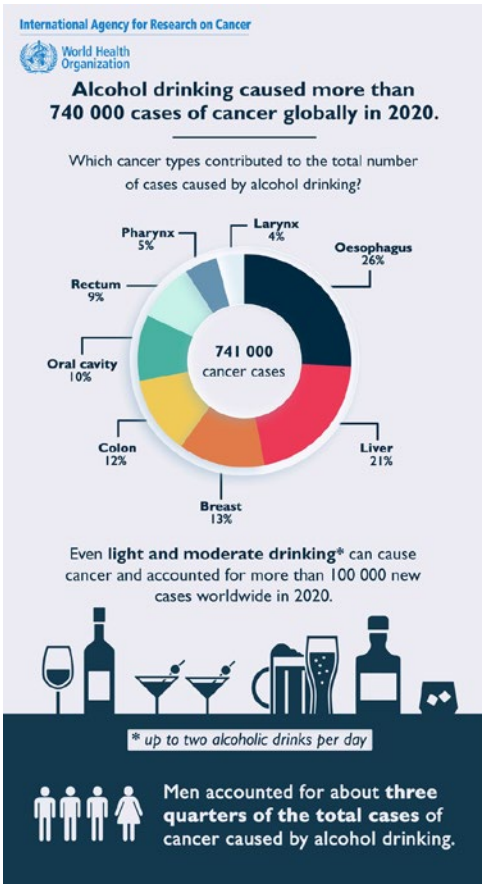


Figure 5. The COVID-19 and Cancer Global Modelling Consortium. This infographic was designed by CSU. For more information about the consortium, please visit https://ccgmc.org/.