

The burden of cancer and its economic repercussions in Romania



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Despite significant medical progress in this field, cancer is still a major public health and economic issue in our society.

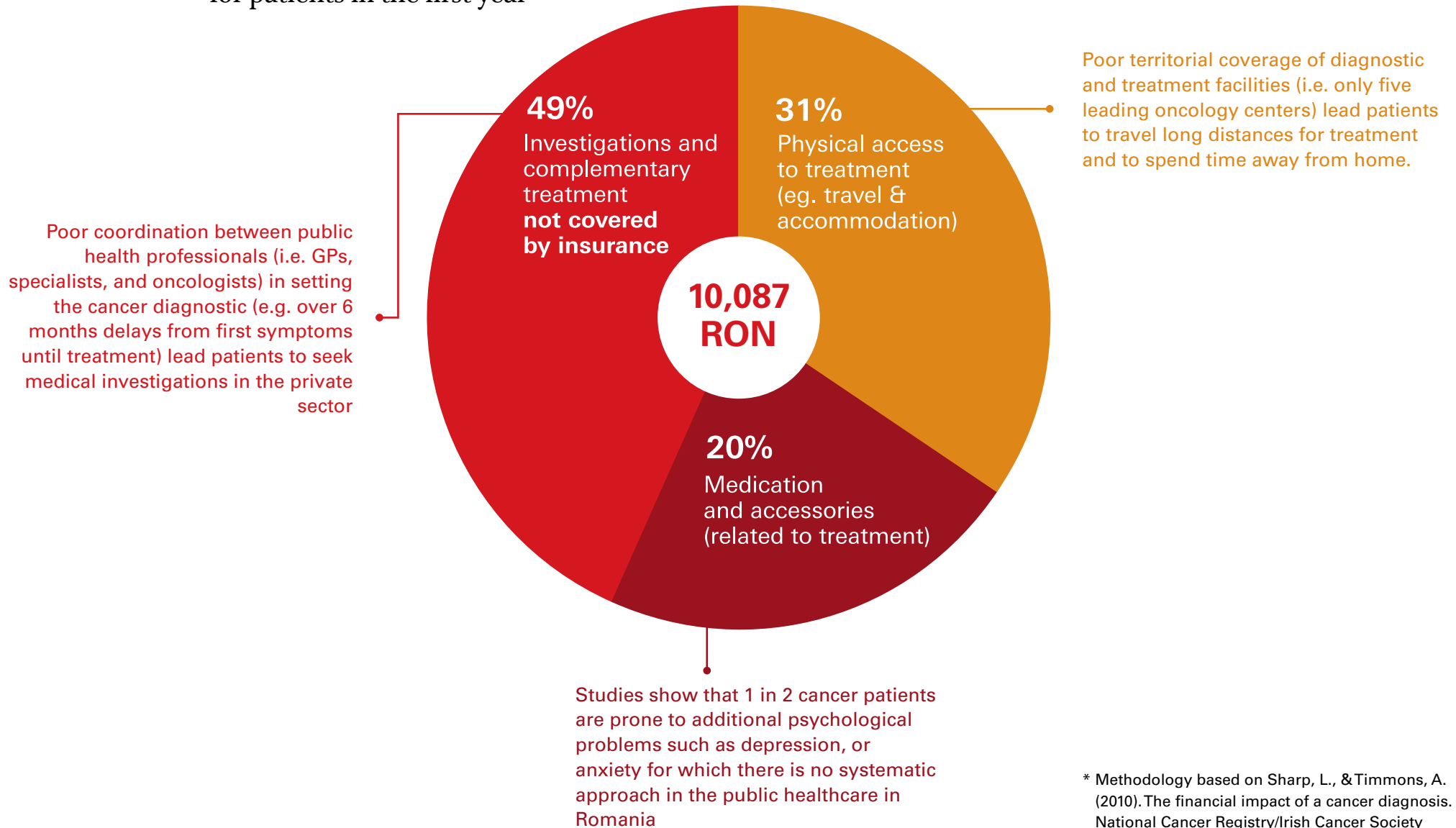
Given the growth and aging of the population, as well as negative changes in the quality of life (e.g. pollution, sedentary lifestyle), the prevalence of cancer is spiralling.

Understanding the socio-economic impact of cancer is the first important step in developing effective evidence-based policies to counter the burden of this disease.

Cancer prevalence will increase by 20% in the next decade.*

The cost of the illness for the patient – Microeconomic Impact

A cancer diagnostic generates on average out of pocket expenses of 10,087 RON for patients in the first year*



The cost of the illness for the patient – Microeconomic Impact



1 in 2 cancer patients in Romania is of active age (i.e. less than 65 years old).*



1 in 3 workers in Romania face severe poverty effects related to a potential cancer diagnostic. While the legislation in Romania permits a payment in full of the salary during cancer-related medical leave, certain categories of workers remain particularly financially vulnerable to a cancer diagnostic: self-employed, liberal professionals, day-workers, agricultural workers, informal work, or unpaid domestic work etc.

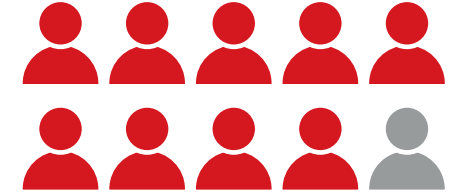
* Based on World Health Organisation – Global Cancer Observatory database



only 40% of Romanians have savings,* and out of those, **over 83% have savings that are less than 10,000 RON***

*IRES study: *Romanians and banks during the COVID-19 pandemic* (19 May 2020)

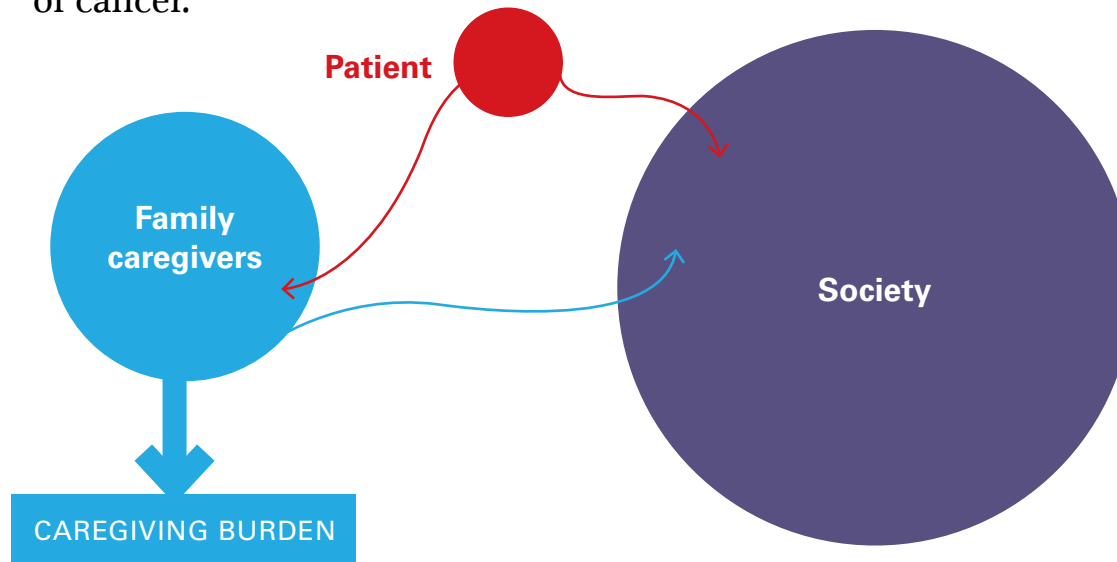
** Bank Deposit Guarantee Fund, 2019 Annual report



9 out of 10 people in Romania are financially vulnerable in the case of a cancer diagnostic.

Multi-level impact of a cancer diagnostic – Caregiver burden

Prevalence of informal care leaves the burden of the disease on the shoulders of the patient and the family hub. As such, social costs are incurred not only by the patient, but also by their caregivers and family members. Extended human capital costs are therefore registered at the level of a society that does not efficiently mediate the negative impact of cancer.



the distress that caregivers feel as a result of providing care

PHYSICAL: sleep disturbance, fatigue and pain¹

PSYCHOLOGICAL: from anxiety and depression to other emotional and more general responses²

SOCIAL: missing work because of caregiving responsibility and caring for others besides the cancer patient³

FINANCIAL: derived from paying high medical expenses and losing income and savings⁴

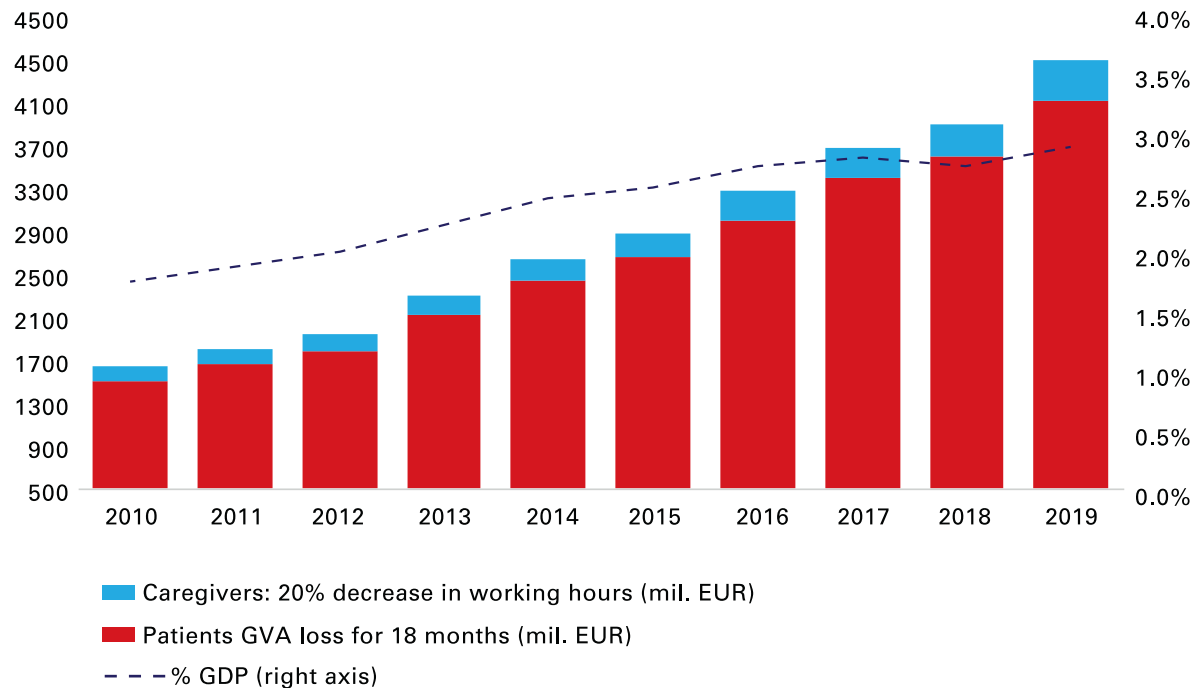
1 IN 3 CARETAKERS see own personal incomes diminished by taking care of a cancer patient in the family.⁵

1. Fletcher et al., 2008, Mosher et al., 2013, Osse et al., 2006, Stenberg et al., 2010
2. Braun et al., 2007, Deshields et al., 2012, Grunfeld et al., 2004, Mosher et al., 2013, Osse et al., 2006, Song et al., 2011, Stenberg et al., 2010, Williams and McCorkle, 2011
3. Deshields et al., 2012, Goldstein et al., 2004, Song et al., 2011
4. Deshields et al., 2012, Song et al., 2011, Yun et al., 2005
5. Cancer Support (2017) No small change: Time to act on the financial impact of cancer.

How cancer affects entire families – Mezo-economic Impact

In order to fully understand, quantify and appropriately address the exhaustive impact of cancer in Romania, both patients and their caregivers and family members must be taken into consideration.

With over 100,000 new cases of cancer diagnosed annually in Romania, **almost a quarter a million people are affected**, directly or indirectly, by cancer each year.



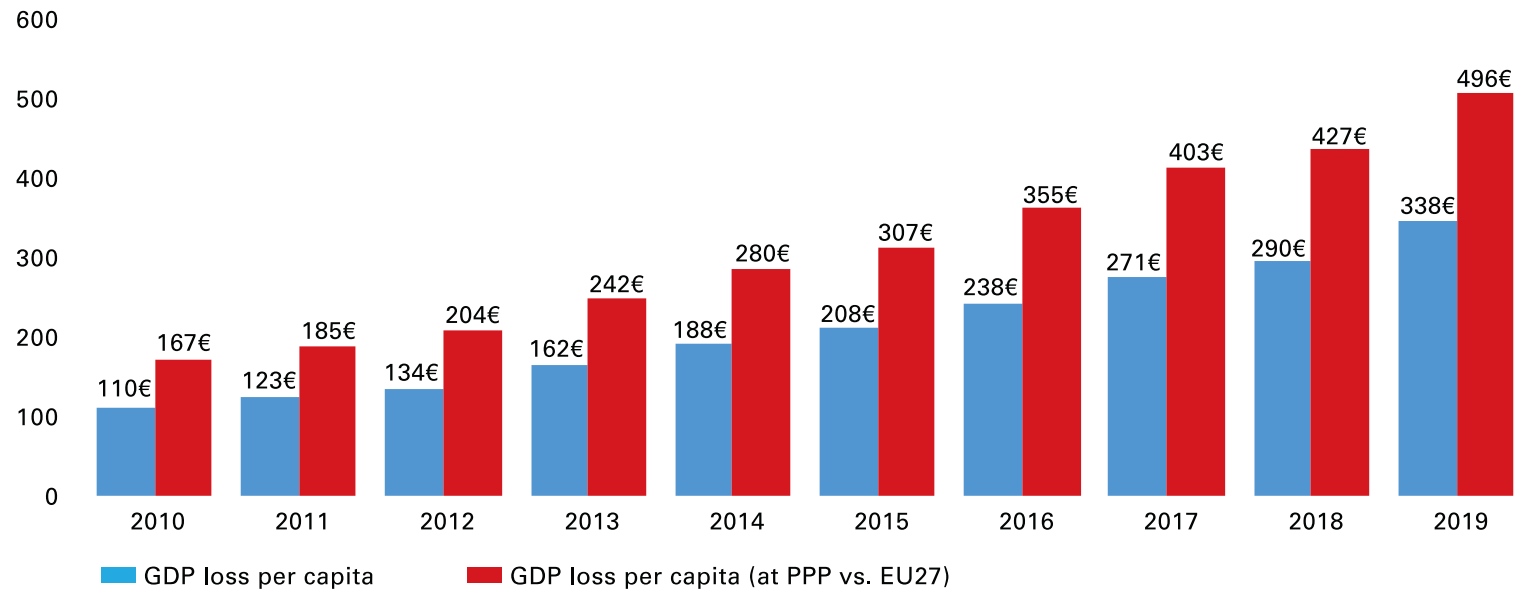
If each caretaker spends just one day a week with a family member that is sick for 6 months, the overall loss from its forgone economic contribution to society is over 530 mil. EUR.

The cumulative productivity loss of cancer patients and caretakers has reached an annual value of 3% of GDP in Romania.

Any public support scheme that can mediate the negative impact on caretakers (e.g. free transportation to and from treatment, house care) would potentially allow for substantial economic gains in Romania.

How cancer affects entire families – Mezo-economic Impact

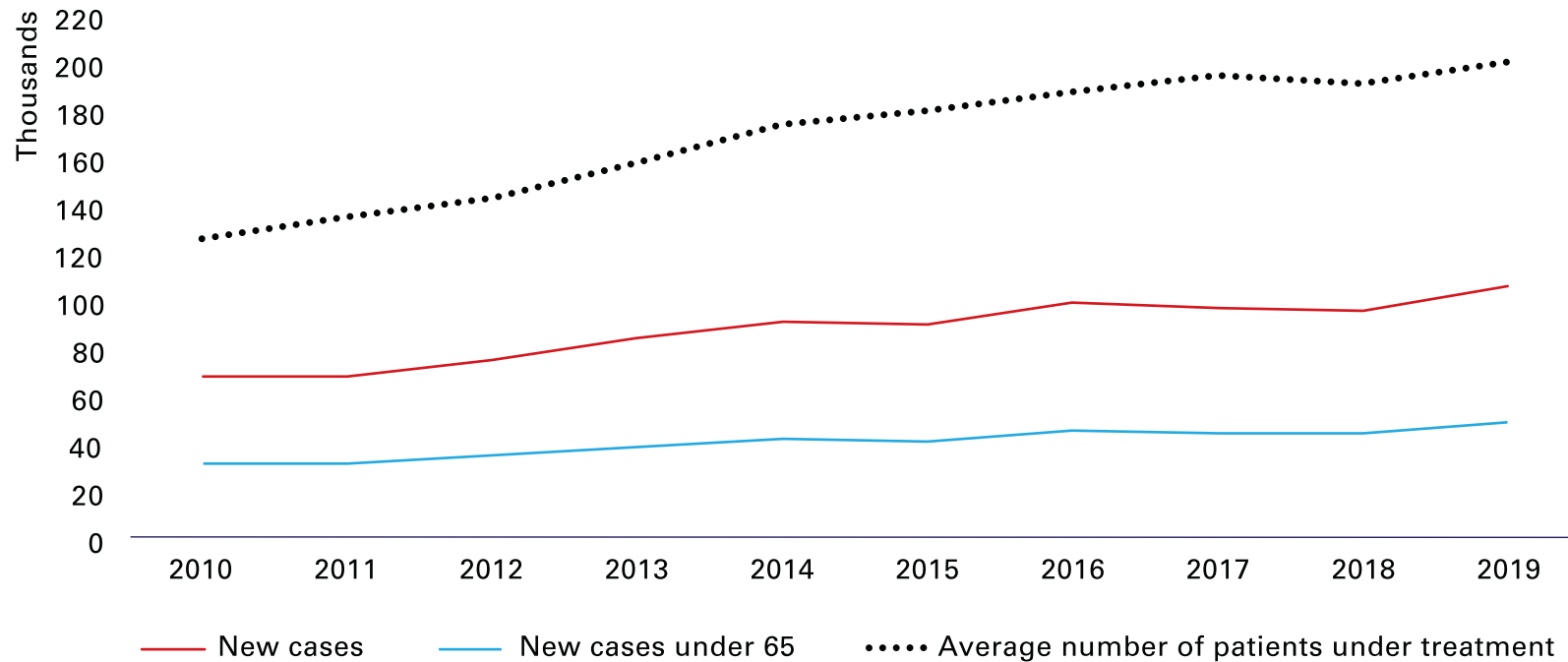
In terms of the public expenditures, the cost of cancer in Romania was of 160 EUR per capita*, but the socio-economic impact of cancer on the Romanian economy were 496 EUR per capita** in 2019.



*According to Hofmarcher, T., Lindgren, P., Wilking, N., & Jönsson, B. (2020). The cost of cancer in Europe 2018. *European Journal of Cancer*, 129, 41-49.

** Calculated as gross value added (GVA) loss of cancer patients and caretakers

The ramifications on public health and economy – Macroeconomic Impact



In Romania, as elsewhere, both the total number of newly diagnosed cancer patients has increased, and the number of cases of in the active population (i.e. under 65 years).

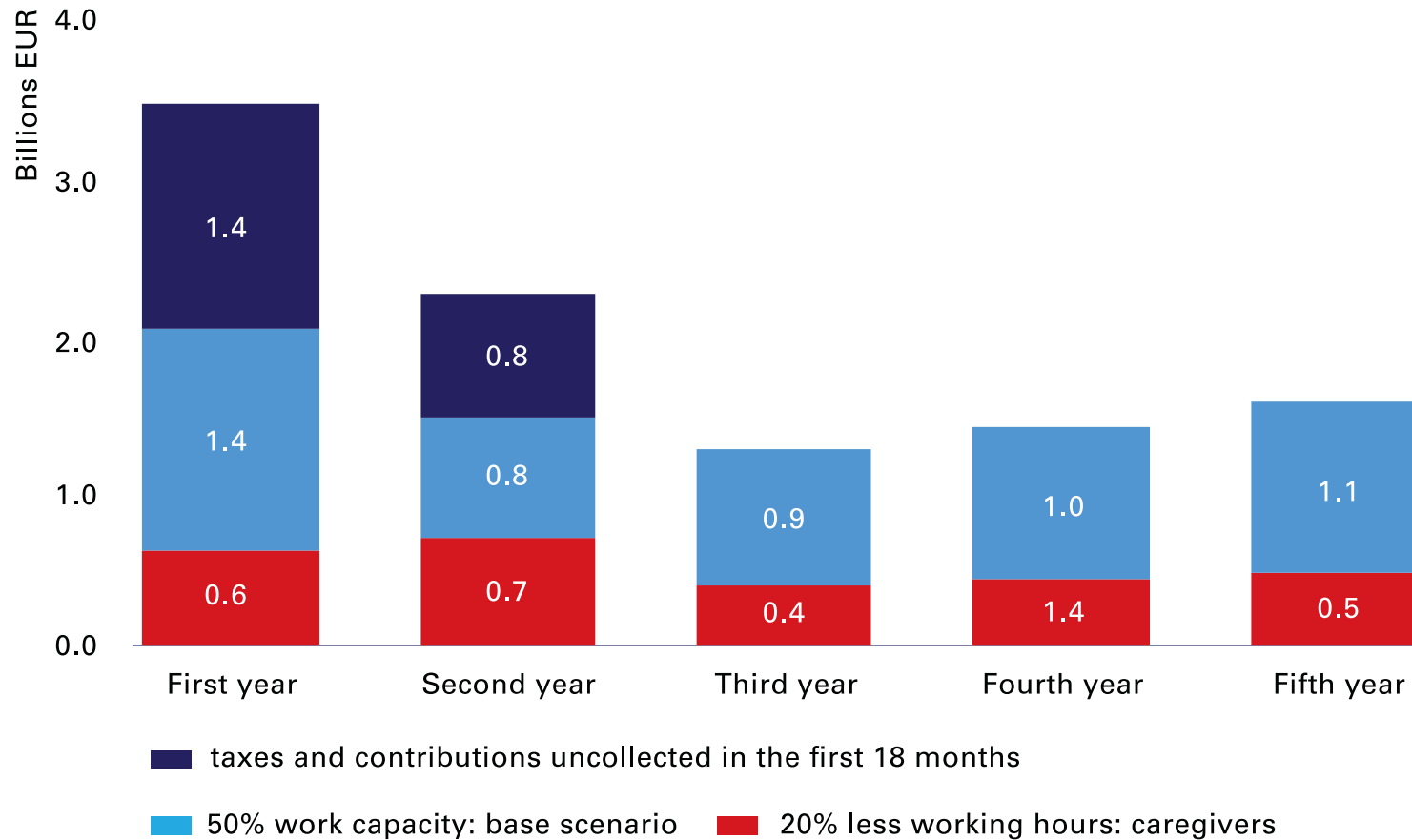
The growing prevalence of cancer in the active population creates a new set of economic costs, not just in terms of cancer treatment, but also in terms of **foregone gains of productivity** and sacrificed personal alternatives. This latter category of costs is

seldom measured, in terms of the negative impact on professional track-record, future financial gains, opportunity costs, and even negative impact on future generations.

For a country such as Romania, that is dealing with the middle-income-trap, all productivity losses have severe poverty effects at all levels – individual, household, and society.

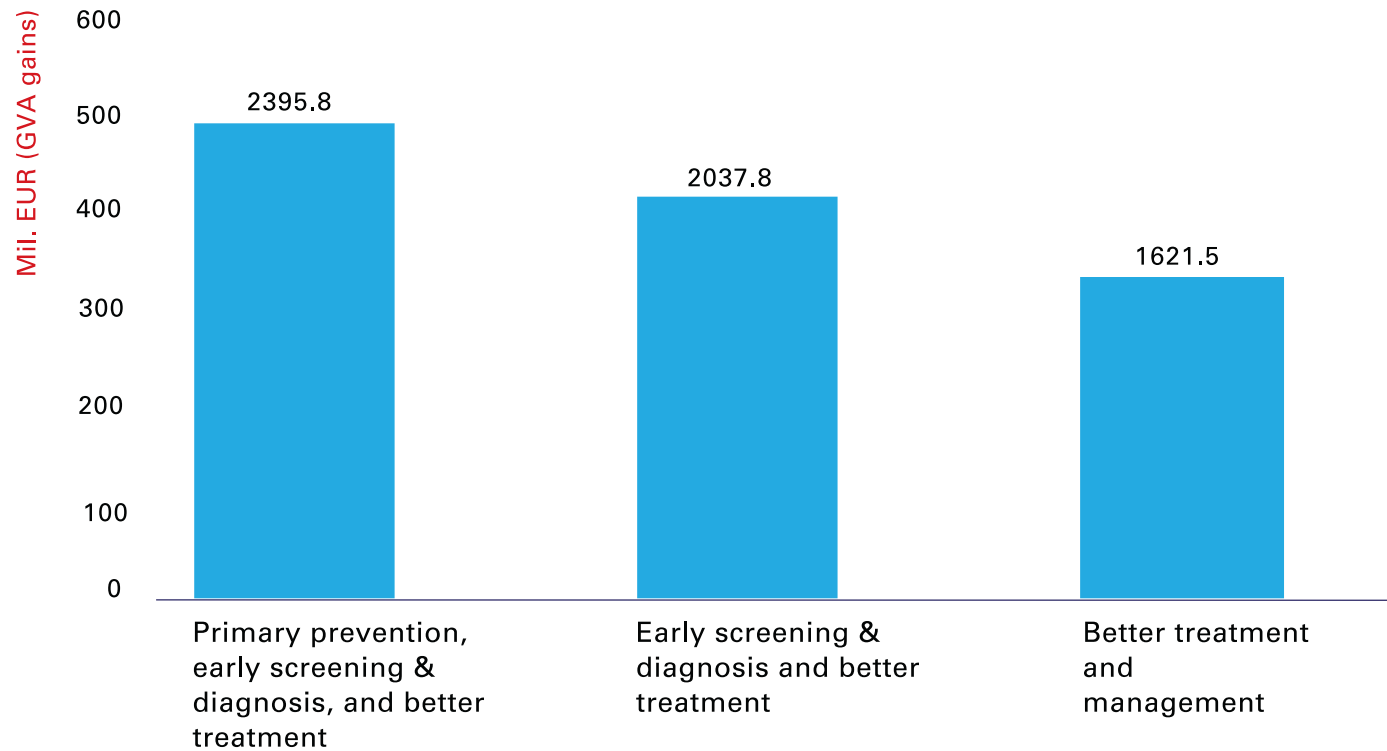
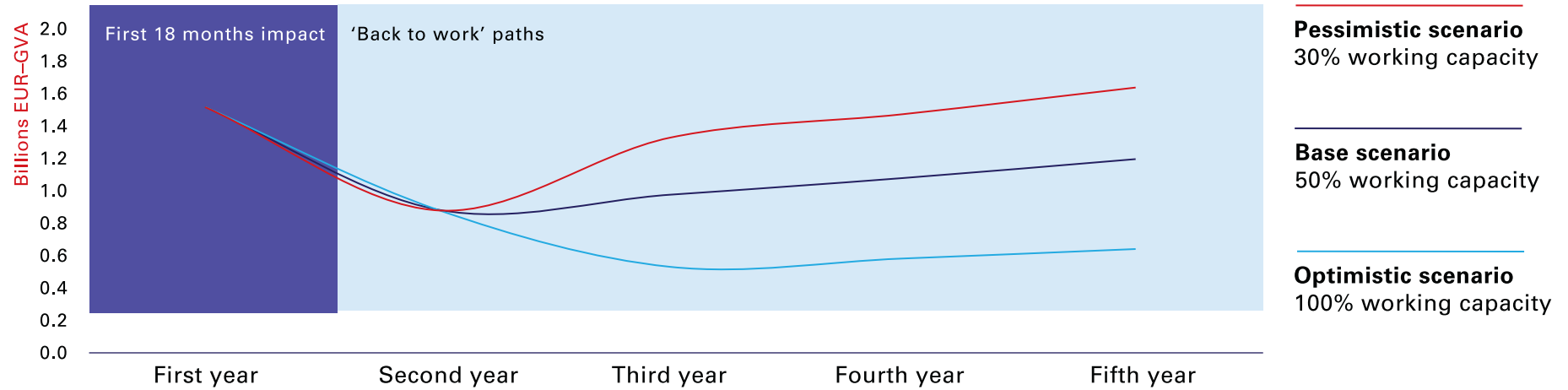
Macroeconomic Impact

The overall negative impact of cancer prevalence in Romania for patients diagnosed each year is of approximately 3.4 bil. EUR* in the first year after diagnostic.



*measured as loss of value-added in the economy and implicit loss of fiscal gains

Macroeconomic Impact

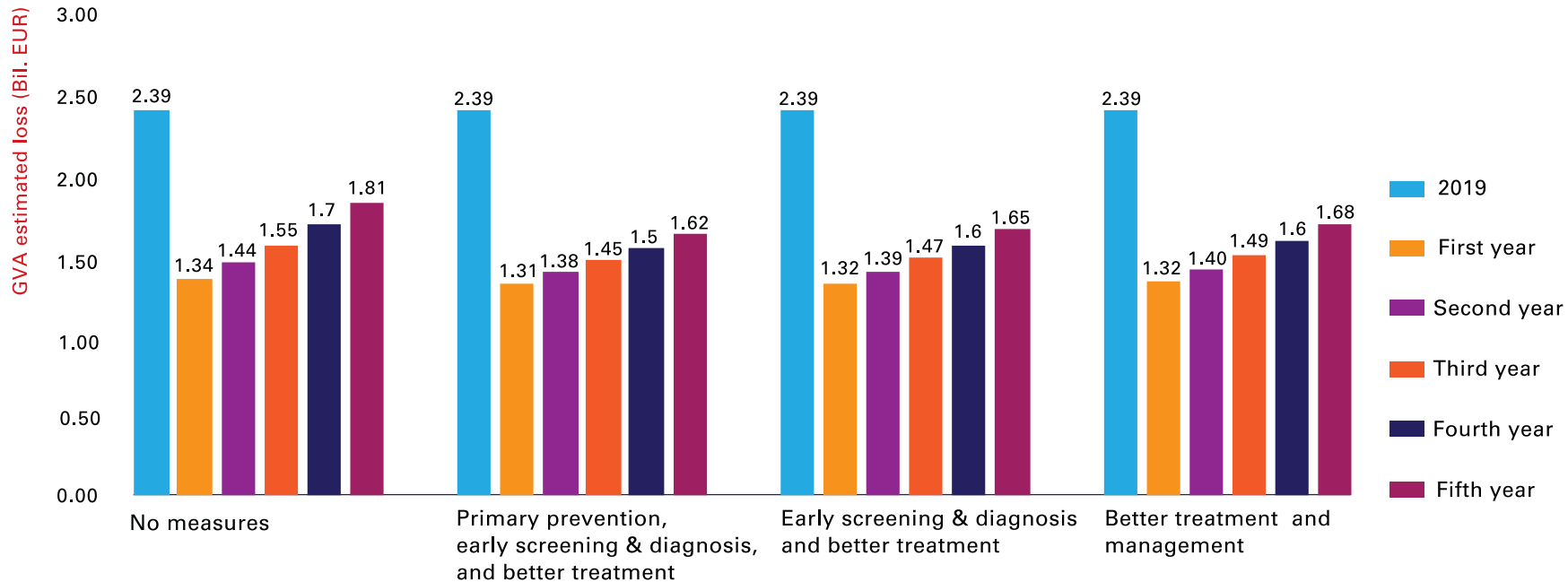
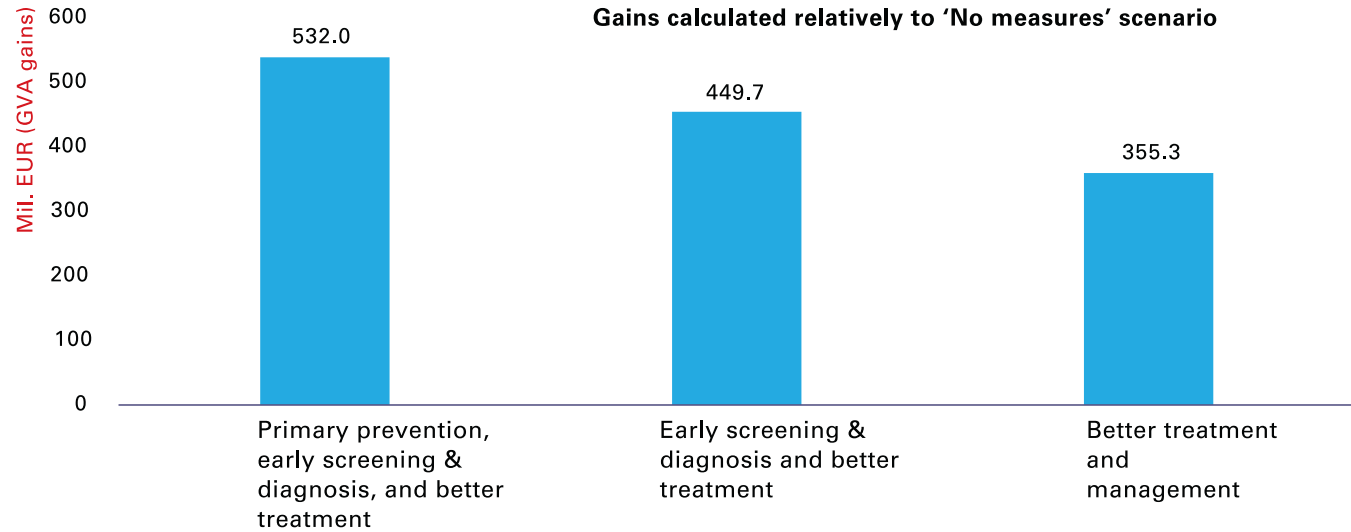


In the first ten years, the economic gains could raise between 1,62 and 2,4 bil. EUR

Macroeconomic Impact

Prevention strategies in middle-income countries, such as Romania, can have a ten-fold positive economic impact on investments.*

*Knaul, Felicia Marie, Hector Arreola-Ornelas, Rifat Atun, Oscar Méndez, Ramiro Guerrero, Marcella Alsan, and Janice Seinfeld. "INVESTING IN CANCER CARE AND CONTROL." Closing the Cancer Divide: An Equity Imperative: 71. Harvard University Press.



PRODUCTIVITY GAPS METHOD:

$$GVA_t = W_t * L_t * H_t,$$

where:

GVA=Gross value added in year t

W =hourly labour productivity in year t

L = number of workers / patients/caretakers in year t

H = total number of working hours during year t

Estimated GDP loss caused by individual inactivity:

$$\text{Loss P12M} = W_t * L_t * H_t$$

$$\text{Loss P18M} = \text{Loss P12M} + \alpha * (W_{t+1} * L_{t+1} * H_{t+1}), \alpha=0,5$$

Estimated GDP loss of patients and caretakers:

$$\text{Loss C12M} = W_t * L_t * (1-\beta) * H_t, \beta=0,2$$

$$\text{Loss P18M} = \text{Loss P12M} + \alpha * (W_{t+1} * L_{t+1} * H_{t+1}), \alpha=0,5$$

$$\text{CAGR} = [(\text{Ending Value}) / (\text{Starting Value})]^{1/N} - 1$$

MACROECONOMIC IMPACT OF PATIENTS FORECAST:

$$GVA \text{ loss } t = (1-\pi) * H_t * L_t * W_t$$

where:

π = 0,5 for base scenario; 0,75 for optimistic scenario;
0,3 for pessimistic scenario;

H_t = total number of working hours during year t ,
respectively 2015 hours

L_t = estimated number of patients based on 2010–2019
compounded annual growth rate of 4,8%

W_t = estimated labour productivity based on 2010–2019
compounded annual growth rate of 7,7%

Cumulative impact of cancer patients and caretakers forecast:

$$\text{Taxes and contributions} = \text{Waget} * L_t * \mu,$$

where μ = the share of taxes and contribution in net wage

$$\mu=74,8\%$$

Estimated patients evolution by government interventions type:

'No measures' scenario:

patients number increase with 4,8% (CAGR 2010-2019)

'Primary prevention' scenario:

patients number increase with 2,4% $((1-0,5)^*4,8\%)$

'Early screening&diagnostic' scenario:

patients number increase with 3,1% $((1-0,35)^*4,8\%)$

'Better treatment and management' scenario:

patients number increase with 3,8% $((1-0,2)^*4,8\%)$

Public policies recommendations for national cancer management in Romania

NATIONAL LEVEL

- Defining, approving, and implementing a national plan for cancer control, aligned with Europe's Beating Cancer Plan, which will address the four essential pillars:
 - prevention,
 - screening,
 - diagnosis & treatment,
 - quality of life.

PATIENT'S PATHWAY

- Implementing a well-defined standardised cancer patient pathway within the healthcare system by defining an optimal time-frame for diagnosis (starting with the first symptoms), as well as by initiating and continuing treatment (correlated with a precise and complete diagnosis).

PERSONALISATION

- Implementing personalised medicine (the right treatment, for the right patient, at the right time) for treating cancer, aligned with the scientific international guidance.
- Putting into practice 'tumour boards' on a national scale, as well as preparing for possible 'molecular tumour boards'.

ACCESS TO SERVICES

- Reshaping of the national system for oncology support by creating / strengthening the function of comprehensive cancer centres in parallel with the development of regional support networks for cancer patients.
- Developing community centres and training general practitioners to also tackle cancer.

SCREENING AND PREVENTION

- Initiating cancer prevention campaigns by targeting the known risk factors (40% of cancers can be prevented).
- Extending screening programs at national level based on the best practices identified during regional screening programmes.

DATA AND DIGITAL

- Putting into place an electronic national registry for cancer patients, as well as an electronic file for each cancer patient.
- Using telemedicine to monitor patients' pathways, as well as their post treatment check-ups together with other digital tools (registry, file, mobile apps, digital tumour board, etc..)

FINANCING

- Applying the principle of 'money follows patient'.
- Developing a unique diagnosis package for each type of cancer and cancer stage, which will replace the current approach (i.e. payment for service).
- Diversifying funding for diagnosis tools and innovative treatments by implementing the Innovation Fund.

ACCESS TO INNOVATIVE THERAPIES

- Stimulating clinical trials in Romania by optimising the necessary approval times.
- Developing and approving the legislation for off-label cancer drugs. Prioritising the use of innovative cancer drugs.

TRAINING

- Updating the national guides and protocols in real time and in accordance with international guides, as well as constant training of medical staff in order to achieve a unified implementation of new methods.

EDUCATION

- Developing a national programme dedicated to cancer literacy (addressed to the public, patients, medical staff, and others interested) as part of the National Plan for Cancer Control.

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