

# HEALTHCARE COSTS OF CANCER BY CLINICAL STAGE AND COST COMPONENT IN A PRIVATE HEALTH PLAN IN BRAZIL (REAL WORLD DATA)

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## BACKGROUND

The economic burden of cancer is a major issue worldwide. It’s estimated that the total cost of cancer to the global economy will reach 25.2 trillion dollars between 2020 and 2050 regarding 29 cancers 204 countries. Cancer has a large economic impact not only because of its incidence, but also because its diagnosis and treatment incur very high costs that vary over time. Diagnosis and treatment of cancer at earlier stages may reduce this burden.

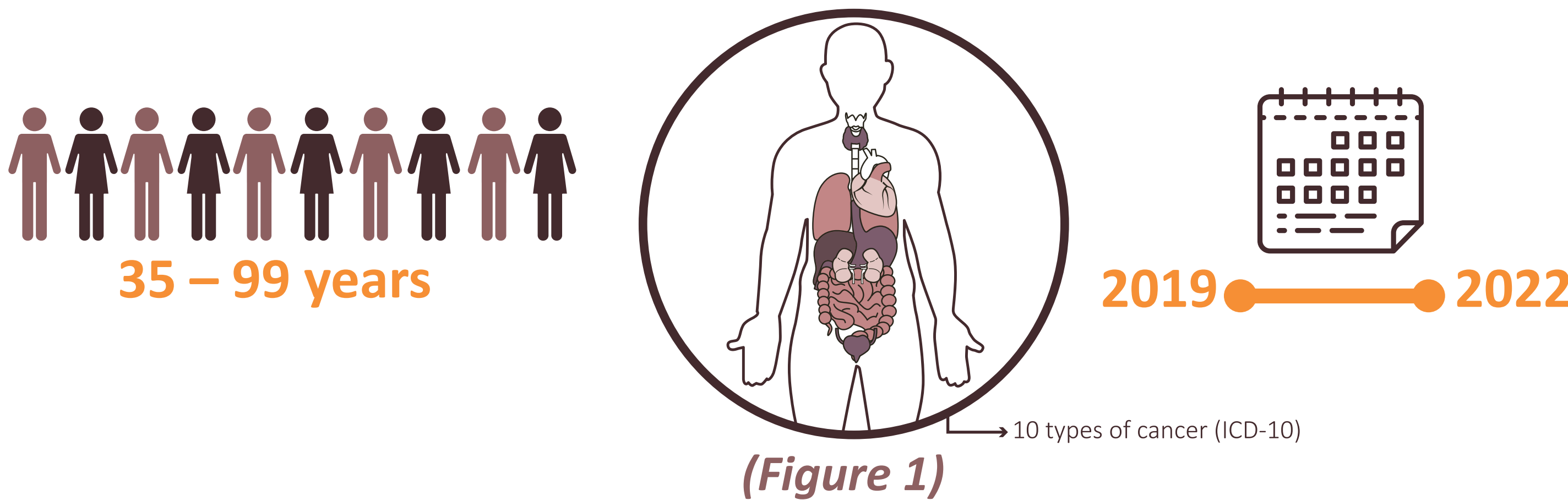
The use of healthcare resources is concentrated both in the initial period after the diagnosis of nonmetastatic cancer and at the end of a patient’s life if recurrence occurs. When it happens, patients costs over time follow a characteristic U-shape.

## OBJECTIVES

The aim of this study is to measure 3-year care costs of 10 most common cancers disaggregated by clinical stage at diagnosis and treatment initiation.

## METHODS

Retrospective non-interventional study using population-based health administrative database to identify patients aged 35–99 years who were diagnosed with one of the following cancers: breast, prostate, colon, rectum, lung, myeloma, ovary, bladder, pancreas, or stomach, from 2019 through 2022 (Figure 1). We used the International Classification of Diseases, 10th Edition (ICD-10) for the cancer of interest. Data gathered included TNM stage at diagnosis and initiation of treatment. The analysis was carried out separately for each stage (I, II, III and IV) and site. Follow-up was from the date of diagnosis until the date of death or, in living cases, for 3 years. Resource utilizations were evaluated by each patient (considering hospitalizations, complications, outpatient consultations, hospital-at-home services, chemotherapy, and radiotherapy). A descriptive analysis of the cohorts by site and stage of cancer detection was performed using absolute and relative frequencies in the case of categorical variables, and the mean and standard deviation in the case of continuous variables. The non-parametric Mann-Whitney test was used to compare the medians of the costs by stage. All analyses were performed using Jamovi statistical software version 2.4 and at the 5% significance level.



### WHAT

Retrospective non-interventional study using population-based health administrative database

### WHO

35–99 years patients diagnosed with one of the following cancers: breast, prostate, colon, rectum, lung, myeloma, ovary, bladder, pancreas, or stomach

### WHERE

Health payer perspective in Brazil

### WHEN

From January 2019 to December 2022

### WHY

To measure 3-year care costs of 10 most common cancers disaggregated by clinical stage at diagnosis and treatment initiation

### HOW

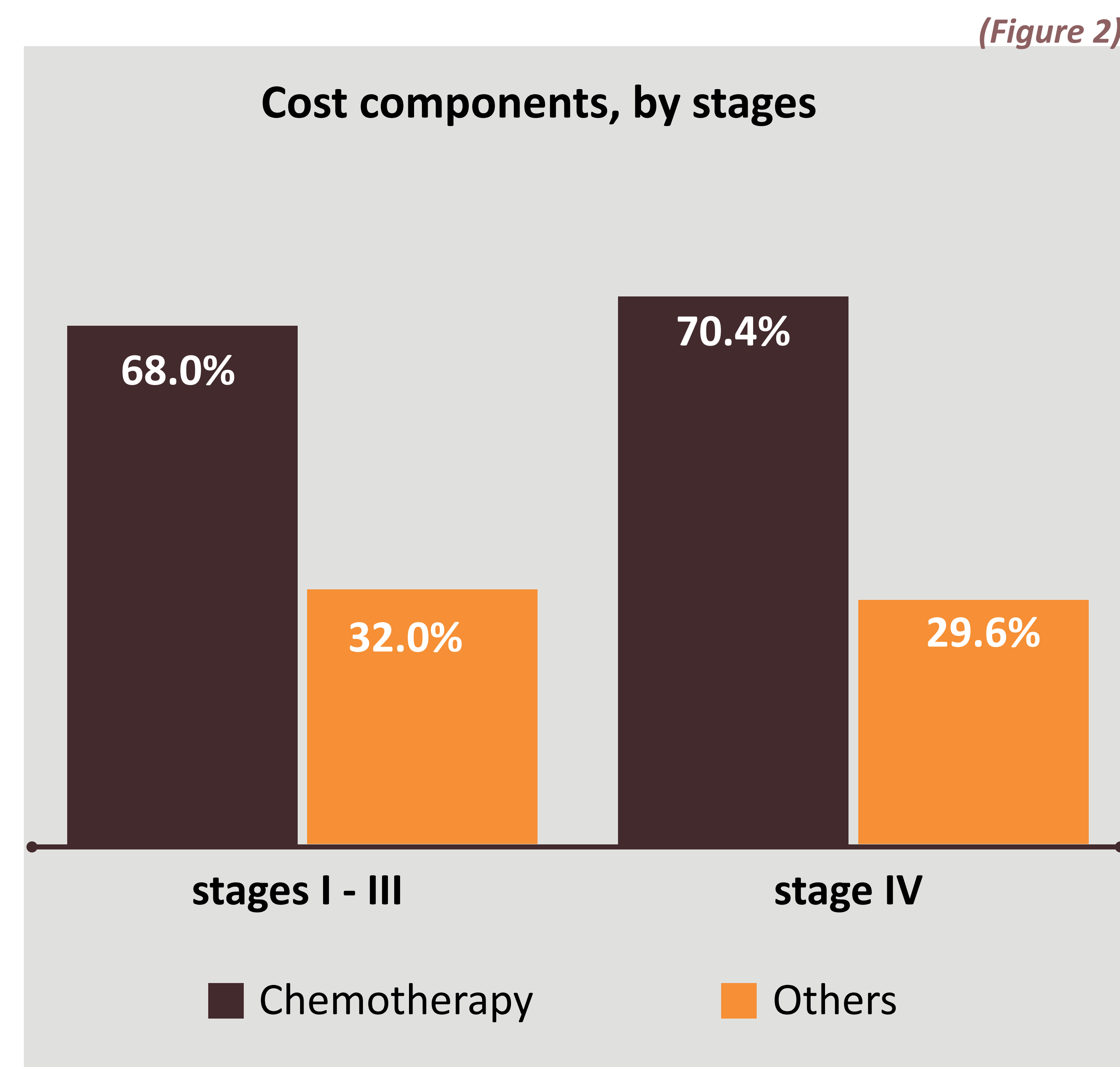
Data gathered included TNM stage at diagnosis and treatment initiation. Analysis was carried out separately for each stage (I, II, III and IV) and by site. Follow-up for 36 months from diagnosis or until death. Resource utilizations and costs were evaluated by each patient, including chemotherapy and radiotherapy.

## RESULTS

We identified 543 patients diagnosed with one of the studied malignancies. Annualized average 3-year costs per patient with stage I to III (78.8%) disease were U\$12,763 and U\$34,972 for initial period (diagnosis and initial treatment) and follow-up, respectively. Total survival-adjusted costs until death (Table 1) for patients with stage IV (21.2%) disease were 49.8% higher than the 3-year costs for those with earlier-stage disease (p<0.001) (U\$82,202 / U\$52,390).

(Table 1)

| Annualized average 3-year costs/patient |           |           |
|---|-----------|-----------|
| Stages                                  | Period    |           |
|   | Initial   | Follow-up |
| I – III                                 | U\$12,763 | U\$34,972 |
| IV                                      | U\$82,202 | U\$52,390 |



The most important cost components were chemotherapy (Figure 2) in both groups (70.4% - stage IV and 68.0% - stage I - III from total cost). There was considerable variation in costs by cancer site. Annualized average costs were highest for myeloma in all phases of care. Stage IV cancers posed the greatest annual cost burden for different types of cancer.

## CONCLUSIONS

Considerable differences exist in 3-year costs per patient with stage IV at diagnosis and initiation of treatment when compared I to III stages. This study quantitatively shows the pattern of changes in the economic burden of cancer throughout its natural history and the great magnitude of this burden for the Brazilian private health system. The use of indicators based on real-world data it can contribute to the adequate allocation of resources and better quality of healthcare. More up-to-date studies on treatment costs of cancer by stage are required worldwide respecting the difference of developing and developed countries. The results of this study point to a greater need for investment in screening and early detection of new cases of cancer.

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