

# Cost-effectiveness analysis with real-world data reusing brazilian health system databases: a case study in breast cancer



## INTRODUCTION

Metastatic HER2-positive breast cancer remains a major challenge for the Brazilian public health system (SUS). The incorporation of monoclonal antibodies such as trastuzumab and pertuzumab has significantly improved clinical outcomes, particularly through dual HER2 blockade.

## OBJECTIVE

To evaluate the cost-effectiveness of pertuzumab in patients with HER2-positive metastatic breast cancer within SUS, compared to standard chemotherapy, using real-world.

## METHODS

Raw data from DATASUS of information on oncology treatments performed in the country, were collected and analyzed, covering the period from 2008 to 2024. The data were converted and migrated to a PostgreSQL relational database. For each CONITEC recommendation report evaluated, a corresponding procedure code was identified in which the respective technology should be used.

CONITEC Reportm	Reimbursed drugs	Procedure code	Procedure description
N°406/2018	Sunitinib e Pazopanib	0304020168	Chemotherapy for Advanced Renal Cell Carcinoma
N°116	Hormoneterapy of breast cancer	0304040193	Hormone Therapy for Breast Cancer (Prior)
N°145/2015	Hormoneterapy of prostate cancer	0304040207	Hormone Therapy Prior to External Beam Radiotherapy for Prostate Adenocarcinoma
N°464/2019	Abiraterone	0304020087	Chemotherapy for Hormone-Resistant Prostate Adenocarcinoma
N°678/2021	Ademaciclib, Palbociclib and Ribociclib	0304020133	Chemotherapy for Advanced Breast Cancer – First Line
N°318/2017	Pertuzumabe	0304020435	Combination Chemotherapy with Dual Anti-HER2 for HER2-Positive Breast Cancer – First Line
N°751/2022	Trastuzumab Etansine	0304050318	Monochemotherapy for HER2-Positive Breast Cancer in Stage III (Adjuvant)

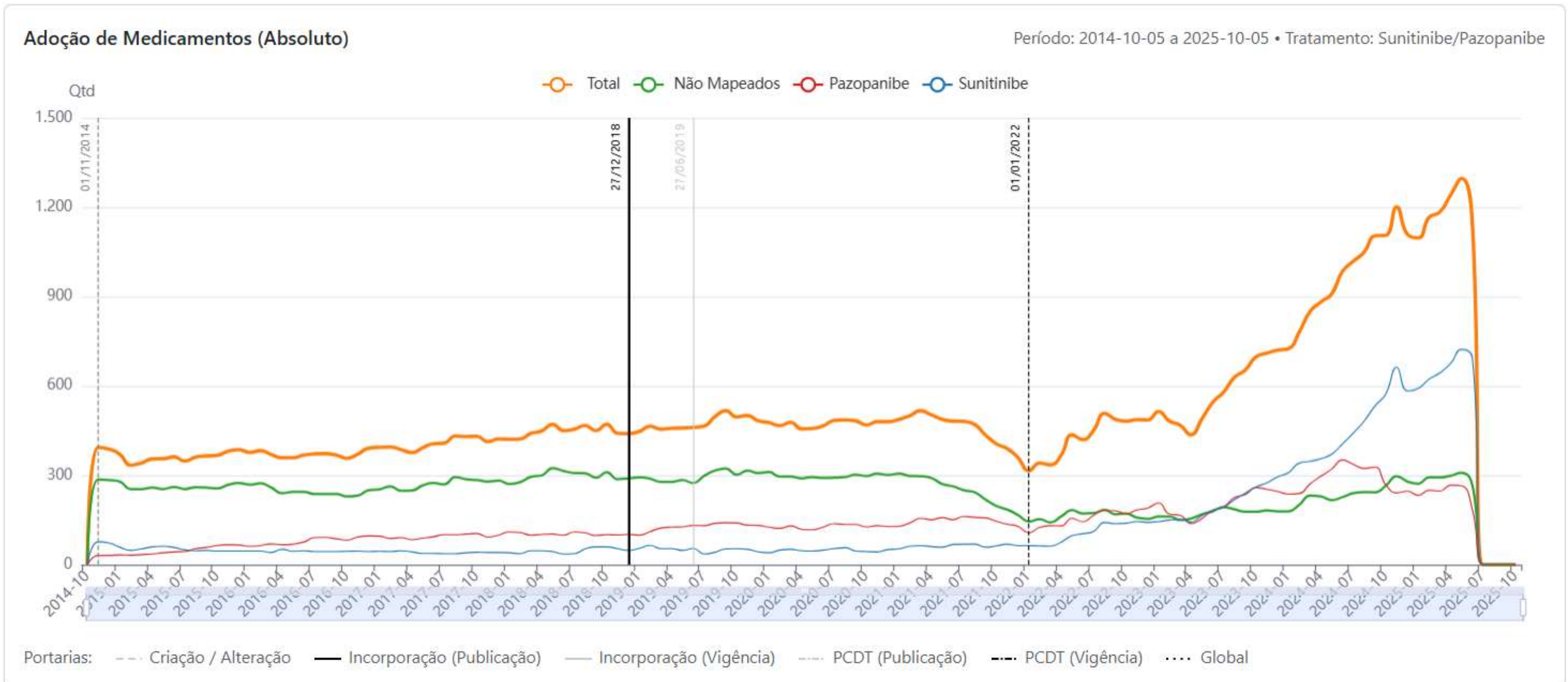
Within the set of Procedure Authorizations (APAC), an analysis of the nomenclature of the medications used—recorded in the variables AP\_ESQ1 and AP\_ESQ2 of the database—was conducted to verify whether the drugs used in each APAC complied with CONITEC’s recommendations.

With the aim of incorporating a temporal dimension into the database, complementary information was also integrated, including temporal marks concerning changes in APAC reimbursement values, and the publication of new guidelines, related to the health conditions addressed in the study.

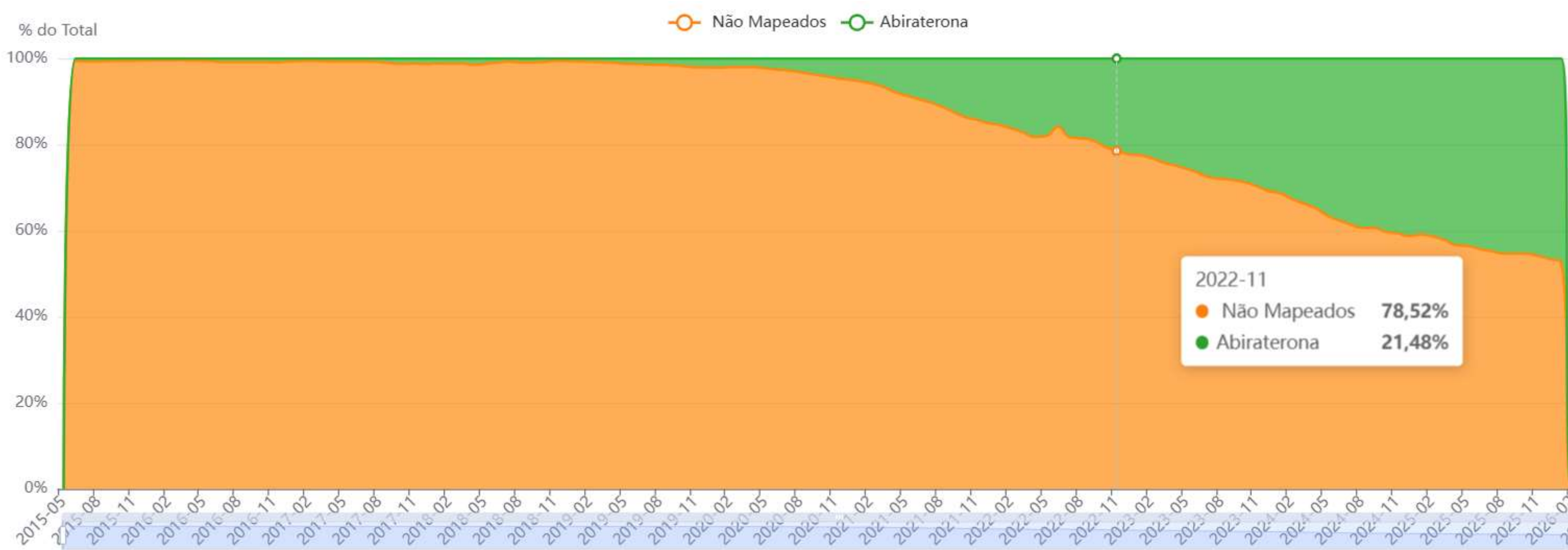
Among the available filters for analysis are: geographic region, state, municipality, and healthcare facilities, as well as legal status, types of management, and medication. These analyses were included to assess heterogeneity in the technology reimbursement. This enrichment contributes to a broader and more contextualized analysis of the data

## RESULTS

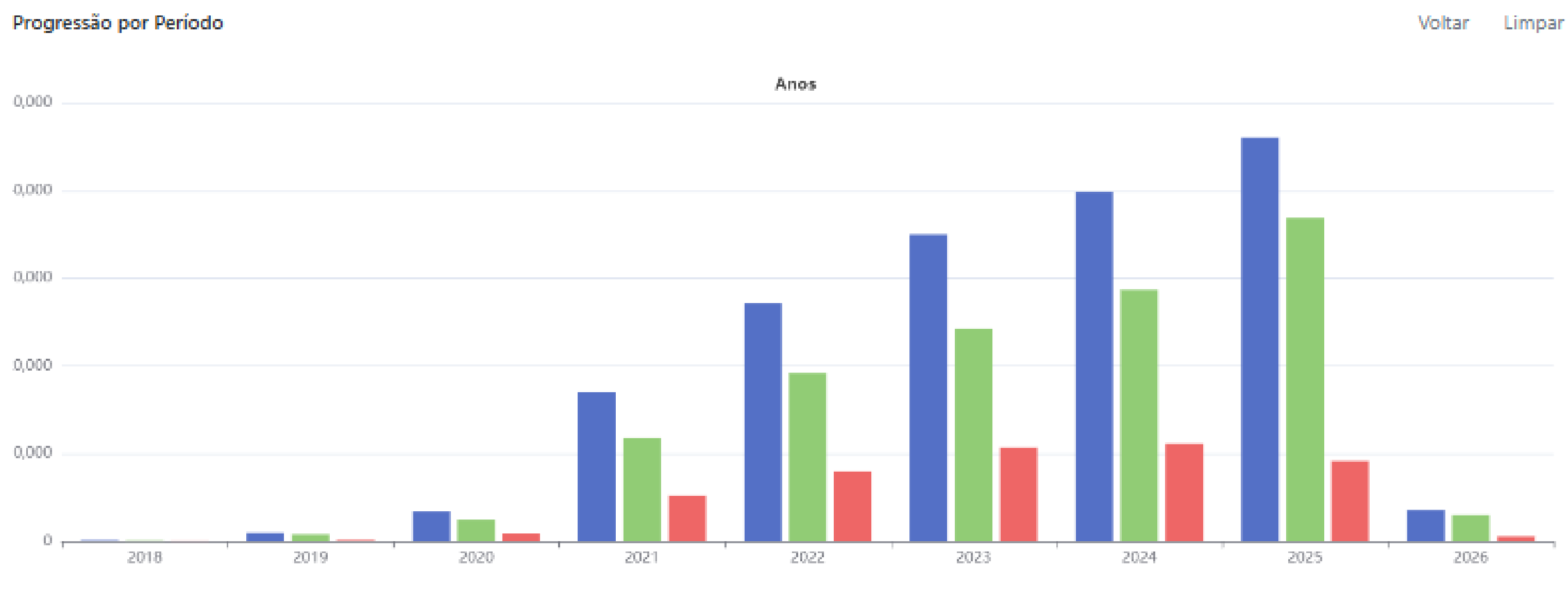
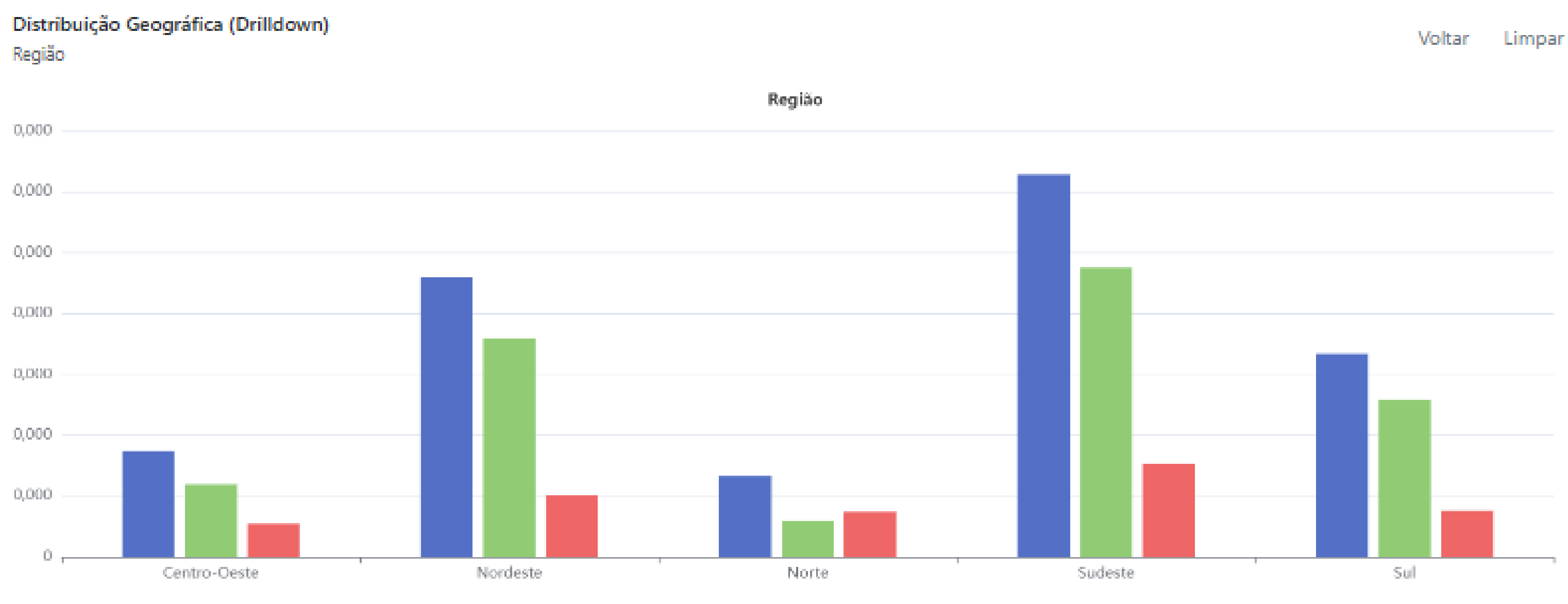
The following presents the different types of graphs available in the dashboard, using selected examples of the medications analyzed.



In the chart above, the orange line represents the total number of procedure authorizations for renal cancer. The blue line shows authorizations that used sunitinib, the red line represents pazopanib, and the green line indicates authorizations that used a medication not recommended by the Ministry of Health. The solid vertical lines indicate the point in time of the reimbursement recommendation, and the dashed line indicates the year in which the reimbursement amount was increased.



The chart above displays, in an area format, the use of abiraterone in reimbursement authorizations over 12 years. The green area represents the use of abiraterone, and the orange area represents the use of any other medication. The x-axis represents months.



The bar chart above shows, in the first dataset, the use of pertuzumab across the regions of the country. The second dataset shows the use of the medication over the years nationwide. The blue bars represent the total number of procedure authorizations, the green bars represent authorizations that did not use the medication, and the red bars represent those that did.



The map above shows the use of hormone therapy for breast cancer across the national territory. Each circle represents a hospital, and the chart allows users to zoom into specific areas and assess the proportion of authorizations in hospitals that do or do not use medications recommended by the Ministry of Health.

## CONCLUSION

The full dashboard is in Portuguese and available at: [www.observaonco.com.br](http://www.observaonco.com.br). It can be accessed by scanning the QR code below:



DASHBOARD QR CODE