The High Cost of Cancer Treatments in Washington State

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Financial Relationships

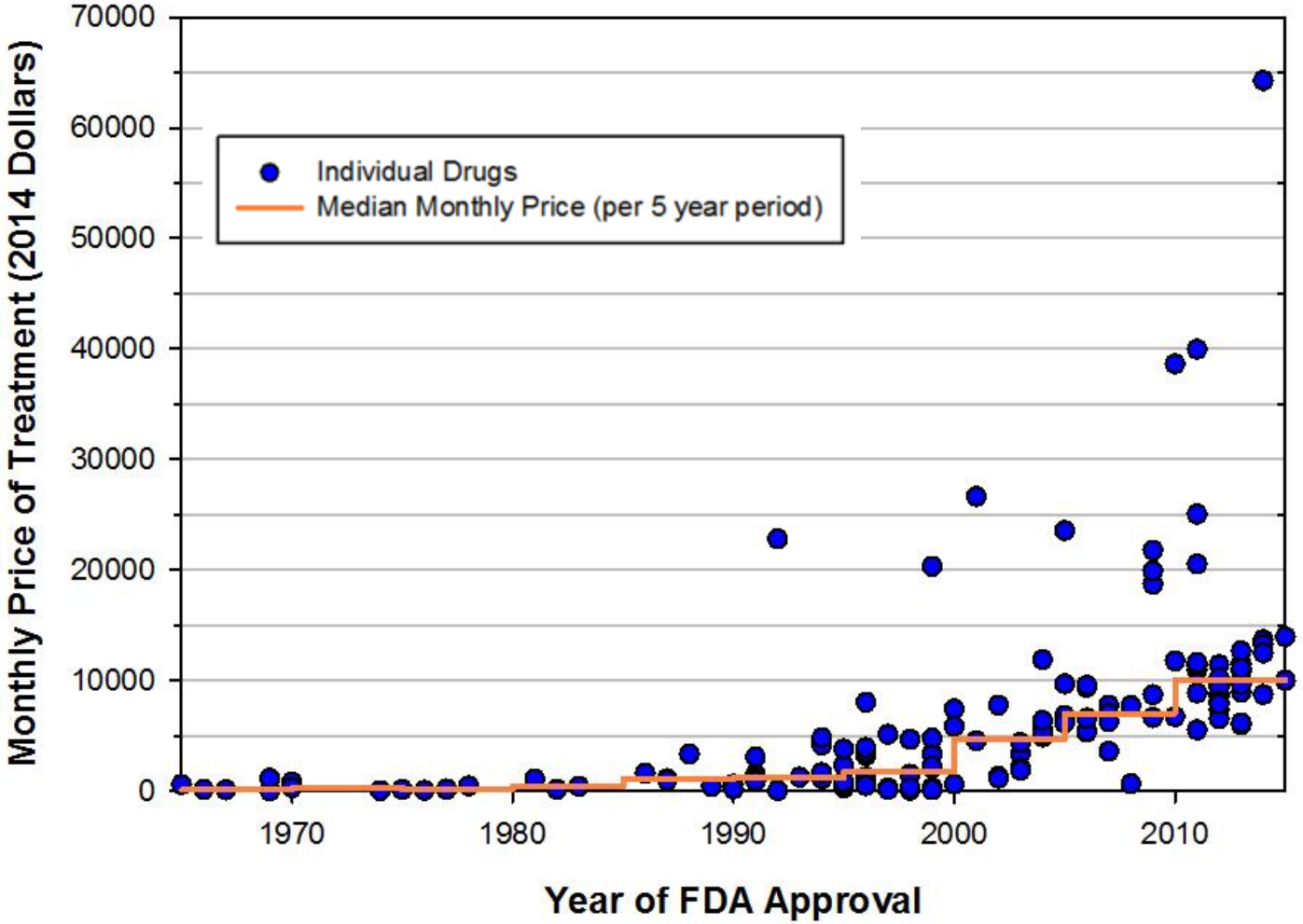
- Grant Funding:
  - NCI, NHLBI, PCORI, CDC
- Consulting/Advisory Boards:
  - Bayer, Epigenomics, Genentech, Seattle Genetics

The Landscape of Cancer in the United States is Changing

- The annual number of new cases in the United States is expected to increase 75% by 2030
  - Population growth
  - Aging population
- Survival rates continue to climb for the most common cancers, in part due to improved treatments
- Rapidly rising healthcare costs compelling insurers to shift larger share of costs to patients
  - Affecting access to cancer care for lower income people

Monthly and Median Costs of Cancer Drugs at the Time of FDA Approval

1965 - 2015



Source: Peter B. Bach, MD, Memorial Sloan-Kettering Cancer Center

Top 5 Part B and D Drug Costs for Medicare, 2014

Top 5 Expenditure	Total Medicare	Total Annual Spending Per	Average Annual Beneficiary Cost
Cancer *	$3,179,922,015	$80,466	$7,226
Noncancer **	$13,114,862,964	$21,048	$1,286
Noncancer, sofosbuvir	$10,007,901,983	$2,796	$344

*lenalidomide, imatinib, ipilimumab, sipuleucel-T, bexarotene

**Sofosbuvir, esomeprazole, rosuvastatin, apiprazole, fluticasone/salmeterol

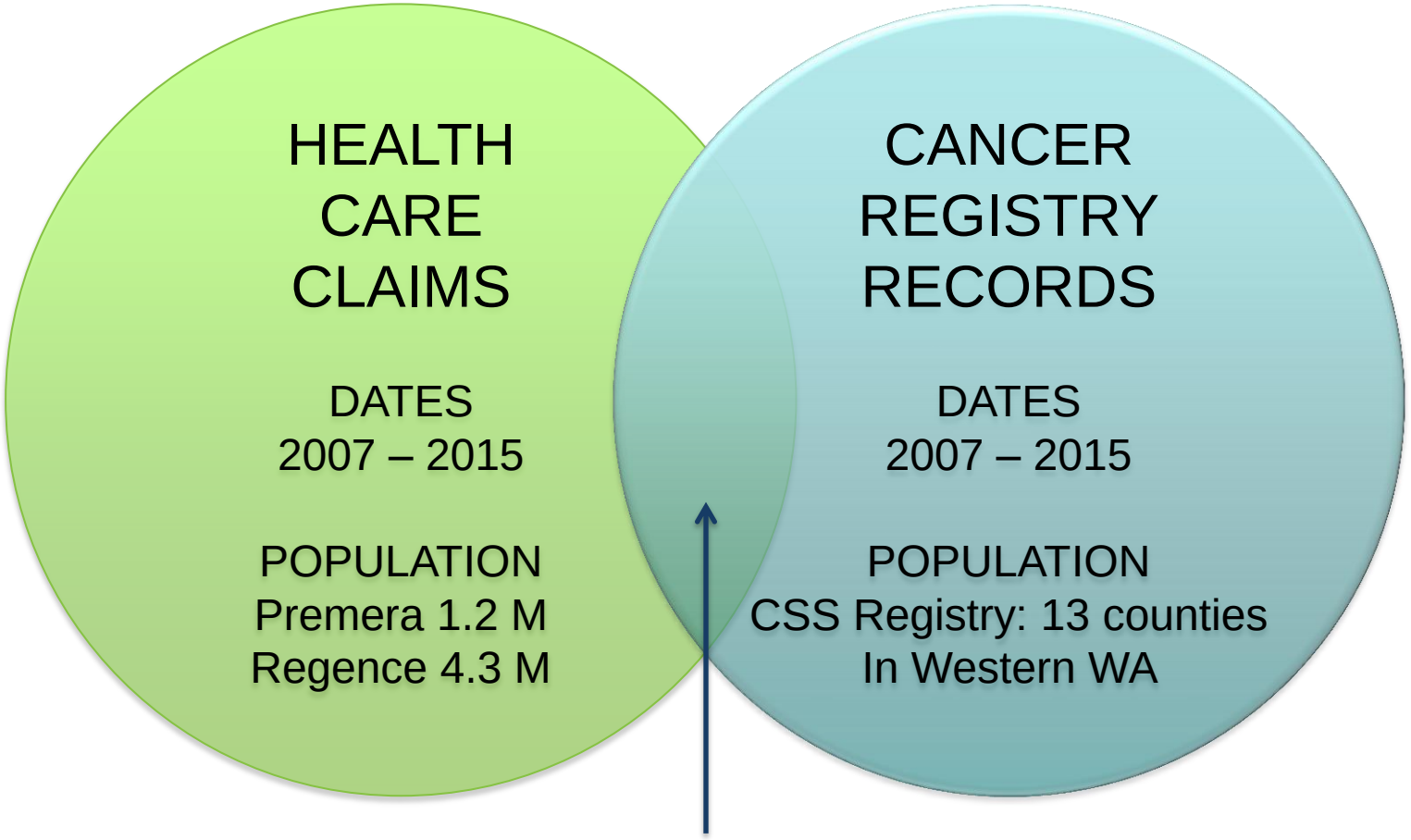
Medicare Drug Spending Dashboard 2014, www.cms.gov

Objectives for Measuring Cost

- Provide oncology community with **cost data to support decision-making** in cancer care
- Promote a dialogue about **value** in cancer care
- Cost is **one component of the value equation** – consider cost in the context of quality and outcomes

Linking Data Sources

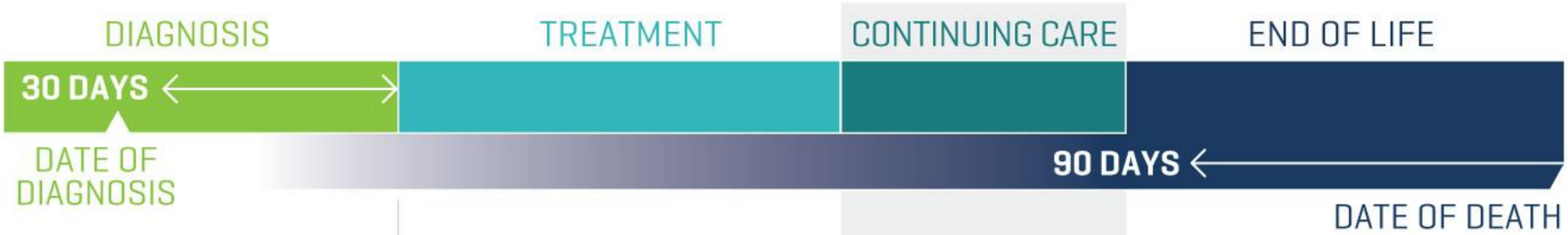
The Database



88,000+ cancer patients linked between the two data sources

With 35,000 patients enrolled at time of diagnosis

Phases of care



TIME PERIOD

START: 1 month prior to diagnosis

END: First of

- Beginning of treatment
- 2 months following diagnosis
- Death

TIME PERIOD

START: First treatment (surgery, chemotherapy, radiation therapy)

END: First of

- Beginning of treatment gap (gap must be at least 4 months)
- 12 months following initial treatment
- Death

NOT MEASURED

TIME PERIOD

START: 90 days prior to death

END: Date of death

How we measure cost

All insurance claims paid for the phase of care.

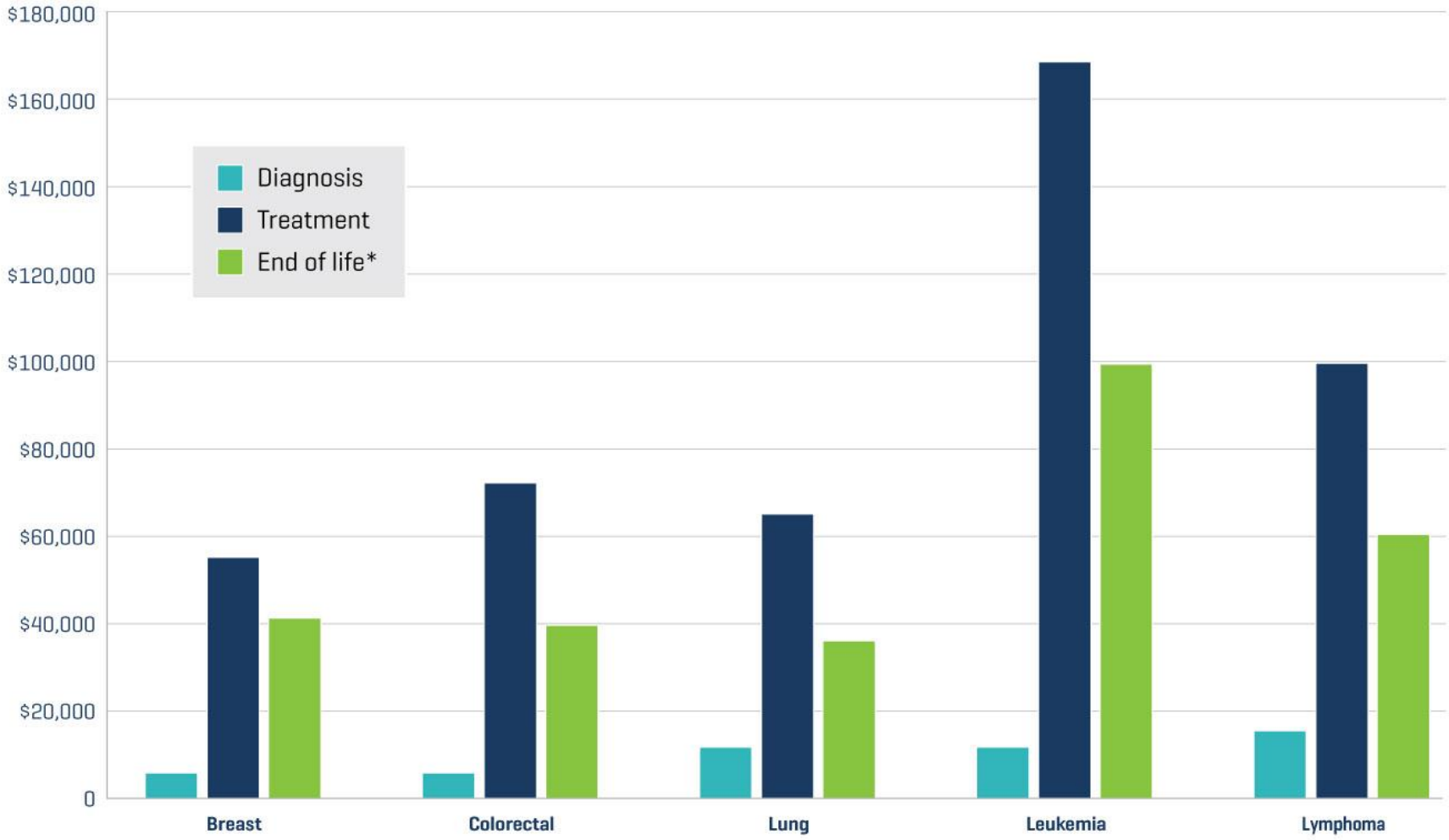
- Except where noted, cost represents the amount paid by insurers to providers.
- All numbers are inflation adjusted to 2015 dollars

Cancer Patients in the Cost Analysis

- Age 18+
- Cancer: Breast, colorectal, non-small cell lung, leukemia, lymphoma
- First and only cancer
- Enrolled with a single (participating) insurance plan over the phase of care

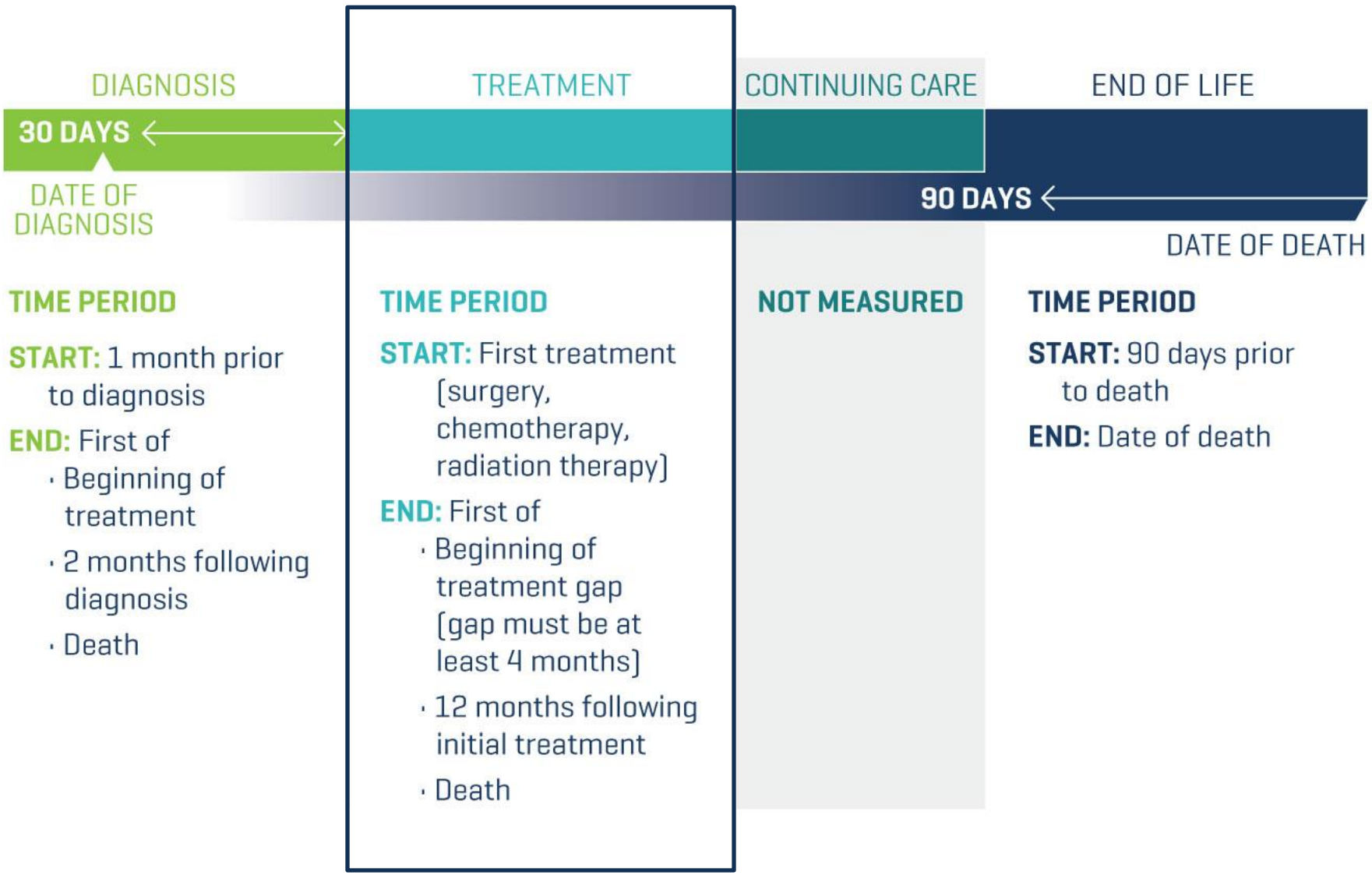
Cost of Care by Phase

Average cost



* For some patients the end of life phase overlaps with the treatment phase.

Phases of care



Treatment Components

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Surgery: Specific surgical procedures for each cancer site (e.g. mastectomy)

Chemotherapy:
Infusion services
IV and oral chemotherapy drugs
Supportive care:
- colony stimulating factors
- blood transfusions
- antibiotics
- antivirals
- antifungals
- anti-nausea drugs

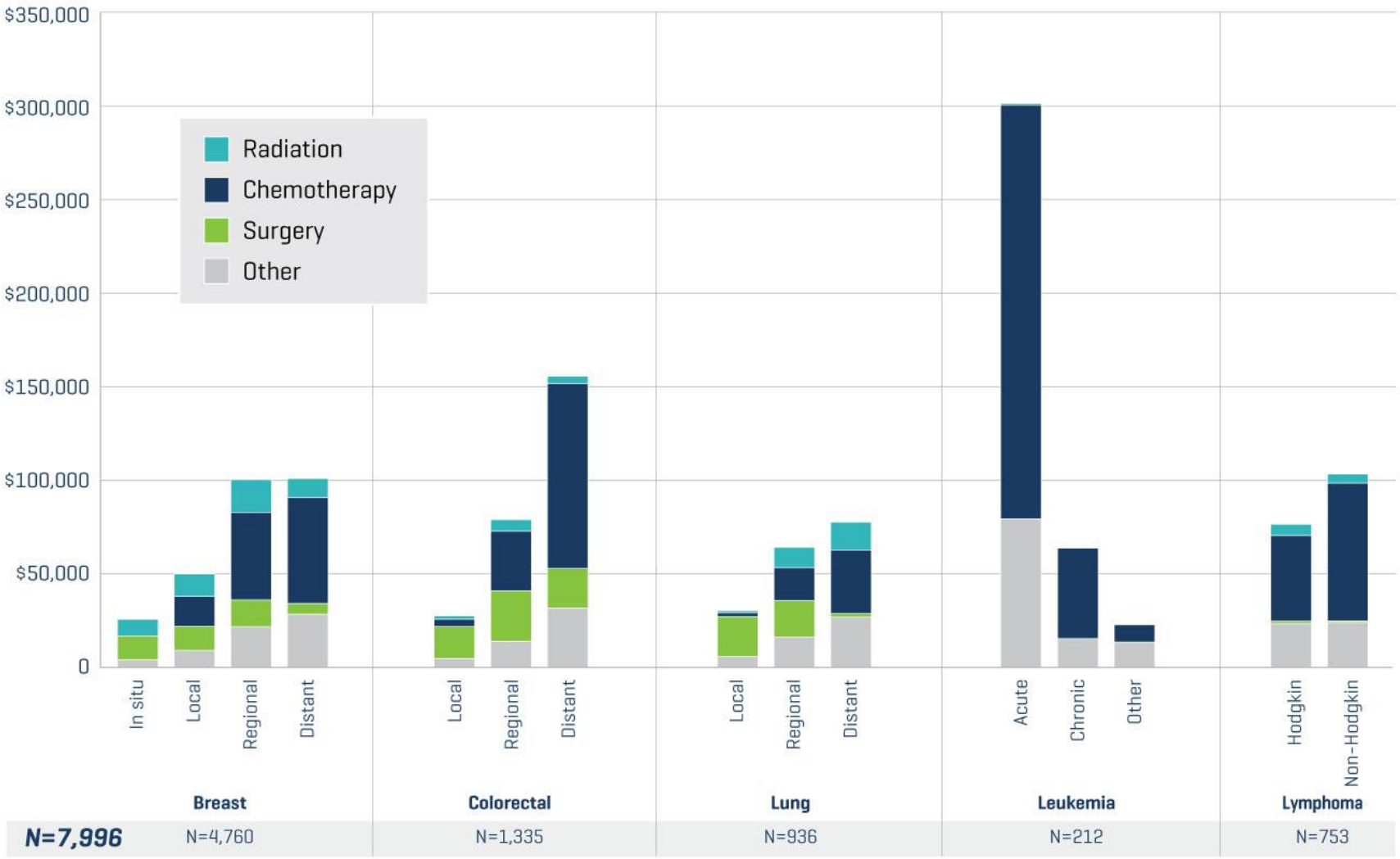
Radiation Therapy: All radiation oncology

Other: All other claims

All claims on the day of surgery, chemotherapy, or radiation therapy are considered part of the total cost of that treatment.

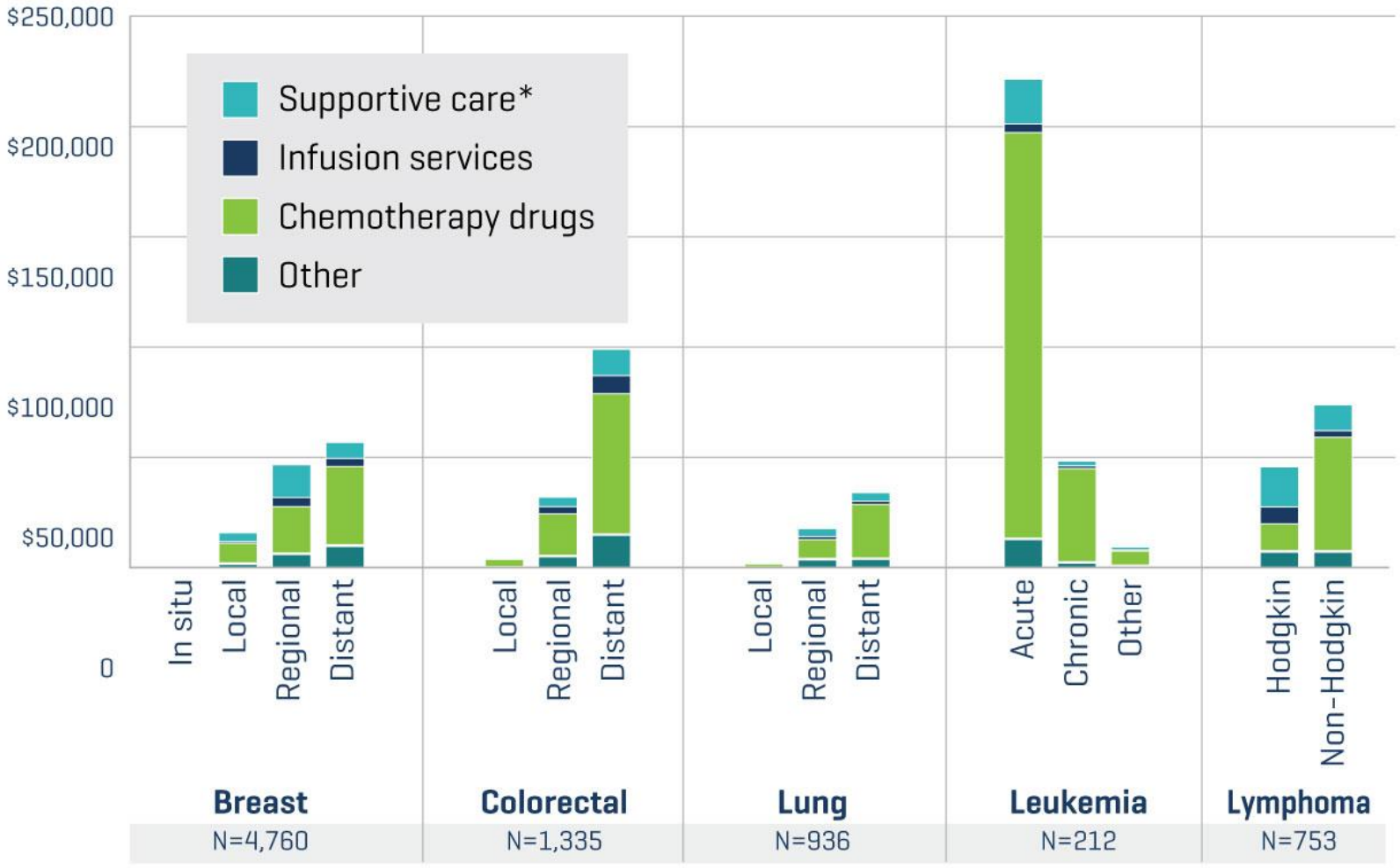
Treatment

Cost Components by Cancer Site and Stage



Cost of Chemotherapy

During Initial Treatment



* Supportive care includes: colony stimulating factors, blood transfusions, antibiotics, antivirals, antifungals, and anti-nausea medications.

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Most Expensive Chemotherapy Drugs: 2007 and 2014

2007	
Drug Name	Average Total Spend Across Treatment Phase*
Trastuzumab	$55,434
Rituximab	$39,413
Oxaliplatin	$39,372
Bevacizumab	$35,420
Docetaxel	$17,592
Paclitaxel	$5,728
Carboplatin	$1,217
Fluorouracil	$869
Doxorubicin	$631
Leucovorin	$595

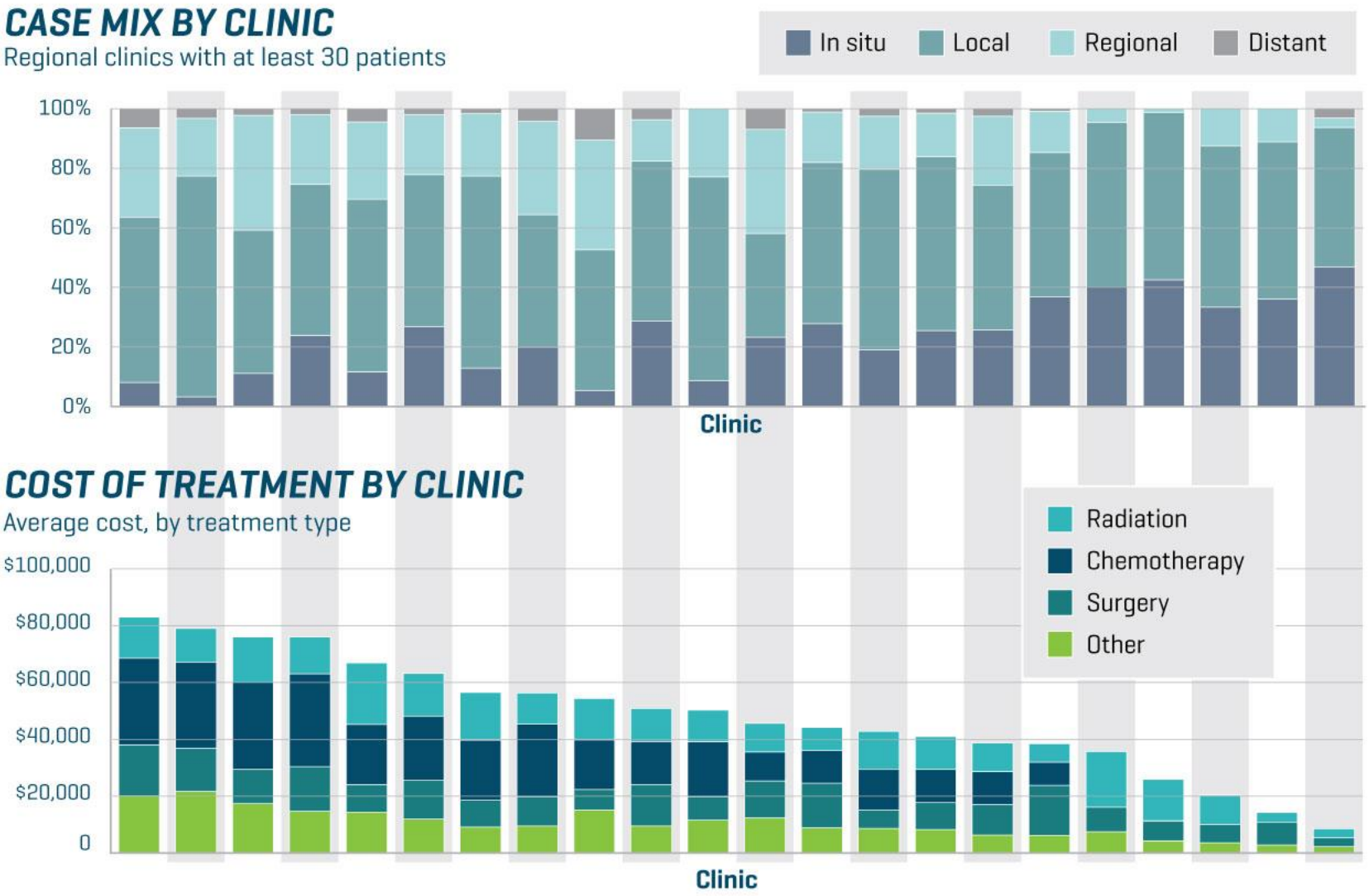
2014	
Drug Name	Average Total Spend Across Treatment Phase*
Trastuzumab	$86,837
Bevacizumab	$57,500
Pertuzumab	$51,304
Rituximab	$46,694
Pemetrexed	$27,921
Oxaliplatin	$11,027
Docetaxel	$7,334
Cyclophosphamide	$4,250
Paclitaxel	$3,350
Irinotecan	$1,641

*Treatment Phase defined as time from initiation of first treatment to beginning of first treatment gap OR 12 months after treatment. All costs expressed in 2015 dollars.

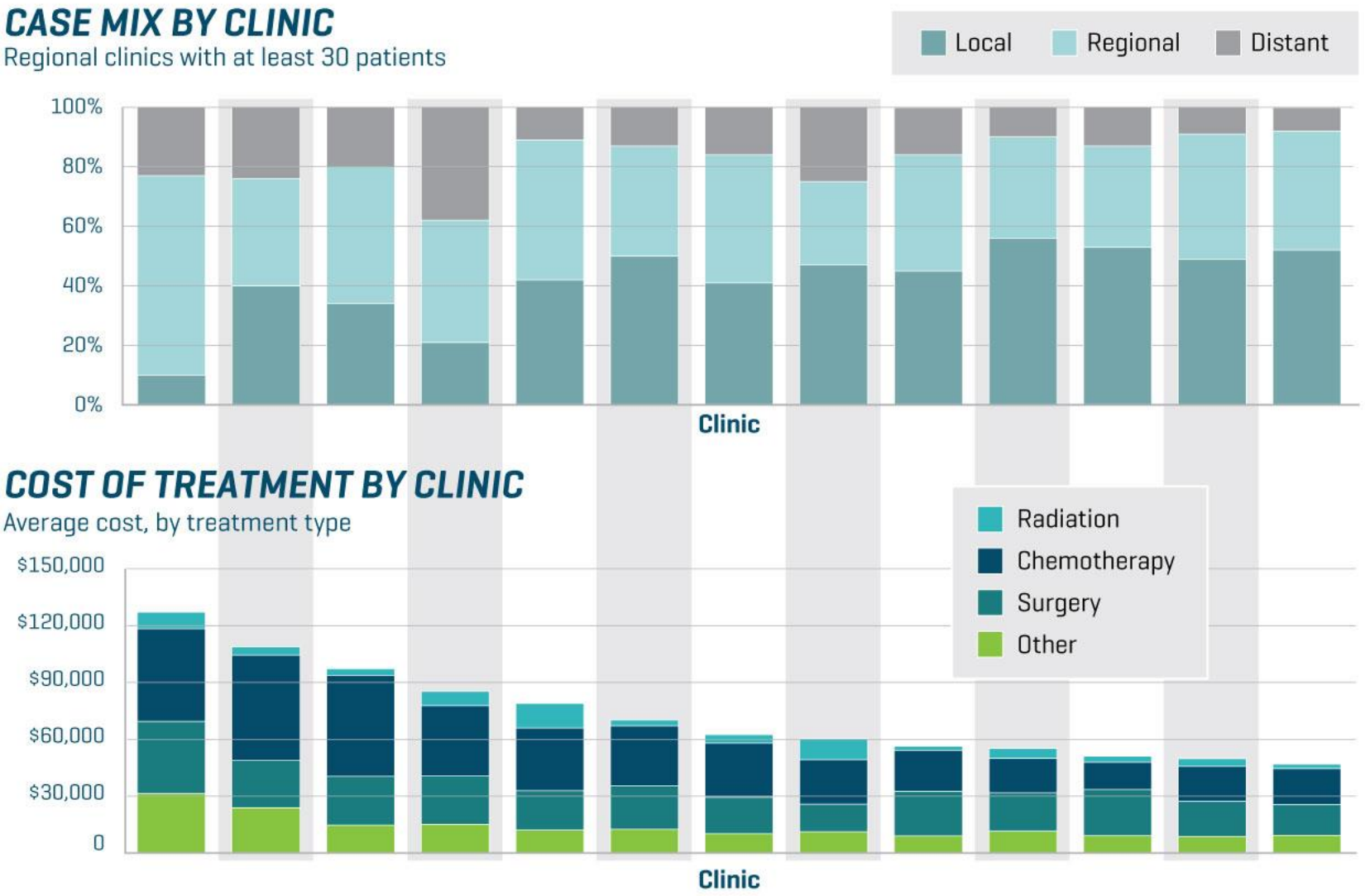
Clinic Cost Profiles

- Oncology clinics in Western Washington
- Included in the comparison if the clinic had at least 30 patients with that cancer type in our dataset

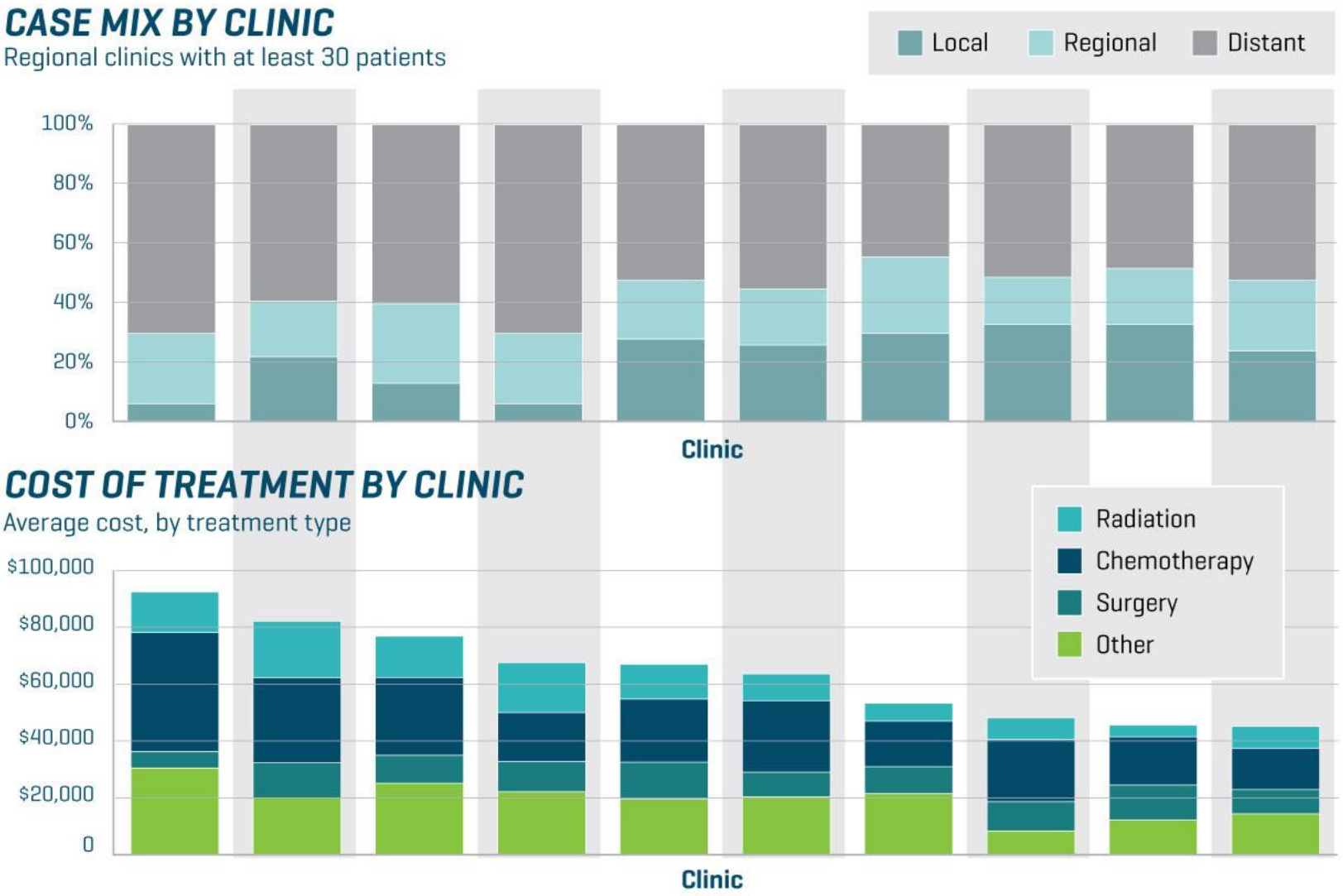
Clinic Profiles: Breast Cancer



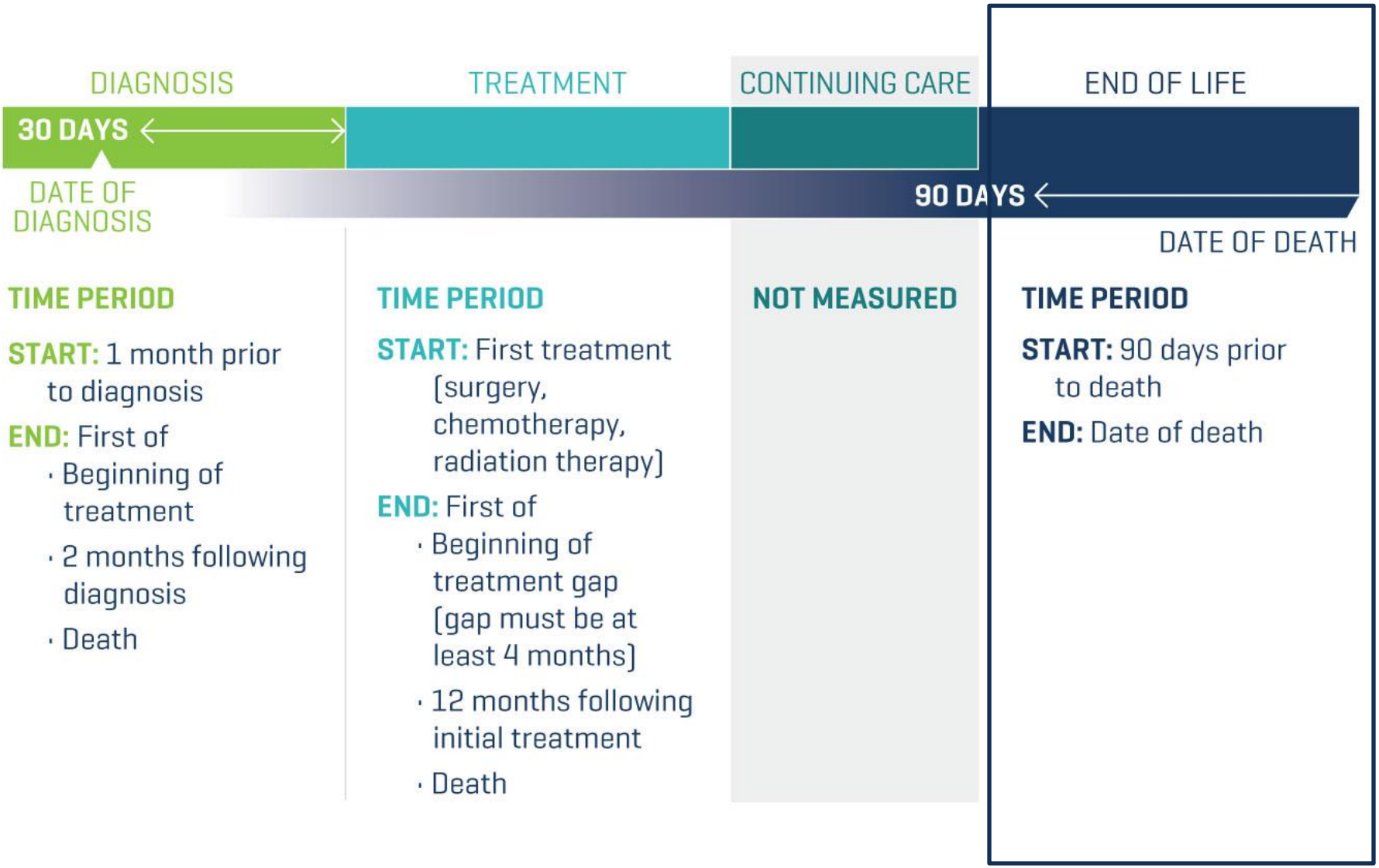
Clinic Profiles: Colorectal Cancer



Clinic Profiles: Lung Cancer



Phases of care

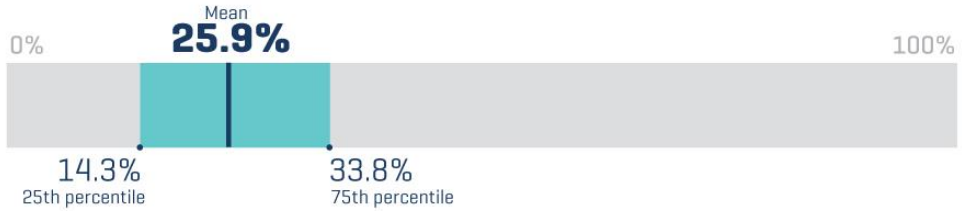


Results:

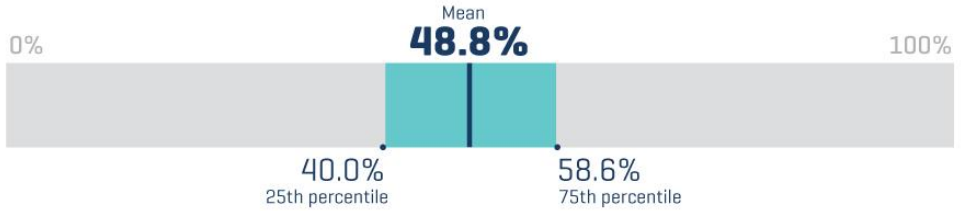
End of Life Phase

Regional results for metrics from the end of life phase

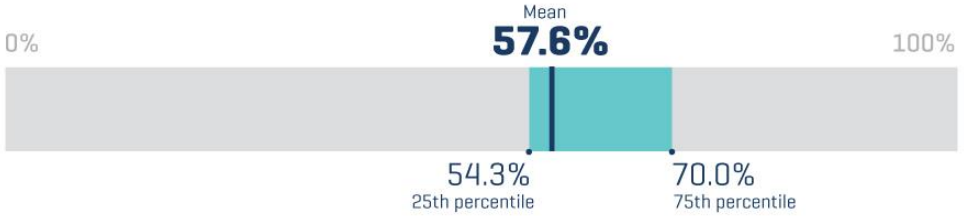
Use of chemotherapy or radiation therapy in last 30 days of life



Use of advanced imaging in the 30 days of life



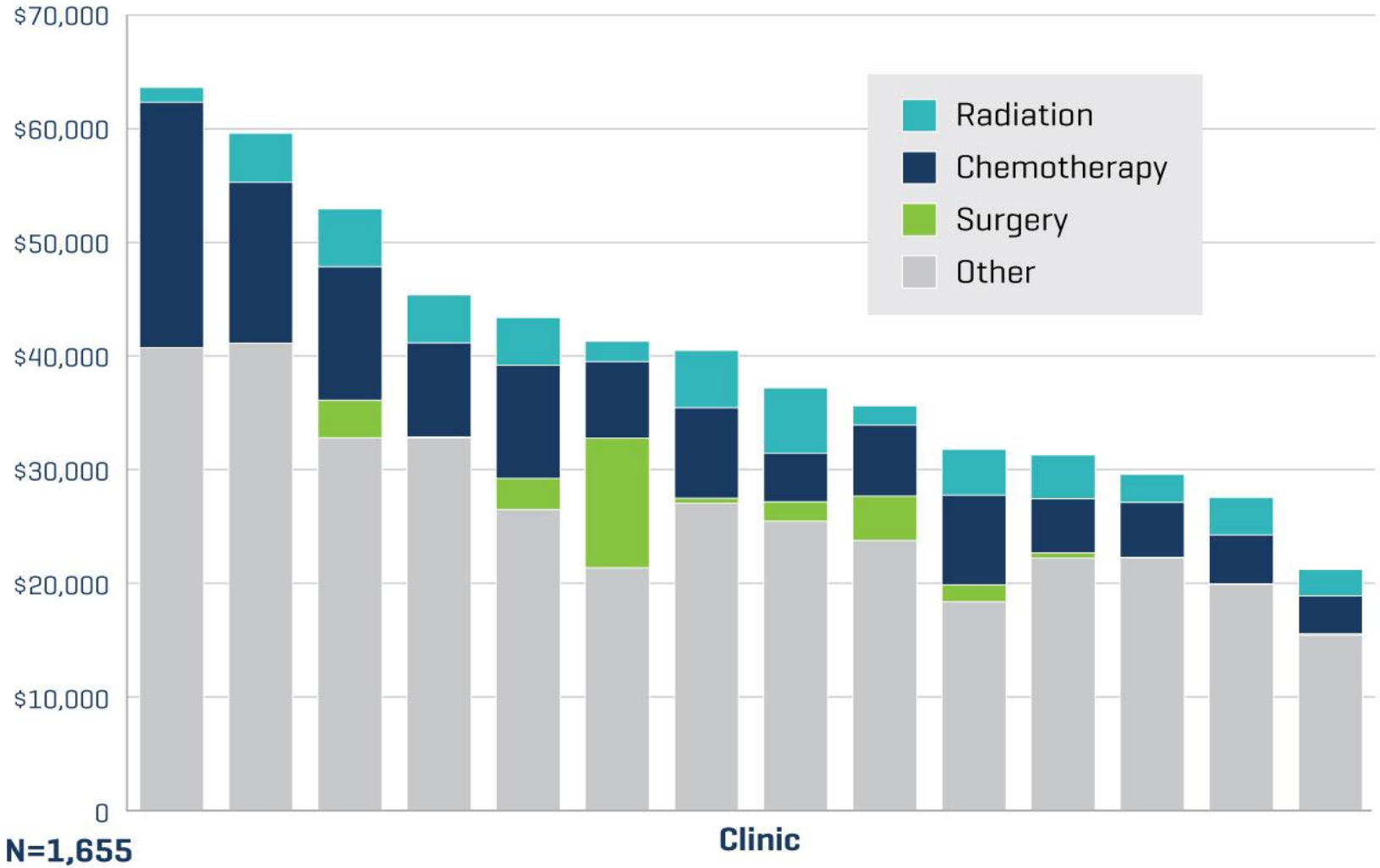
Inpatient admissions in last 30 days of life



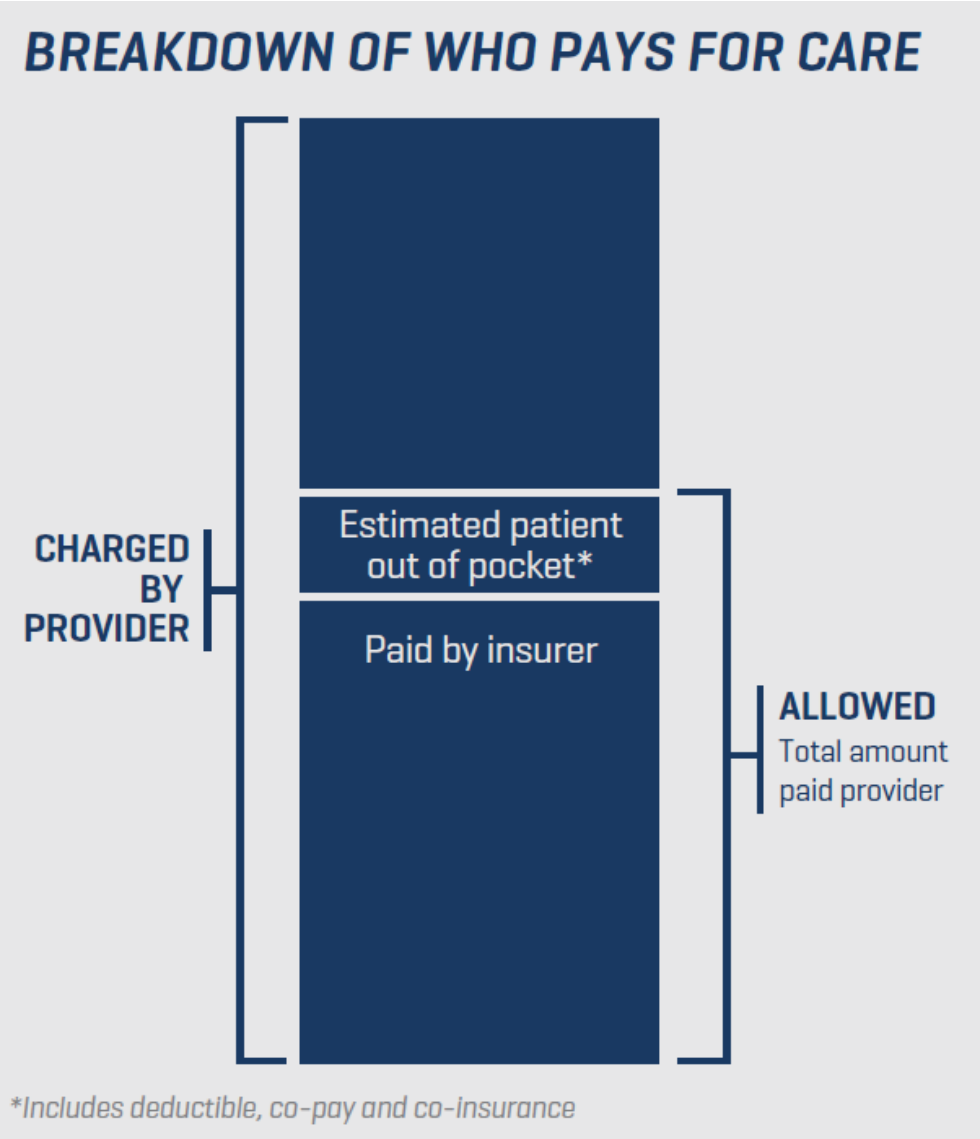
Emergency department visits in last 30 days of life

End-of-Life

Average cost, solid tumors only, last 90 days

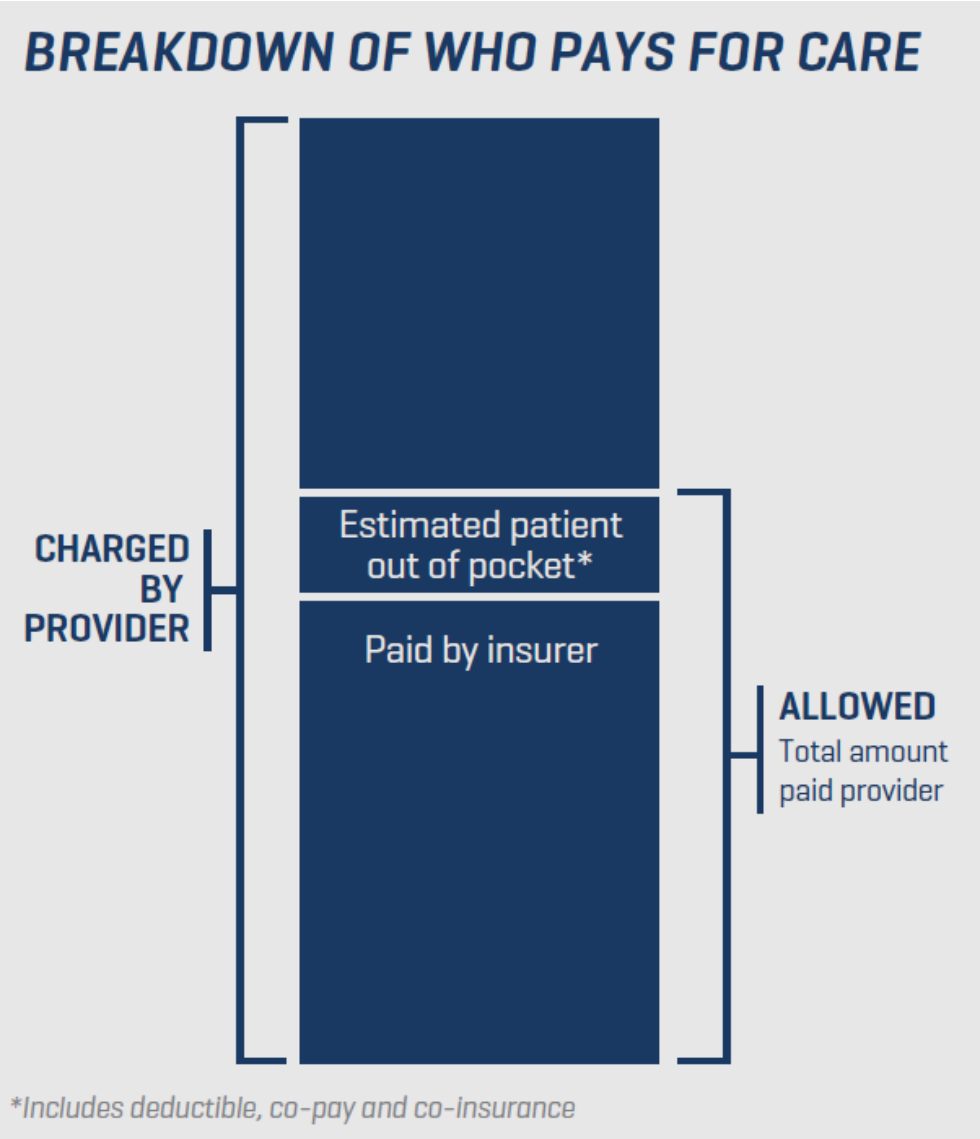


Estimated Out-of-Pocket Costs



The difference between the allowed amount and amount paid by insurer

Estimated Out-of-Pocket Costs



Included in estimated out-of-pocket costs:

- Deductible
- Co-pays
- Co-insurance

Medical cost to the patient may be lower if:

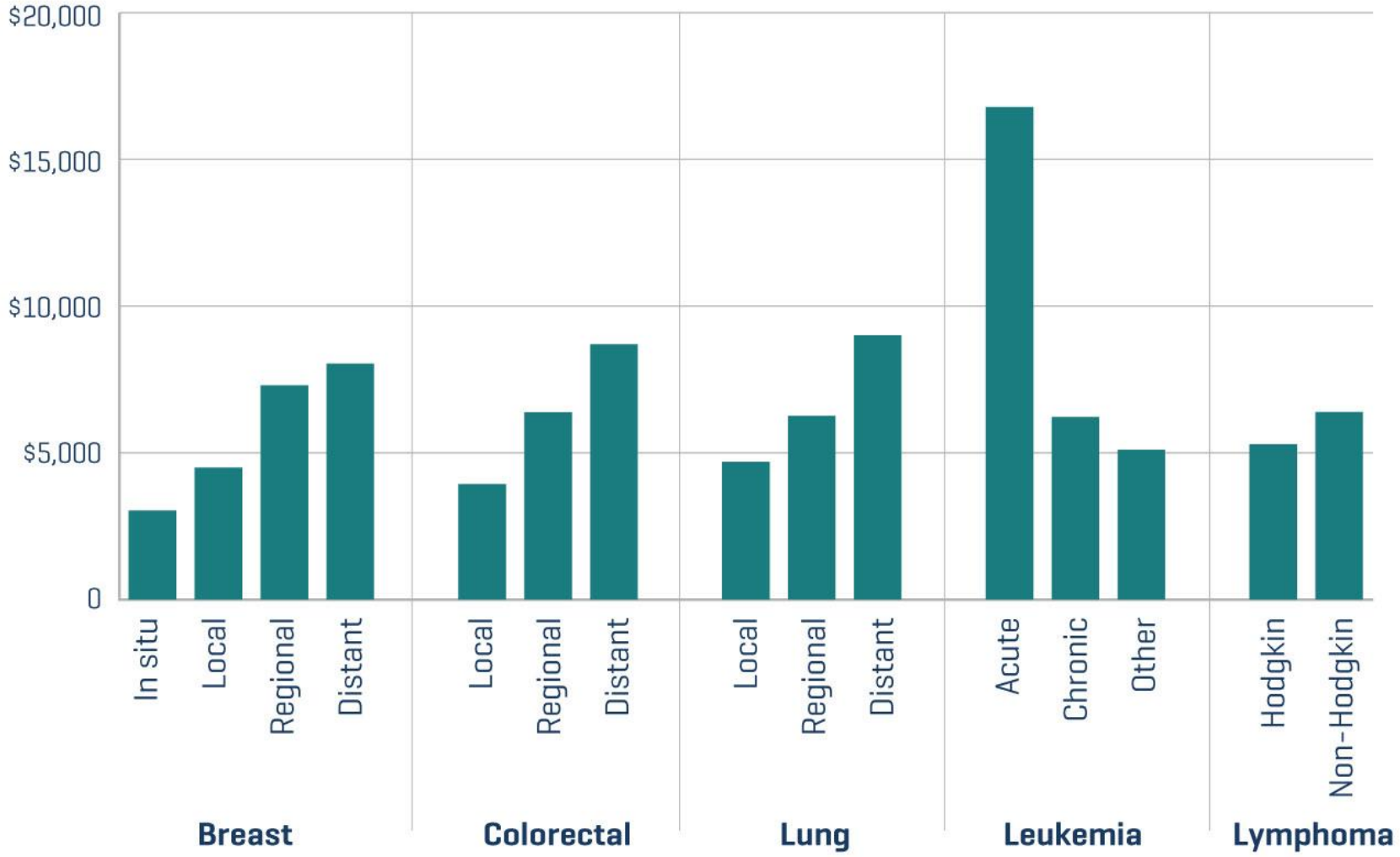
- The patient has more than one insurance coverage
- The provider reduces or does not bill the patient

Medical costs to the patient may be higher due to:

- Medical costs not covered by insurance
- Loss of income due to the inability to work

Estimated Out-Of-Pocket Costs Treatment Phase

Average Cost, by Cancer Site and Stage



Limitations of Insurance Claims Costs

- Only show what was paid for by insurance
- Do not reflect full patient financial burden
- Claims data show utilization, not clinical rationale or test results
- Measuring long periods of treatment may not be possible as patients are more likely to change their health care coverage.
- Commercially insured population only

Conclusions

- Chemotherapy is the largest component of treatment phase for all except local stage cancers
- Variability in chemotherapy use across providers suggests room for improvement in prescribing practices
- At End-of-Life chemotherapy use is contributing to costs with little benefit to patient – another area for improvement
- Out-of-pocket cost burden to patients is substantial