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Hutchinson Institute for
Cancer Outcomes Research

Community Cancer Care in Washington State

Quality and Cost Report 2026

Fred Hutch
Cancer Center

Skagit Wildlife Area

The Hutchinson Institute for Cancer Outcomes Research (HICOR®) developed the Community Cancer Care in Washington State: Quality and Cost Report 2026 to improve quality and affordability of cancer care. HICOR is a scientific research institute based at Fred Hutch Cancer Center. HICOR's mission is to improve cancer prevention, detection and treatment in ways that will reduce the economic and human burden of cancer. The report promotes transparency by providing an analysis of quality measures linked to cost on selected indicators of care. HICOR hopes that the information in this report will facilitate the development of interventions aimed at improving care quality, reducing variability in care and lowering the costs of cancer care for patients and the health care system.

This work has been reviewed by the Institutional Review Boards of Fred Hutch Cancer Center and Washington state, and is covered by data use agreements with the Centers for Medicare & Medicaid Services, Premera Blue Cross, Cambia Health Solutions Inc., Washington State Healthcare Authority, State of Washington Department of Health, Washington State Cancer Registry and the Cancer Surveillance System.

Rules of use

The report data may not be used for clinic or payer contracting (without mutual agreement), advertising or marketing.

Acknowledgments

This report is a culmination of many years of collaboration with patients, providers, payers, researchers and guideline experts to define and measure value in cancer care. We would like to thank the individuals involved in HICOR's Value in Cancer Care (VCC) Working Groups, Patient and Caregiver Working Group, Data Methods Committee and Steering Committee for helping us achieve community alignment in our priorities and our methodologies for performance measurement.

We would like to sincerely thank Fred Hutch Cancer Center for funding this report.

How to cite this report

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Available at **FredHutch.org/Cancer-Care-Report**

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From the HICOR Directors

The Hutchinson Institute for Cancer Outcomes Research (HICOR) is pleased to release the seventh Community Cancer Care Report (CCCR) on Cost and Quality in Washington State. Our ongoing goal for the CCCR is to support practices and communities in their efforts to improve care and outcomes for patients and to reduce costs to the health system.

CCCR findings are derived from a database that combines cancer registry and health insurance claims data for Washington state residents who have been diagnosed with cancer. The report is intended for a variety of audiences:

- **Providers** who can use the information to improve quality and provide high value cancer care
- **Patients** who need high quality cancer care at a price they can afford
- **Employers** that contribute to health insurance premiums and support their employees as they undergo cancer care
- **Public and private health insurers** that manage benefits and payments to providers on behalf of their members
- **The general public** who support Medicare and Medicaid through taxes and insurance premiums

The metrics in this report cover care delivered from 2020 to 2022. This is the time of the COVID-19 pandemic, when patients and clinics faced severe challenges to their operations. The general stability of the metrics is a testament to the resilience of oncology practice in Washington state during a very difficult time.

Like the 2025 report, this year's report presents separate results for the 13 counties covered by the Cancer Surveillance System (CSS) Registry, reflecting care primarily delivered between 2022 and 2024. Due to the recency of the data within the Washington State Cancer Registry, statewide reporting for this period is not yet available.

This report is indebted to many invaluable contributions from individuals in our community. The HICOR team is deeply grateful for their support. As always, our hope is that these findings serve as a catalyst for continued community collaboration in pursuit of high-quality, affordable cancer care for all patients in Washington state.

Scott Ramsey, MD, PhD
Director

Veena Shankaran, MD
Co-Director

Contents

Executive Summary

The HICOR team is pleased to provide the seventh edition of our publicly accessible statewide report of clinic-level quality and cost measures for cancer care. The report is designed to facilitate discussion among those who are most impacted by cancer care delivery: patients and their families, clinicians providing cancer care, and insurance plan administrators and employer groups who purchase insurance. We believe that public reporting spurs collaboration, research and innovation towards the goal of high-quality cancer care at a reasonable price for all Washingtonians.

The Community Cancer Care in Washington State: Quality and Cost Report 2026 includes metrics that community leaders identify as meaningful and actionable. The information in this report is a selective view of a very complex world. Issues not addressed in this report — such as physician-patient communication, respect for patient preferences and quality of life — are also critical aspects of cancer care. The metrics themselves are not intended to inform individual medical care decisions.

The results presented in this report draw from a patient-level database that links enrollment and claims records from commercial and public health insurance plans with clinical information from Washington state cancer registries. HICOR's linked database includes approximately 70 percent of patients with cancer who received care in Washington state between 2020 and 2022.

The quality measures include recommended treatment and testing following diagnosis, emergency department and inpatient hospital admissions during treatment, appropriate use of surveillance testing for patients who have been treated with curative intent, and care for patients in the last 30 days of life. Where possible, we have aligned community input with recommendations and evidence-based guidelines from national organizations such as the National Comprehensive Cancer Network and the American Society of Clinical Oncology, and quality initiatives such as the Quality Oncology Practice Initiative.

The findings in the 2026 report remain stable over time, with the exception of Measure 1 (**Recommended Cancer Treatment and Testing**) which has been reconfigured to better align with community needs and national standards. The **Hospitalization During Chemotherapy** metric continues to show that more than half of patients with cancer have an emergency department visit or require hospitalization during their first six months of chemotherapy treatment. **Breast Cancer Tumor Marker Testing Following Treatment** has declined substantially compared to prior reports. Finally, **End-of-Life Care** remains highly variable among practices.

For some measures, episodes of care costs decreased compared to 2025. The most notable cost decreases are in the **Hospitalization During Chemotherapy** and **Breast Cancer Tumor Marker Testing Following Treatment** measures, with an average decrease of over $6,000 and $3,000 per episode respectively.

For metrics reported at the regional level, **Germline Testing** for patients with pancreatic and prostate cancers remains low and unchanged from 2025. In addition, there is decreasing use of germline testing for patients with breast and ovarian cancers. **Timeliness of Care** shows that it takes 38 days for patients to start treatment following the initial visit with their oncology provider, similar to 2025. There continues to be significant differences in timeliness of care across race and insurance types.

The table on the next page provides an overview of the results.

Reporting Years: 2020–2022

	Measure Population	Regional Quality Average [Clinic-level Range[1]]	Summary Quality Score Range[2]	Regional Average Episode Cost Per Patient [Clinic-level Range[1]]
Measure 1: Recommended Cancer Treatment and Testing				
1.1: Recommended treatment based on cancer type	5721	68.6% [57.6% to 73.9%]	-12.7% to 7.9%	$84,832 [$75,955 to $104,931]
1.2: Somatic mutation testing for metastatic cancer	1735	79.3% [73.9% to 83.2%]		
Measure 2: Hospitalization During Chemotherapy				
2.1: Emergency Department (ED) visits during chemotherapy	8480	28.0% [21.9% to 35.3%]	-8.2% to 6.2%	$70,832 [$63,719 to $87,475]
2.2 Inpatient (IP) stays during chemotherapy	8480	30.2% [28.2% to 32.0%]		
Measure 3: Breast Cancer Tumor Marker Testing Following Treatment				
3.1: Breast cancer tumor marker testing following treatment	1588	12.7% [3.8% to 32.4%]	-19.7% to 8.8%	$17,288 [$15,736 to $19,087]
Measure 4: End-of-Life Care				
4.1: Chemotherapy in the last 14 days of life	9683	6.0% [4.3% to 11.3%]	-28.7% to 17.1%	$23,684 [$18,823 to $30,484]
4.2: Multiple Emergency Department (ED) visits in the last 30 days of life	9683	17.9% [12.9% to 22.6%]		
4.3: Intensive Care Unit (ICU) stay in the last 30 days of life	9683	25.1% [13.6% to 46.0%]		
4.4: Hospice care 3 or more days prior to death	11212	58.5% [54.2% to 62.7%]		
State-Level Reporting				
Measure 5: Germline Testing				
5.1: Germline testing for breast cancer	1820	61.9%	n/a	n/a
5.2: Germline testing for ovarian cancer	495	53.5%	n/a	n/a
5.3: Germline testing for pancreatic cancer	737	27.1%	n/a	n/a
5.4: Germline testing for prostate cancer	1262	11.3%	n/a	n/a
Measure 6: Timeliness of Care				
6: Time to start of treatment	4022	38 days	n/a	n/a

[1] All metric quality and cost clinic-level ranges have been risk-standardized for patient factors and clinic size.

[2] The range represents clinic performance with zero as the regional average.

What's New

Key updates in the 2026 Community Cancer Care in Washington State: Quality and Cost Report

Update to Reporting Years

The report includes measurement results for 2020 to 2022, an update from 2019 to 2021 in last year's report, but years may vary based on the measure. Please see the 2026 Methodology report for exact reporting years by measure.

Updates to Measures

Recommended Treatment Metrics

The recommended treatment metrics have been updated to better reflect national measures (PQRS, QOPI, NCCN guidelines, ASH, CQMS, EOM, CoC, SSO) after input from clinical disease-specific experts, quality leaders at regional clinics, and the Value in Cancer Care (VCC) Steering Committee. Five new metrics have been added: for patients with breast cancer, receipt of sentinel lymph-node biopsies and receipt of surgery within 60 days of diagnosis; for patients with non-small cell lung cancer, receipt of chemotherapy within 90 days of surgery; baseline cytogenetic testing on bone marrow for patients with acute leukemias, and; receipt of baseline flow cytometry for patients with chronic lymphocytic leukemia (CLL).

We removed metrics that were no longer included in national guidelines or had high overall adherence over time. These include: receipt of chemotherapy within 9 months of diagnosis for stage II-III rectal cancer; receipt of chemotherapy within 60 days of surgery for stage II-IIIA non-small cell lung cancers (NSCLC); and no bevacizumab for metastatic NSCLC tumors within 3 months of diagnosis.

Somatic Mutation Testing

We now measure somatic mutation (tumor) testing for aditional metastatic cancers: prostate, pancreatic, bladder and ovarian. More types of testing technology are now counted as somatic testing. Test types are based on NCCN guidelines for each cancer site.

Inclusion of Hematologic Cancers

In response to community interest, we have expanded our measurement of hematologic cancers. First, hematologic cancers are now included in the recommended treatment measures (see Updates to Measures above). We have added Chronic Lymphocytic Leukemia (CLL) to Measure 2: Hospitalization During Chemotherapy. Finally, hematologic cancers are now added to metric 4.4: Hospice care 3 or more days prior to death (End-of-Life care).

How to Read and Interpret the Report

The report provides select indicators of cancer care quality and cost for 26 hospital systems and clinics in Washington state. Results for hospital systems and clinics are shown relative to the regional average.

Interpreting the Results

- **The regional average for each quality measure is not a benchmark.** The regional average is included to provide a regional reference point when viewing individual clinic results. All graphs highlight clinics with scores that are 5% above or below the regional quality average. The 5% rate was chosen after consultation with the Value in Cancer Care Steering Committee.
- **Cost represents the total amount paid by the insurer to all health care providers over the episode of care relevant to the measure.** Cost includes payments for cancer-directed and non-cancer care. Cost reflects the amount of services provided and the payment per unit of service. Both payment levels and use of services vary from facility to facility.
- **The report does not provide medical advice on how to treat an individual patient.** No medical advice or conclusions about individual care should be drawn from this report. Patients with questions about their health care should contact their providers.
- **The results in this report should be accurately cited.** Users of the report should make precise statements about the results and acknowledge the difference between the regional and the clinic-level outcomes. Clinic-level results have been risk standardized — that is, adjusted for clinic size and patient characteristics — to facilitate comparison across clinics. Example statement: "29.7% of patients at Clinic X had an emergency department visit during the first six months after the start of chemotherapy, after adjusting for clinic size and patient characteristics."
- **How to cite this document**: Hutchinson Institute for Cancer Outcomes Research. Community Cancer Care in Washington State: Quality and Cost Report 2026. © 2026 Fred Hutch Cancer Center, Seattle, WA.
- **The results in this report are intended to improve care for patients with cancer.** Specifically, report recipients are prohibited from negotiating contracts (without mutual agreement) or engaging in advertising or marketing based on the data shared in the report.

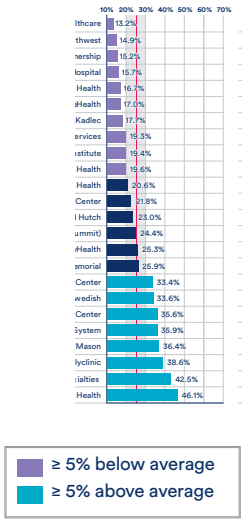
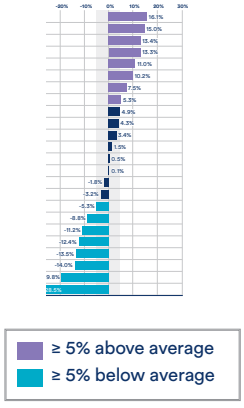
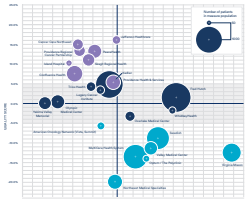
Understanding the Results Section

Summary results are reported for four measures. Each measure combines the results of up to four individual metrics. For example, the Hospitalization During Chemotherapy measure uses two metrics: 1) Emergency department (ED) visits during chemotherapy and 2) Inpatient (IP) stays during chemotherapy. The table on page 9 describes the key features of the Results section.

Understanding the Methodology

A table with individual metric definitions can be found in Appendix A. For complete methodology information please download a copy of the Community Cancer Care in Washington State: Methodology 2026 report available at FredHutch.org/cancer-care-report. It summarizes the critical steps in metric construction, including the patient population, reporting years, metric specifications, patient attribution to clinics, standardizing individual quality metrics, standardizing costs and constructing a summary quality score.

How to Read the Report

Icon	Item	Item Description	Example
	Lists the quality metrics in each measure.	This item is helpful for understanding what is being measured and reported. For more detailed metric definitions, see Appendix A.	**MEASURE 1A: Recommended Treatment for Breast, Colorectal and Lung Cancer**
	Risk-Standardized Rates of Individual Quality Metrics Scale: Measured 0 to 100% utilization. Higher quality is always at the top of the figure.	This item is helpful for understanding each clinic's results before combining into a summary quality score. **Citing the results:** "26.1% of patients at Clinic X received recommended therapy based on cancer types, after adjusting for clinic size and patient characteristics." The red line, shown in the sample chart to the right, indicates the regional average. The grey shading to the right and left of the red line indicates 5% below and above the regional average. The teal bars indicate clinics that are more than 5% away from the regional average in the lower-performing direction while the purple bars indicate clinics that are more than 5% away from the regional average in the higher-performing direstion. Pay close attention to the numbers: 1. The difference between clinics can be small. 2. The scales may change.	
	Summary Quality Score The summary quality score combines individual clinic results into one quality score. Overall performance is reported relative to the regional average.	This item provides a more comprehensive picture of clinic quality within a care topic area. **Citing the results:** "Clinic X's summary quality score was 2.4% points above the regional average." The 0% line indicates the regional average for this care topic area. The grey shading to the right and left of the 0% line indicates 5% below and above the regional average. The teal bars indicate clinics that are greater than 5% below the regional average while the purple bars indicate clinics that are greater than 5% above the regional average.	
	Summary Quality Score and Costs Displays the summary quality score on the y-axis and cost on the x-axis to facilitate a comparison of each clinic's quality score and costs.	This item is helpful in evaluating the relationship between quality and cost. The grey shading of the y-axis indicates clinics that fall within 5% above and below the summary quality score regional average. The size of the bubble is representative of the clinic size. Pay close attention to the x-axis (cost) scale. The scale varies between graphs.	

Results:

Medicare & Commercial

Measure 1:
Recommended Cancer Treatment and Testing

Cancer patient outcomes are better when cancer care providers follow evidence-based recommendations for treatment and testing.

Measure 1.1:
Recommended Treatment for Breast, Colon, Lung and Hematologic Cancer

Evidenced-based clinical practice guidelines, or standards of care, exist for the treatment of all major cancers. These guidelines recommend treatment that is intended to cure or control the cancer, depending on the stage of the disease. Treatments can include chemotherapy, surgery, radiation, immunotherapy, targeted therapy and hormone therapy, among others.

Treatment guidelines that U.S. cancer care providers follow are typically those issued by professional organizations such as the American Society of Clinical Oncology (ASCO) and the National Comprehensive Cancer Network (NCCN). They reflect the consensus opinion of panels of clinicians and oncology researchers (and sometimes patient advocates), based on the most current data.

This section of the report describes and displays metrics that summarize provider adherence to several recommended cancer treatments. The metrics measure adherence to treatment guidelines for breast, colon, non-small cell lung, and hematological cancers.

The measurement of how well clinics follow recommendations for breast, colon, lung and hematologic cancer, allows for a picture of how clinics follow cancer care recommendations overall.

Some measures we have reported in prior years (use of chemotherapy for non-small cell lung and rectal cancers as well as use of bevacizumab for metastatic non-small cell lung cancer) are no longer in our report as they are no longer included in current national quality measures.

Individual metric definitions are available in Appendix A.

MEASURE 1.1

Breast Cancer

- Receipt of chemotherapy within 120 days of diagnosis for ER/PR negative patients (stage IC-III)
- Hormone therapy (tamoxifen or aromatase inhibitor) within 365 days of diagnosis for ER/PR positive patients (stage IC-III)
- Receipt of trastuzumab based on HER2 status (stage IC-III) within 365 days of diagnosis
- Receipt of sentinel lymph node biopsies (stage IA) within 180 days of diagnosis
- Receipt of lumpectomy or mastectomy (stage I-III) within 60 days of diagnosis

Colon Cancer

- Receipt of chemotherapy within 120 days of diagnosis for patients with colon cancer (stage III)

Non-Small Cell Lung Cancer

- Receipt of chemotherapy within 90 days before or after surgery

Hematologic Cancer

- Receipt of baseline cytogenetic testing on bone marrow within 90 days prior or 180 days following diagnosis for acute leukemia
- Receipt of baseline flow cytometry within 90 days prior or 180 days following diagnosis for chronic lymphocytic leukemia (CLL)

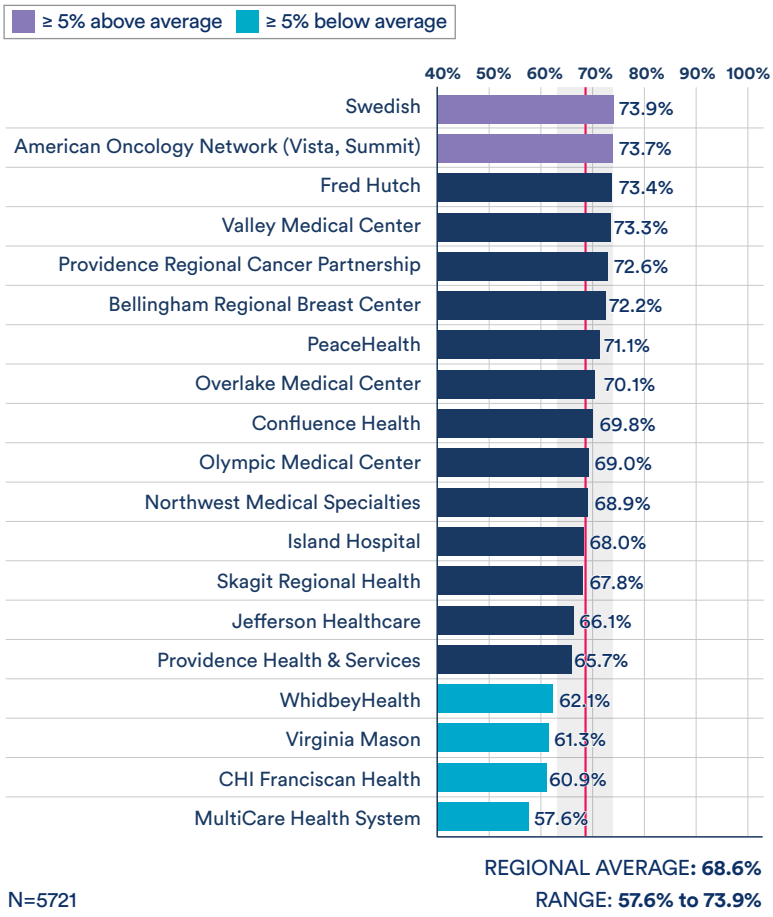
Population: Patients with breast, colon, lung, and hematological cancer undergoing cancer treatment

Reporting Years: 2020–2022

Time Period: The treatment period begins at the start of active treatment (surgery, chemotherapy or radiation therapy) and continues until there is a four-month gap in treatment. The period may end earlier if the patient died or treatment extended beyond 12 months.

Figure 1.1: Recommended treatment based on cancer type

Risk-Standardized Rate | Higher rate = higher quality



REGIONAL AVERAGE: **68.6%**

N=5721

RANGE: **57.6% to 73.9%**

Results: 1.1

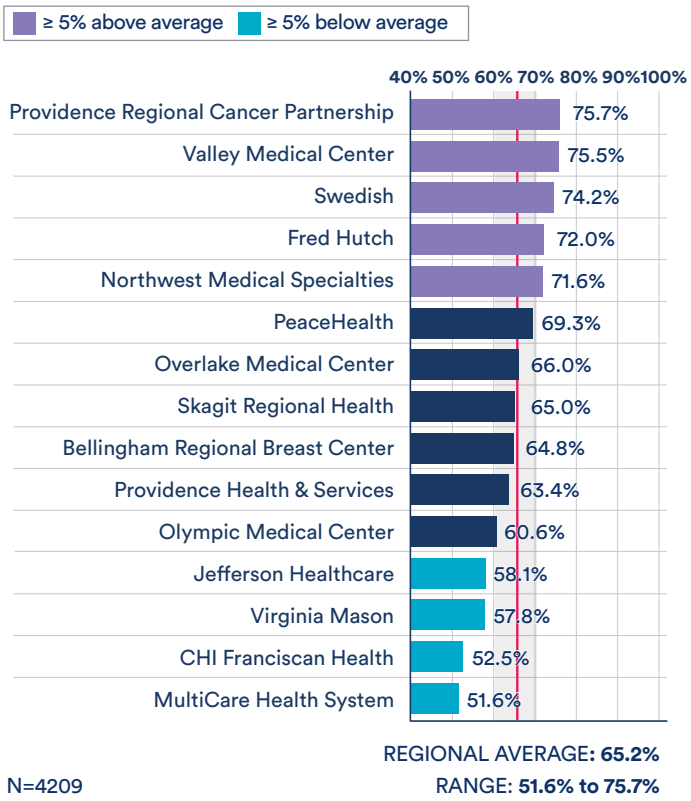
There are 5,721 patients included in this measure.

On average, 68.6 percent of patients received recommended therapy based on cancer type. There is a 16.3 percentage point difference between the highest and the lowest clinic rate. In general, adherance to recommended treatment metrics is lower than expected.

A breakdown of recommended treatment by cancer type is available on the next page. Colon and lung metrics are combined due to small numbers. Only clinics that meet population size requirements within each cancer type are included in the results.

Figure 1.1A: Recommended treatment for breast cancer

Risk-Standardized Rate | Higher rate = higher quality



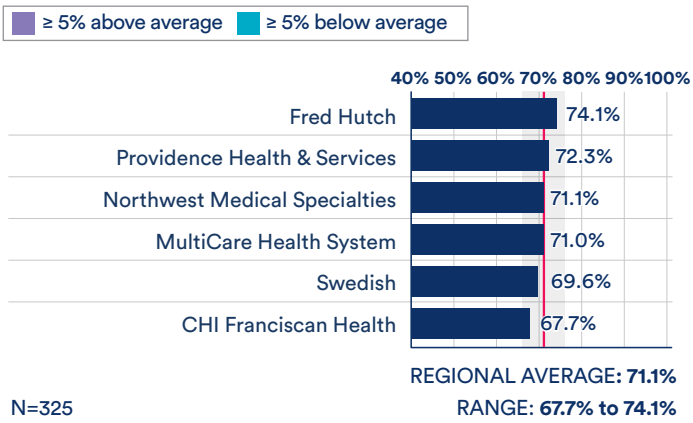
N=4209

REGIONAL AVERAGE: **65.2%**

RANGE: **51.6% to 75.7%**

Figure 1.1B: Recommended treatment for colon and lung cancer

Risk-Standardized Rate | Higher rate = higher quality



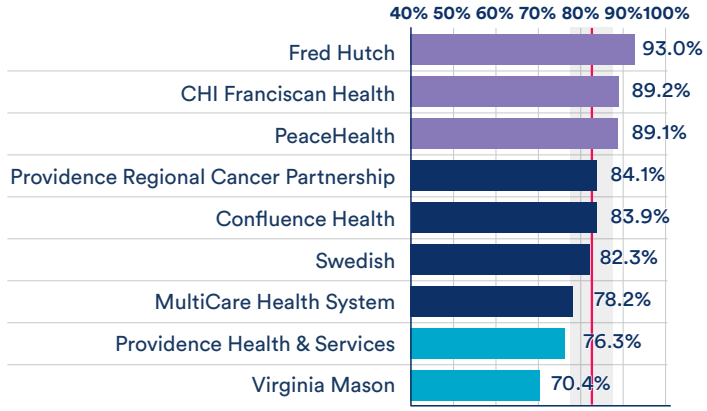
N=325

REGIONAL AVERAGE: **71.1%**

RANGE: **67.7% to 74.1%**

Figure 1.1C: Recommended treatment for hematologic cancers

Risk-Standardized Rate | Higher rate = higher quality



N=759

REGIONAL AVERAGE: **82.7%**

RANGE: **70.4% to 93.0%**

Results: 1.1A & 1.1B & 1.1C

In this measure, there are 4,209 patients with breast cancer, 325 patients with colon cancer, and 759 patients with hematologic cancer.

On average, 65.2 percent of breast cancer patients received recommended treatment. There is a 24.2 percentage point difference between the highest and the lowest clinic rate.

On average, 71.1 percent of colon and lung cancer patients received recommended treatment. There is a 6.4 percentage point difference between the highest and the lowest clinic rate.

On average, 82.7 percent of hematologic cancer patients received recommended treatment. There is a 22.5 percentage point difference between the highest and the lowest clinic rate.

Measure 1.2:
Somatic Mutation Testing for Metastatic Cancer

Biomarker testing (or somatic testing) identifies mutations within cancer cells and may have both prognostic significance and treatment implications. Somatic mutation testing is recommended by NCCN guidelines across a variety of cancers and represents an important component of quality care.

Many newer cancer treatments specifically target certain mutations. Testing for mutations can help guide treatment, as patients with specific mutations are better served by the drugs that target mutations versus more typical chemotherapeutics. In many instances, biomarker testing is essential at the time of diagnosis to determine initial therapy; in other instances, biomarker testing is needed for future treatment planning and sequencing. For example, testing for microsatellite instability (MSI) and mismatch repair immunohistochemistry (MMR IHC) is critically important in determining potential benefit from immunotherapies. In lung cancer, for example, testing for epidermal growth factor receptor (EGFR), anaplastic lymphoma kinase (ALK) and the ROS1 gene is important in determining initial therapy. Similarly, in colorectal cancer, testing for mutations in a variety of genes including the KRAS, NRAS, and BRAF genes is essential for selecting the most appropriate therapy. Testing for these various markers can be done through individual gene testing or Next-Generation Sequencing (NGS) panels which tests multiple genetic markers from a patient's tumor.

This measure provides insight into how well clinics follow biomarker testing recommendations, with a higher rate suggesting better alignment with quality care.

Individual metric definitions are available in Appendix A.

MEASURE 1.2

Somatic mutation testing for metastatic cancer

- Receipt of NGS or other somatic mutation testing (see Appendix A for full list of testing)

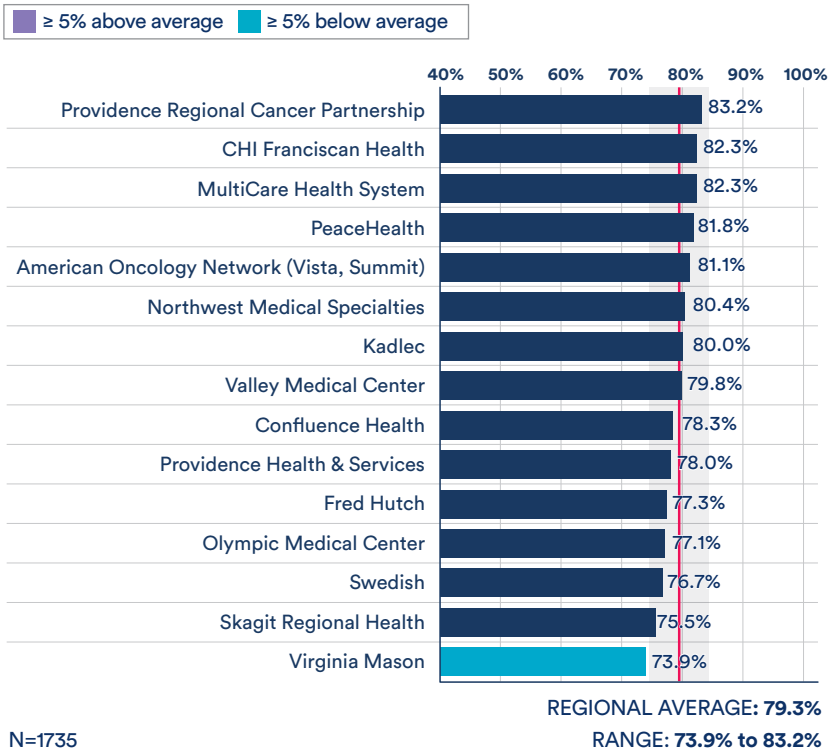
Population: Patients with metastatic non-small cell lung, colorectal, prostate, pancreatic, bladder or ovarian cancer.

Reporting Years: 2020–2022

Time Period: The testing period begins 60 days prior to diagnosis and continues through 120 days following diagnosis.

Figure 1.2: Somatic mutation testing for metastatic non-small cell lung, colorectal, prostate, pancreatic, bladder and ovarian cancer

Risk-Standardized Rate | Higher rate = higher quality



REGIONAL AVERAGE: **79.3%**

RANGE: **73.9% to 83.2%**

N=1735

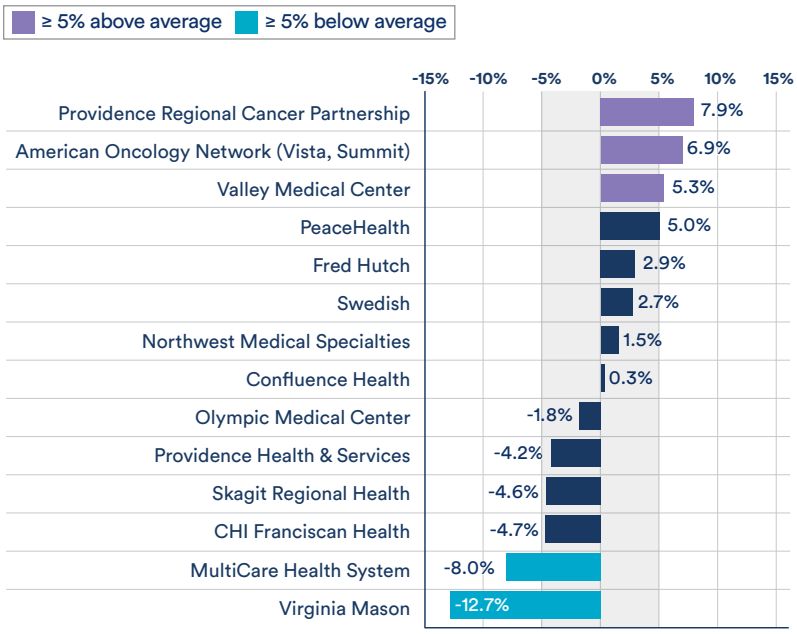
Results: 1.2

There are 1,735 patients in this measure.

On average, 79.3 percent of patients received recommended somatic mutation testing based on cancer type. There is a 9.3 percentage point difference between the highest and the lowest clinic rate. In general, patients are receiving appropriate testing based on their cancer type.

Figure 1.3: Recommended cancer treatment and testing

Summary Quality Score | Positive score = better than the regional average
Negative score = below the regional average



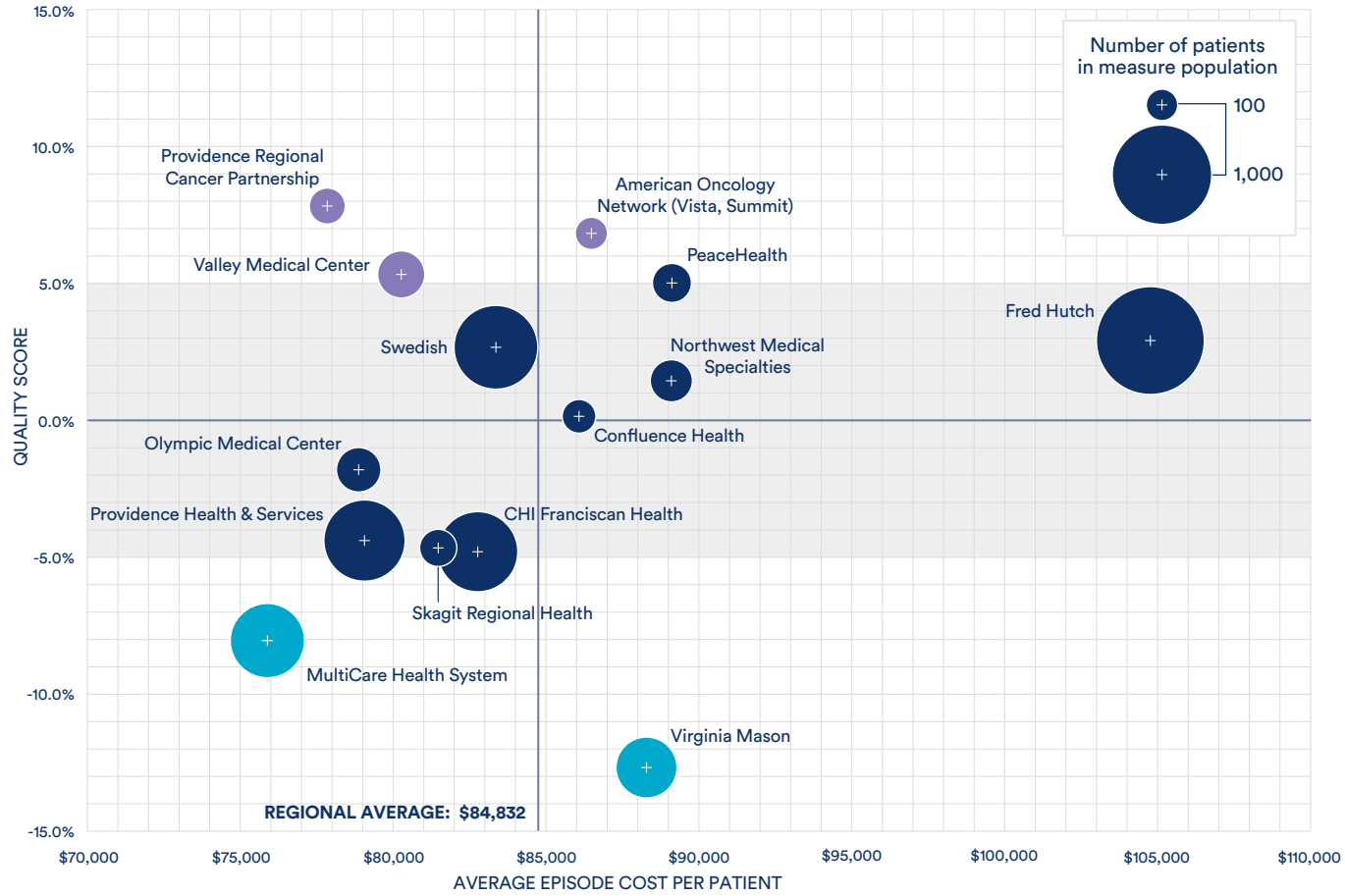
Zero represents clinic performance at the regional average
RANGE: **-12.7% to 7.9%**

Results: 1.3

The summary quality scores, indicating clinic performance relative to the regional average, show a difference of 20.6 percentage points between the highest-performing clinic and lowest-performing clinic.

Figure 1.4: Recommended cancer treatment and testing

Summary quality score and cost



Average length of episode: **341 days**

Summary Quality Score Range: **-12.7% to 7.9%**

Cost Range: **$75,955 to $104,931**

Only 14 of the 20 clinics reported in Measure 1 are included on this graph due to the requirement that each clinic have 40+ patients to calculate average cost. The quality measures are calculated using a different time period than the cost measure and, as a result, more patients and clinics were able to be included in graphs 1.1 and 1.2.

Results: 1.4

The regional average for cost of care over the period is $84,832, with an average treatment episode length of 341 days. The cost range is $28,976 ($75,955 to $104,931). The quality score, indicating clinic performance relative to the regional average, shows a difference of 20.6 percentage points between the highest-performing clinic and lowest-performing clinic.

There is no relationship between episode cost and the quality score, suggesting that there may be an opportunity to lower costs without sacrificing quality.

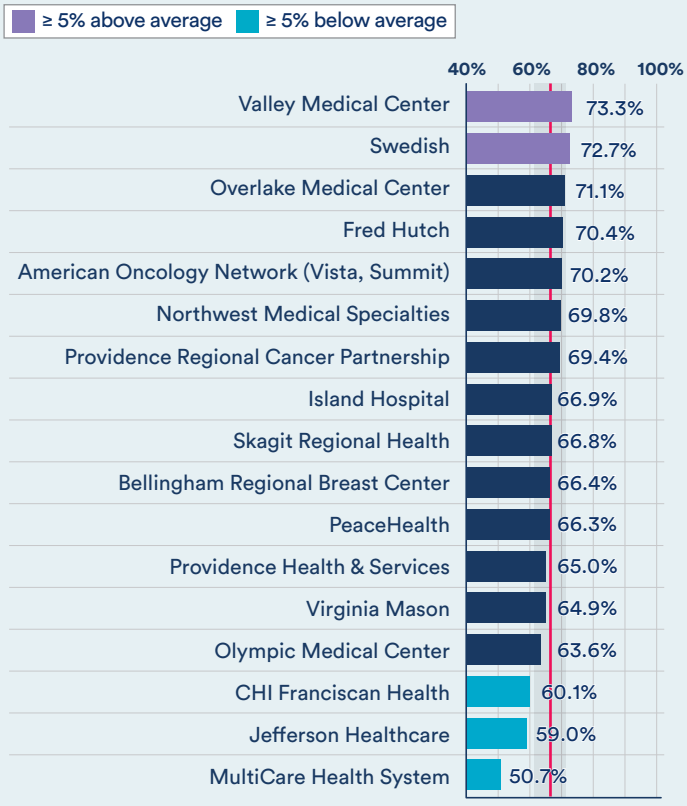
Puget Sound Region Results

Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

Reporting Years: 2021-2023

Figure 1.5: Recommended treatment based on cancer type, Puget Sound Region

Risk-Standardized Rate | Higher rate = higher quality



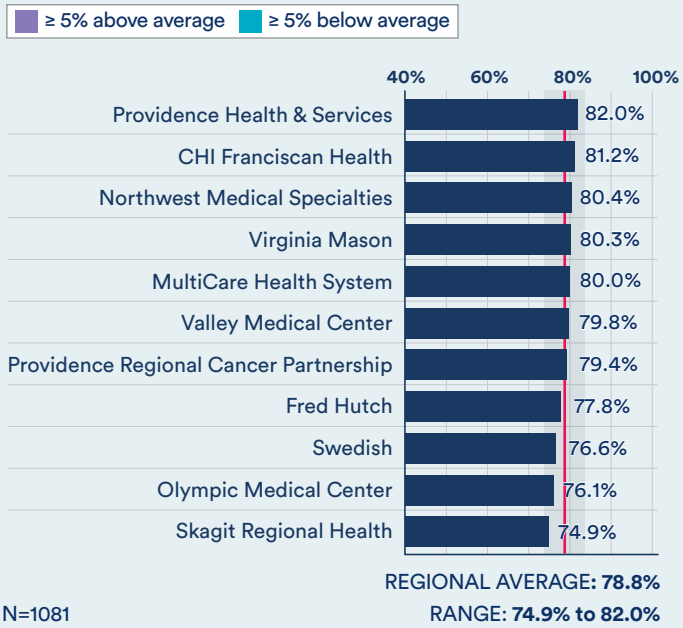
REGIONAL AVERAGE: **66.5%**

N=4040

RANGE: **50.7% to 73.3%**

Figure 1.6: Somatic mutation testing based on cancer type, Puget Sound Region

Risk-Standardized Rate | Higher rate = higher quality



REGIONAL AVERAGE: **78.8%**

N=1081

RANGE: **74.9% to 82.0%**

Results: 1.5 & 1.6

There are 4,040 patients included in the **Recommended treatment by cancer type** metric for the Puget Sound Region (1.5) and 1,081 patients in the **Somatic mutation testing** metric for the Puget Sound Region (1.6).

On average, 66.5 percent of patients received recommended treatment based on cancer type. There is a 22.6 percentage point difference between the highest and the lowest clinic rate. In general, the majority of patients receive appropriate therapy based on their cancer type.

On average, 78.8 percent of patients received recommented somatic mutation testing. There is a 7.1 percentage point difference between the highest and the lowest clinic rate. In general, adherance to recommended treatment metrics is lower than expected.

Measure 2:
Hospitalization During Chemotherapy

A lower rate of emergency department (ED) visits and inpatient (IP) admissions for patients undergoing chemotherapy is a marker of higher-quality care, suggesting better symptom management, support services and access to cancer clinic-based urgent care services.

Many patients with cancer who receive chemotherapy experience urgent symptoms such as severe pain or nausea that require prompt care. Cancer clinics can often address these symptoms through telephone triage and urgent visits to the clinic, but patients frequently go to the emergency department (ED). Common reasons include limited clinic hours, difficulty understanding how to manage symptoms at home, and lack of access to oncology-specific urgent care resources. Untreated symptoms may also lead to inpatient (IP) hospitalization. In a 2017 study, HICOR researchers demonstrated that nearly 50 percent of ED visits by patients with cancer are for a potentially preventable cancer-related cause.[1]

Hospitalization during chemotherapy includes visits to the ED or an IP hospital stay (excluding stays for cancer-directed surgeries) during the time that a patient receives chemotherapy. Cancer clinics that are the most successful at managing their patients' symptoms during chemotherapy will have the lowest rates of ED visits and IP hospital stays.

Individual metric definitions are available in Appendix A.

MEASURE 2

Emergency department (ED) visits during chemotherapy

- ED visit without subsequent inpatient admission within 180 days of first chemotherapy

Inpatient (IP) stays during chemotherapy

- Hospital IP admission for any reason within 180 days of first chemotherapy

Population: Patients with cancer receiving chemotherapy

Reporting Years: 2020–2022

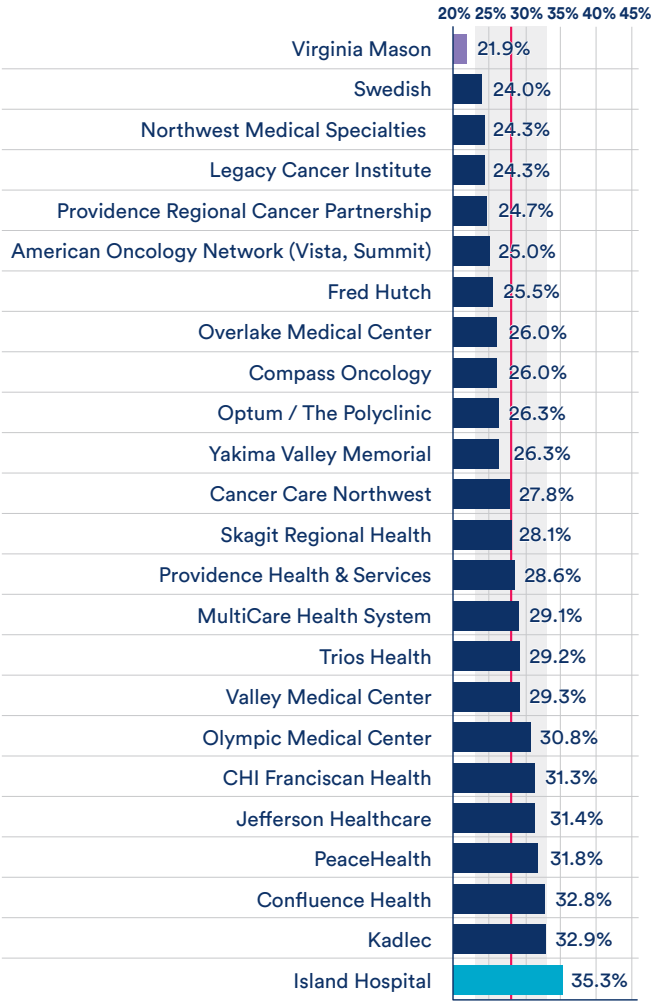
Time Period: Six months (180 days) following the start of chemotherapy

1. Panattoni L, Fedorenko C, Greenwood-Hickman MA, et al. Characterizing Potentially Preventable Cancer- and Chronic Disease–Related Emergency Department Use in the Year After Treatment Initiation: A Regional Study. Journal of Oncology Practice 2018 14:3, e176-e185.

Figure 2.1: ED visits during chemotherapy

Risk-Standardized Rate | Lower rate = higher quality

≥ 5% below average ≥ 5% above average



REGIONAL AVERAGE: **28.0%**

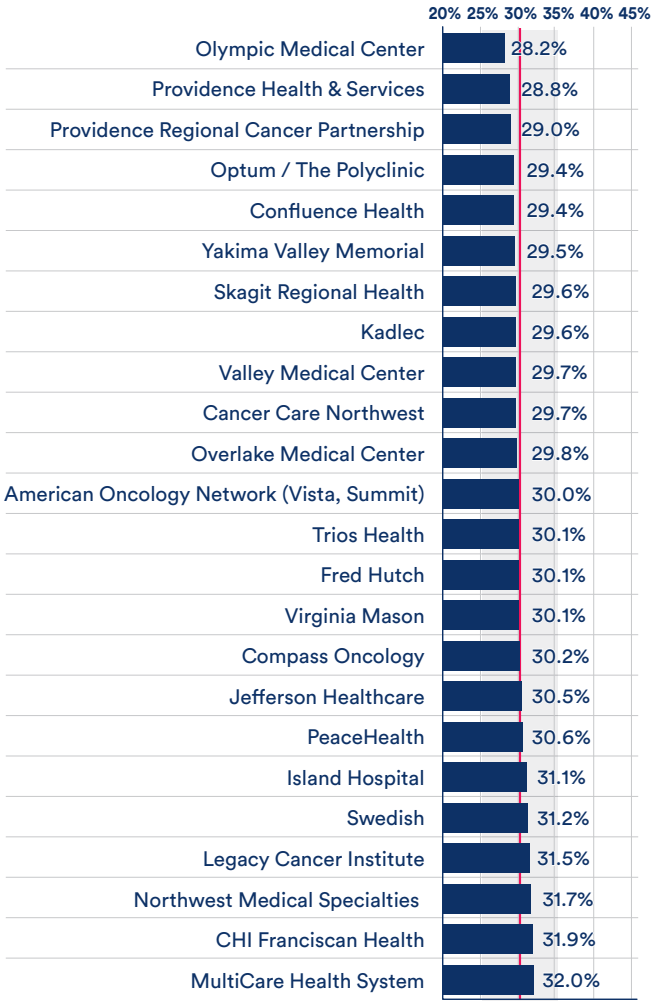
N=8480

RANGE: **21.9% to 35.3%**

Figure 2.2: IP stays during chemotherapy

Risk-Standardized Rate | Lower rate = higher quality

≥ 5% below average ≥ 5% above average



REGIONAL AVERAGE: **30.2%**

N=8480

RANGE: **28.2% to 32.0%**

Results: 2.1 & 2.2

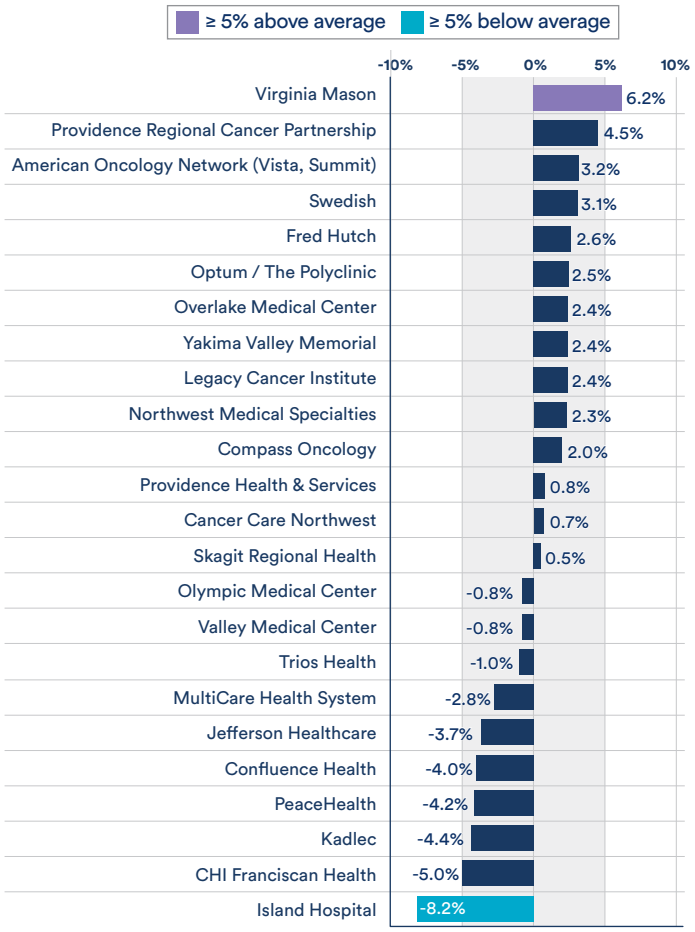
There are 8,480 patients included in this measure.

On average, 28.0 percent of patients had an emergency department (ED) visit during chemotherapy. There is a 13.4 percentage point difference between the highest and the lowest clinic rate.

On average, 30.2 percent of patients had an inpatient (IP) stay during chemotherapy. There is a 3.8 percentage point difference between the highest and the lowest clinic rate.

Figure 2.3: Hospitalization during chemotherapy

Summary Quality Score | Positive score = better than the regional average
Negative score = below the regional average



Zero represents clinic performance at the regional average

RANGE: **-8.2% to 6.2%**

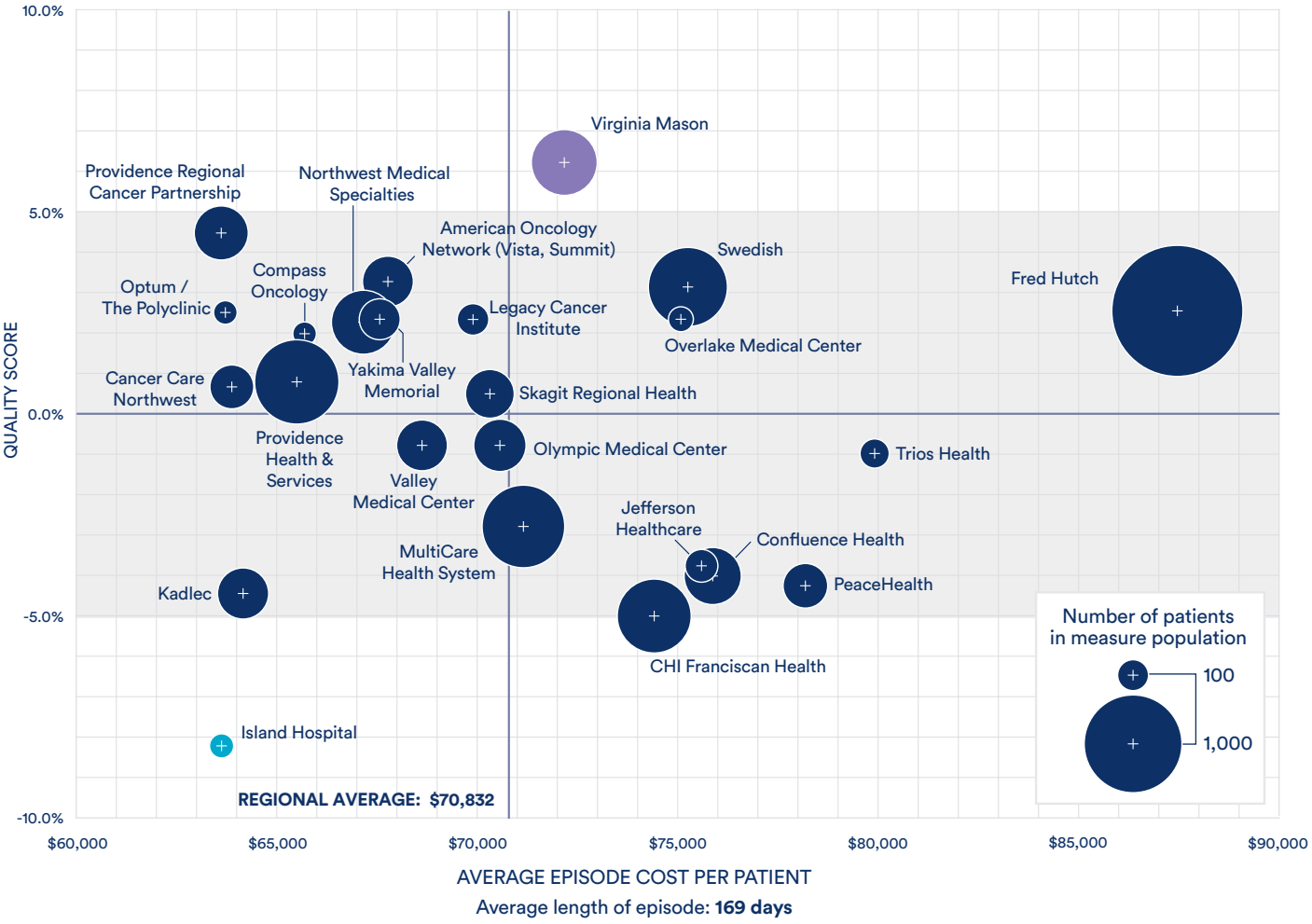
Results: 2.3

The summary quality scores, indicating clinic performance relative to the regional average for both metrics, show a difference of 14.3 percentage points between the highest-performing clinic and lowest-performing clinic.

In some cases, clinics with above-average results on one quality metric (e.g., ED visits) had below-average results on the other metric (e.g., IP stays) or vice versa.

Figure 2.4: Hospitalization during chemotherapy

Summary quality score and cost



Results: 2.4

The regional average episode cost of care over the period of interest is $70,832, for an average observation period of 169 days. The cost range is $23,756 ($63,719 to $87,475). The quality scores, indicating clinic performance relative to the regional average for both metrics, show a difference of 14.3 percentage points between the highest-performing clinic and lowest-performing clinic, which is a marginal difference.

In general, there is a negative relationship between episode cost and quality score, suggesting that efforts to improve quality may also lower costs during this period of cancer care.

Puget Sound Region Results

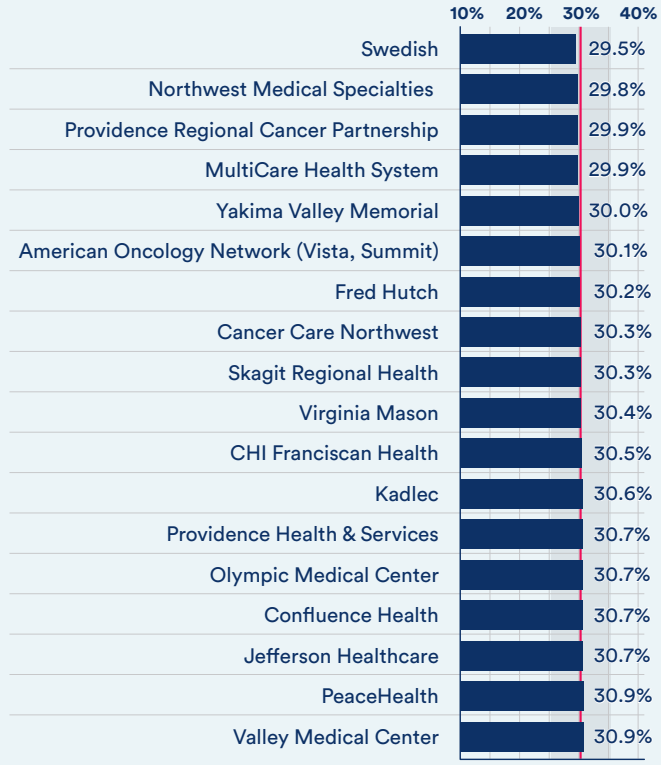
Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

Reporting Years: 2022-2024

Figure 2.5: ED visits during chemotherapy, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality

≥ 5% below average ≥ 5% above average



REGIONAL AVERAGE: **30.3%**

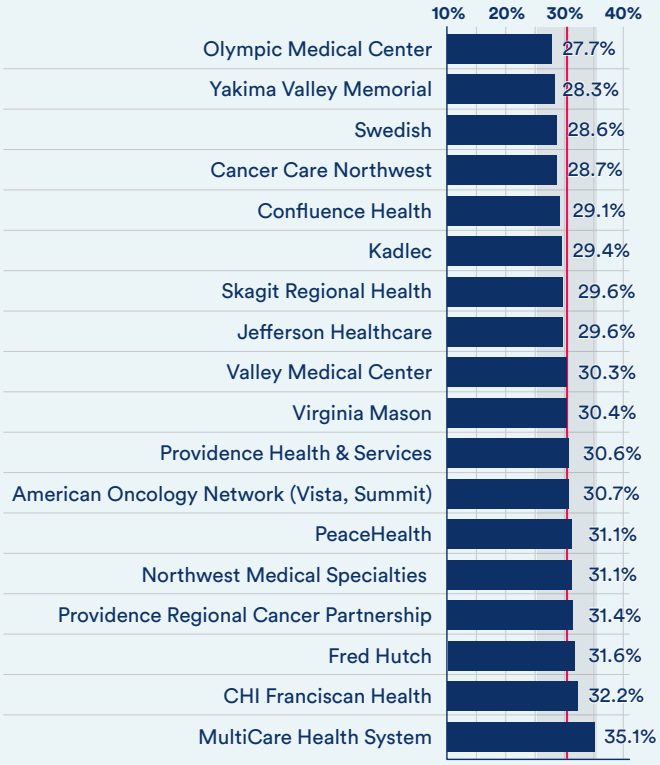
N=5868

RANGE: **29.5% to 30.9%**

Figure 2.6: IP stays during chemotherapy, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality

≥ 5% below average ≥ 5% above average



REGIONAL AVERAGE: **30.3%**

N=5868

RANGE: **27.7% to 35.1%**

Results: 2.5 & 2.6

There are 5,868 patients included in this measure.

On average, 30.3 percent of patients had an emergency department (ED) visit during chemotherapy. There is a 1.4 percentage point difference between the highest and the lowest clinic rate.

On average, 30.3 percent of patients had an inpatient (IP) stay during chemotherapy. There is a 7.5 percentage point difference between the highest and the lowest clinic rate.

Measure 3

Breast Cancer Tumor Marker Testing Following Treatment

Studies have shown no benefit from the routine use of tumor marker testing for patients with early-stage cancers who were treated with curative intent and have no symptoms. Unnecessary testing may lead to misdiagnosis and overtreatment, as well as increased costs.

The American Society of Clinical Oncology (ASCO) recommends against routine use of serum tumor markers for patients who have completed treatment for early-stage breast cancer and do not have symptoms. Use of these tests when not indicated may cause harm. For example, false-positive tests may expose patients to additional, unnecessary invasive tests and procedures, radiation exposure, misdiagnosis, anxiety and increased costs.

Note in prior years we also measured the use of advanced imaging in patients with breast, colorectal and lung cancer. Because adherence to this metric has been consistently and uniformly high for all clinics in the region, these metrics are no longer included in our report.

Individual metric definitions are available in Appendix A.

MEASURE 3

Breast cancer tumor marker testing following treatment

- Serum tumor marker test (CEA, CA 15-3, CA 27.29) for breast cancer (stage I-IIIA) during first 13 months of follow-up

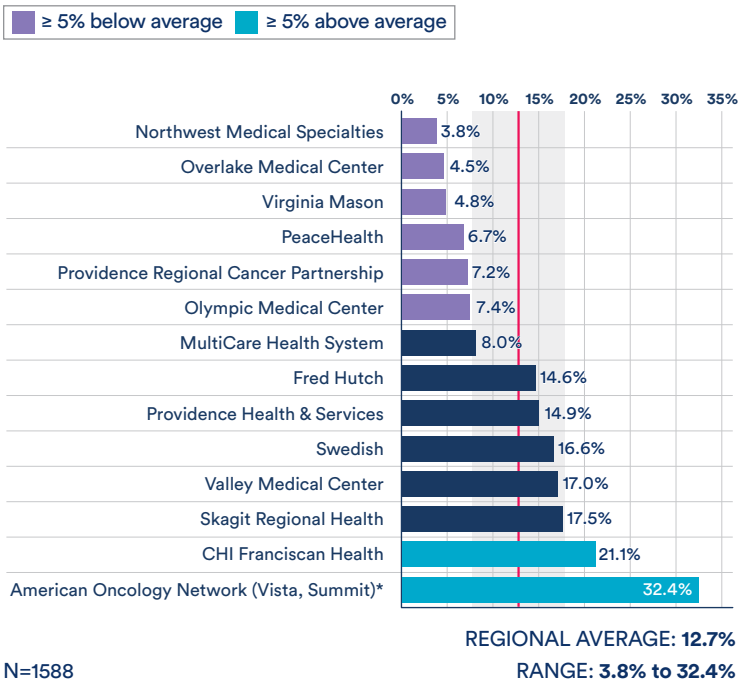
Population: Patients with breast cancer who completed active treatment

Reporting Years: 2020–2022

Time Period: The follow-up period focuses on the initial (13 month) period after the end of active treatment (surgery, chemotherapy or radiation therapy) but may end earlier if the patient died or restarted active treatment. Patients must have four-month gap in active treatment to be considered to have completed treatment.

Figure 3.1: Breast cancer tumor marker testing following treatment

Risk-Standardized Rate | Lower rate = higher quality



REGIONAL AVERAGE: **12.7%**

N=1588

RANGE: **3.8% to 32.4%**

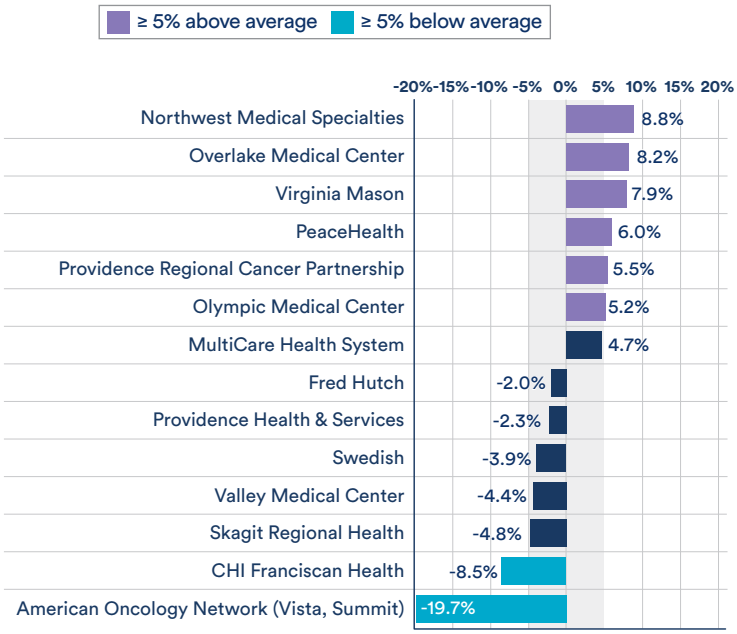
Results: 3.1

This measure includes 1,588 patients with stage I to IIIA breast cancer.

On average, 12.7 percent of patients received tumor marker tests (CA 15-3, CA 27.29, CEA) in the 13 months following treatment. There is a 28.5 percentage point difference in the rate of tumor marker test ordering between the highest-performing clinic and the lowest-performing clinic, demonstrating wide variability of practice patterns relative to national recommendations.

Figure 3.2: Breast cancer tumor marker testing following treatment

Summary Quality Score | Positive score = better than the regional average
Negative score = below the regional average



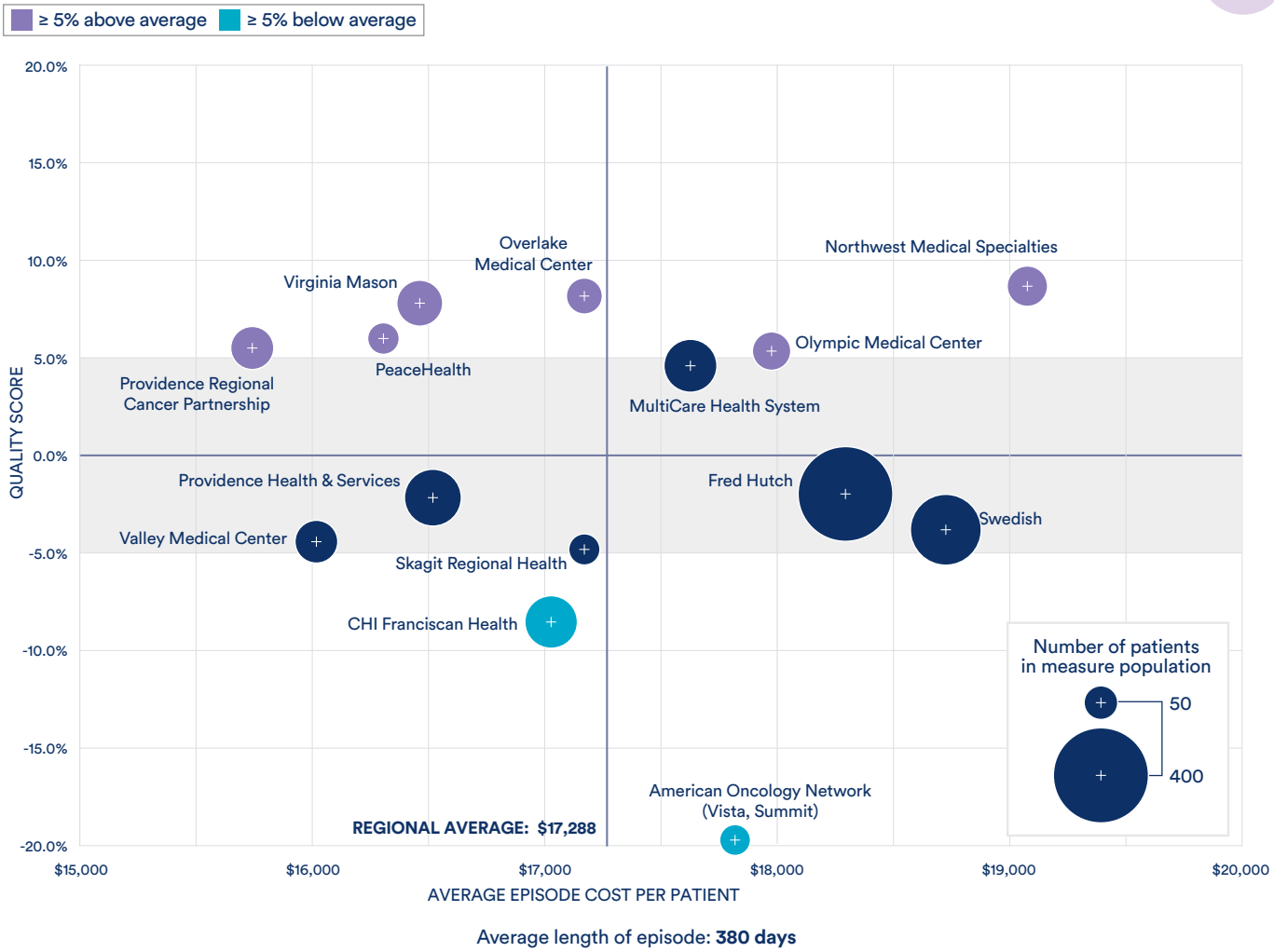
Zero represents clinic performance at the regional average
RANGE: **-19.7% to 8.8%**

Results: 3.2

The summary quality scores, indicating clinic performance relative to the regional average, show a difference of 28.5 percentage points between the highest-performing clinic and lowest-performing clinic.

Figure 3.3: Breast cancer tumor marker testing following treatment

Summary quality score and cost



Average length of episode: **380 days**

Summary Quality Score Range: **-19.7% to 8.8%**

Cost Range: **$15,736 to $19,087**

Note scale for cost results is narrower compared to other measures.

Results: 3.3

The regional average cost of care over the period is $17,288, and the average length of a follow-up episode is 380 days. The cost range is $3,351 ($15,736 to $19,087). The quality scores, indicating clinic performance relative to the regional average, show a difference of 28.5 percentage points between the highest-performing clinic and lowest-performing clinic.

There is no relationship between episode cost and the quality score, suggesting that there may be an opportunity to lower costs without sacrificing quality.

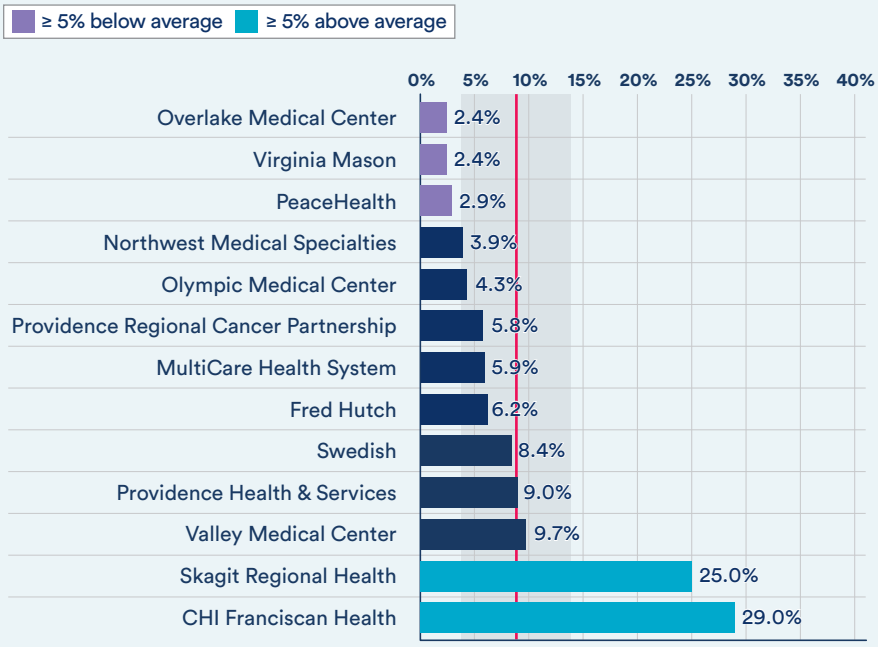
Puget Sound Region Results

Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

Reporting Years: 2021-2023

Figure 3.4: Breast cancer tumor marker testing following treatment, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality



N=1509

REGIONAL AVERAGE: **8.8%**

RANGE: **2.4% to 29.0%**

Results: 3.4

This measure includes 1,509 patients with stage I to IIIA breast cancer.

On average, 8.8 percent of patients received tumor marker tests (CA 15-3, CA 27.29, CEA) in the 13 months following treatment. There is a 26.6 percentage point difference in the rate of tumor marker test ordering between the highest-performing clinic and the lowest-performing clinic, a meaningful difference.

Measure 4

End-of-Life Care

Aggressive cancer-directed treatment for patients with advanced, incurable cancer can be harmful, traumatic and costly without providing benefit. Studies have shown that symptom-focused palliative care is much more beneficial to patients at this stage of their disease.

Appropriate end-of-life care should be tailored to each patient's needs and guided by thoughtful consideration of quality of life and the risks and benefits of continued treatment. Aggressive care — including chemotherapy, radiation, invasive procedures, emergency department (ED) visits and intensive care unit (ICU) admissions — can be harmful and traumatic to patients and is unlikely to benefit those who are nearing the end of life.

At the end of life, symptom-focused palliative care, including hospice care, has been shown to improve quality of life and even modestly prolong survival compared to aggressive treatment. Clinicians should clearly explain to patients the potential benefits, risks, side effects and costs of pursuing aggressive treatment, as well as the potential benefits of palliative care.

The End-of-Life Care measure tracks the use of chemotherapy, multiple ED visits and ICU admissions as indicators of aggressive end-of-life care and includes hospice admissions as an indicator of recommended, higher-quality care.

Individual metric definitions are available in Appendix A.

MEASURE 4

Chemotherapy in the last 14 days of life

- Receipt of any chemotherapy in the last 14 days of life

Multiple emergency department (ED) visits in the last 30 days of life

- More than one ED visit in the last 30 days of life

Intensive care unit (ICU) stay in the last 30 days of life

- Hospital ICU admission for any reason in the last 30 days of life

Hospice care three or more days prior to death

- Two or more inpatient or outpatient hospice encounters, with the first encounter at least three days prior to death

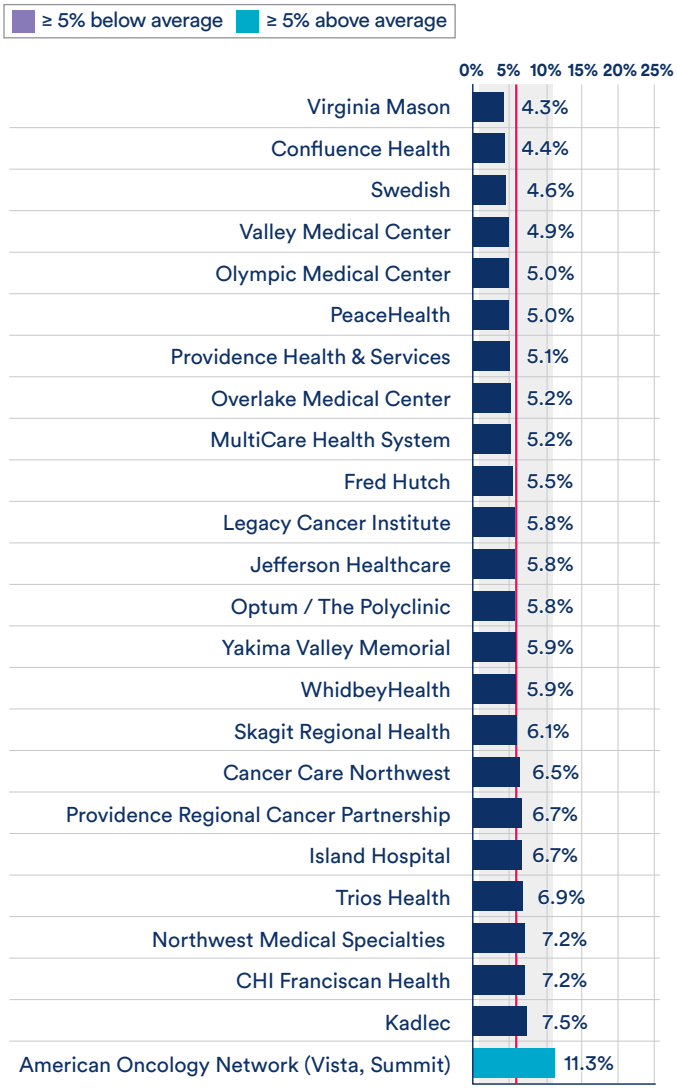
Population: Patients with cancer at end of life

Reporting Years: 2020–2022

Time Period: Patient's last 30 days of life

Figure 4.1: Chemotherapy in the last 14 days of life

Risk-Standardized Rate | Lower rate = higher quality



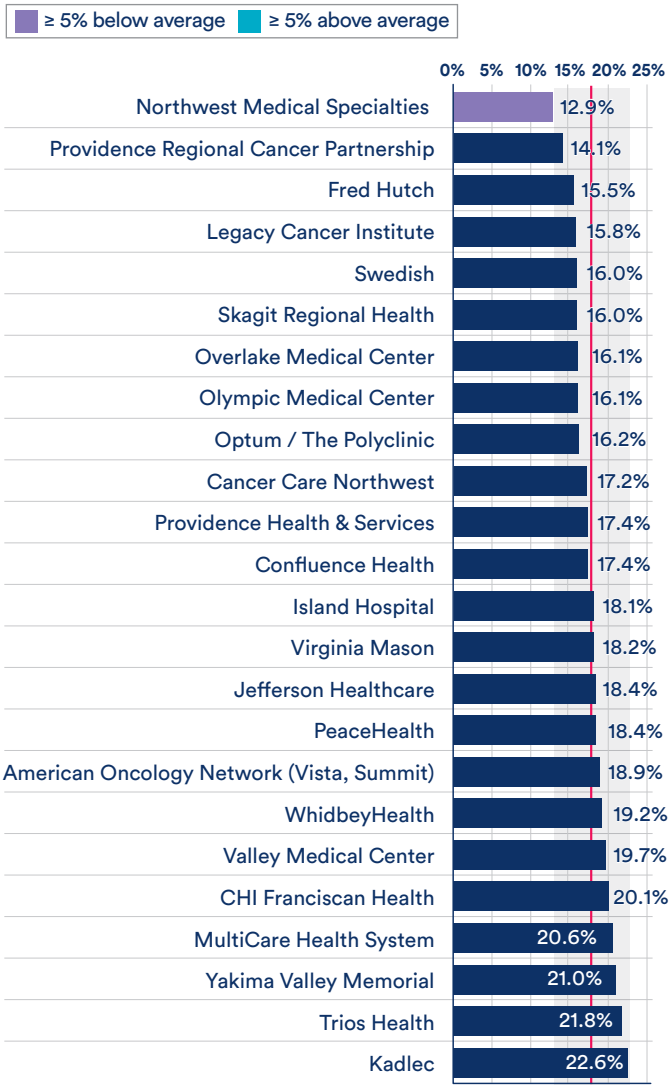
REGIONAL AVERAGE: **6.0%**

N=9683

RANGE: **4.3% to 11.3%**

Figure 4.2: Multiple emergency department (ED) visits in the last 30 days of life

Risk-Standardized Rate | Lower rate = higher quality



REGIONAL AVERAGE: **17.9%**

N=9683

RANGE: **12.9% to 22.6%**

Results: 4.1 & 4.2

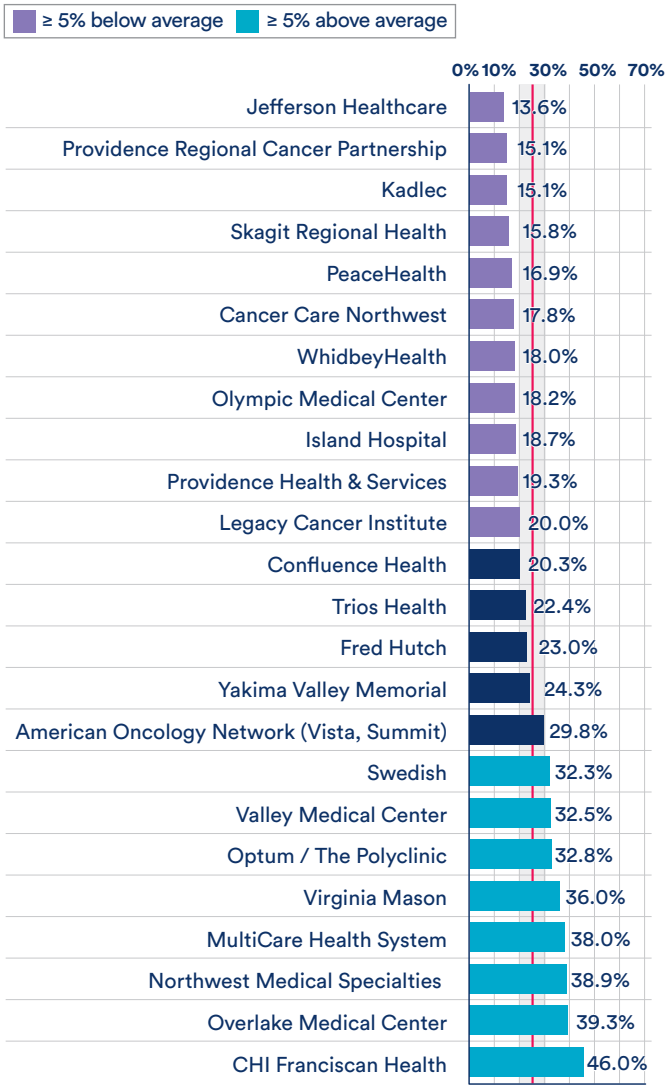
There are 9,683 solid tumor patients in metrics 4.1, 4.2 and 4.3 (next page).

On average, 6.0 percent of patients received chemotherapy in the last 14 days of life. There is a 7.0 percentage point difference between the highest-performing clinic and lowest-performing clinic.

On average, 17.9 percent of patients had more than one ED visit in the last 30 days of life. There is a 9.8 percentage point difference between the highest-performing clinic and lowest-performing clinic.

Figure 4.3: Intensive care unit (ICU) stay in the last 30 days of life

Risk-Standardized Rate | Lower rate = higher quality



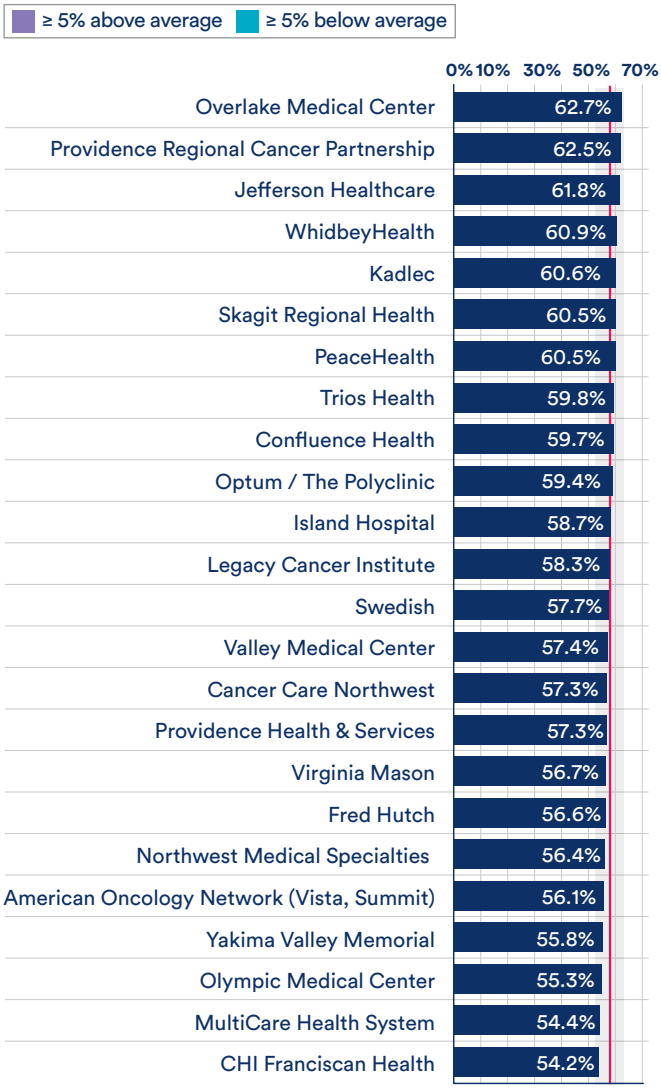
REGIONAL AVERAGE: **25.1%**

N=9683

RANGE: **13.6% to 46.0%**

Figure 4.4: Hospice care three or more days prior to death

Risk-Standardized Rate | Higher rate = higher quality



REGIONAL AVERAGE: **58.5%**

N=11212

RANGE: **54.2% to 62.7%**

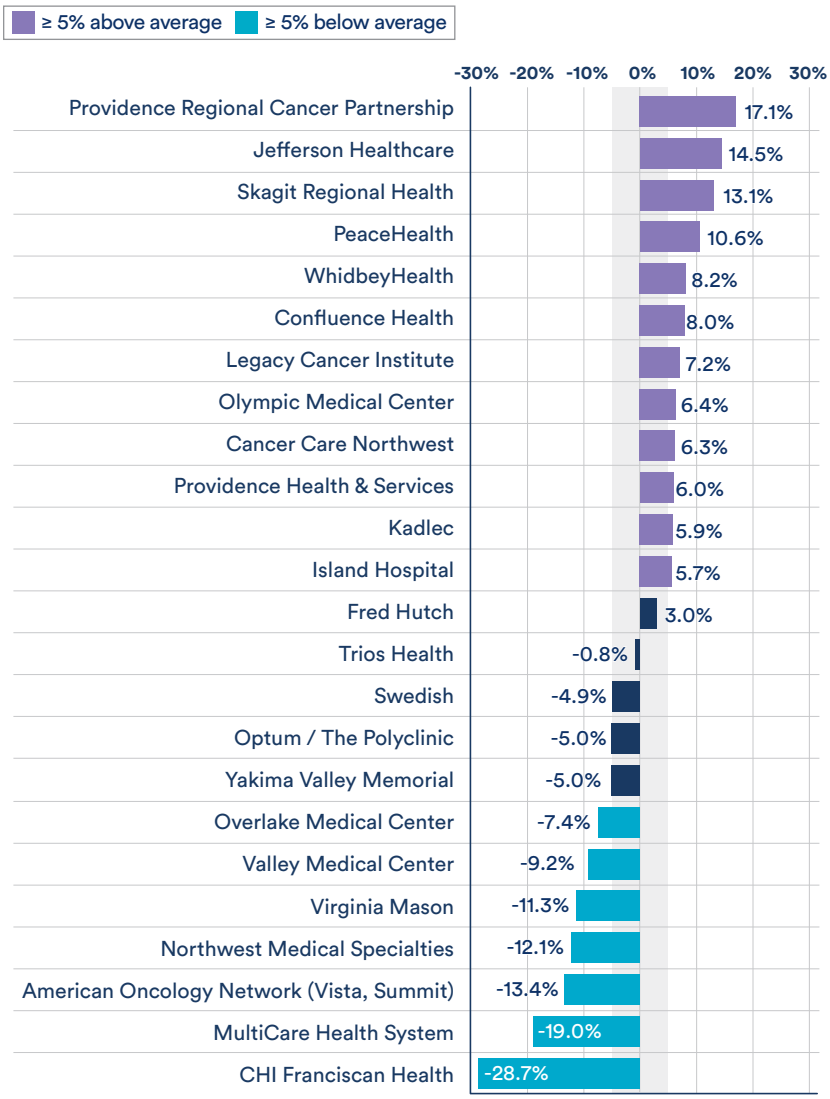
Results: 4.3 & 4.4

On average, 25.1 percent of patients had an ICU stay in the last 30 days of life. There is a 32.4 percentage point difference between the highest-performing clinic and lowest-performing clinic, suggesting considerable differences in how clinics manage the intensity of care for their patients at the end of life.

There are 11,212 patients in the hospicare measure, which includes both solid tumors and hematologic cancers. On average, 58.5 percent of patients enrolled in hospice care three or more days prior to death. There is a 8.5 percentage point difference between the highest-performing clinic and lowest-performing clinic.

Figure 4.5: End-of-Life Care

Summary Quality Score | Positive score = better than the regional average
Negative score = below the regional average



Zero represents clinic performance at the regional average

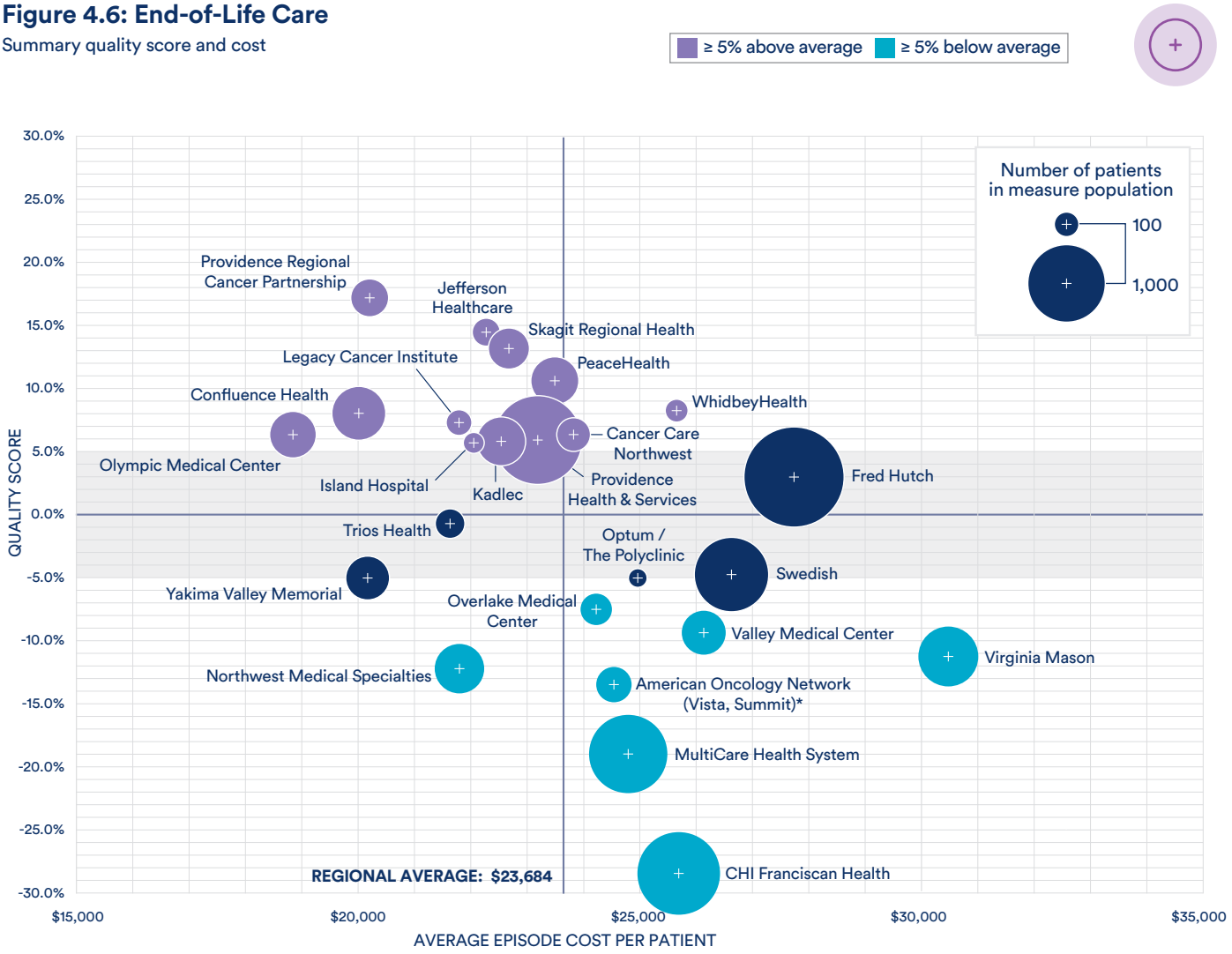
RANGE: **-28.7% to 17.1%**

Results: 4.5

- The summary quality scores, indicating clinic performance relative to the regional average for all four end-of-life metrics, show a difference of 45.8 percentage points between the highest-performing clinic and lowest-performing clinic.
- The ICU metric had the greatest impact on the summary quality score.
- End-of-life care shows the greatest variation in quality among all measures in this report.

Figure 4.6: End-of-Life Care

Summary quality score and cost



Average length of episode: **30 days**

Summary Quality Score Range: **-28.7% to 17.1%**

Cost Range: **$18,823 to $30,484**

Results: 4.6

The regional average cost of care over the last 30 days of life is $22,696. The cost range is $9,209 ($19,228 to $28,437). The quality scores, indicating clinic performance relative to the regional average for all four metrics, show a difference of 45.8 percentage points between the highest-performing clinic and lowest-performing clinic.

There is a negative relationship between episode cost and quality score, indicating that higher quality is associated with lower costs for cancer care at end of life.

Most of the measures, including ICU stays, which is the main factor influencing the summary quality score, increase the cost of care without clear benefit to patients. In contrast, hospice may improve the patient experience at end of life and also is less expensive for patients and health systems.

Puget Sound Region Results

Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data on cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

Reporting Years: 2022-2024

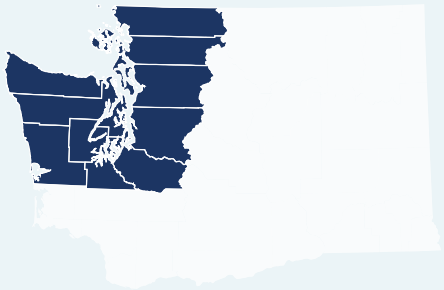
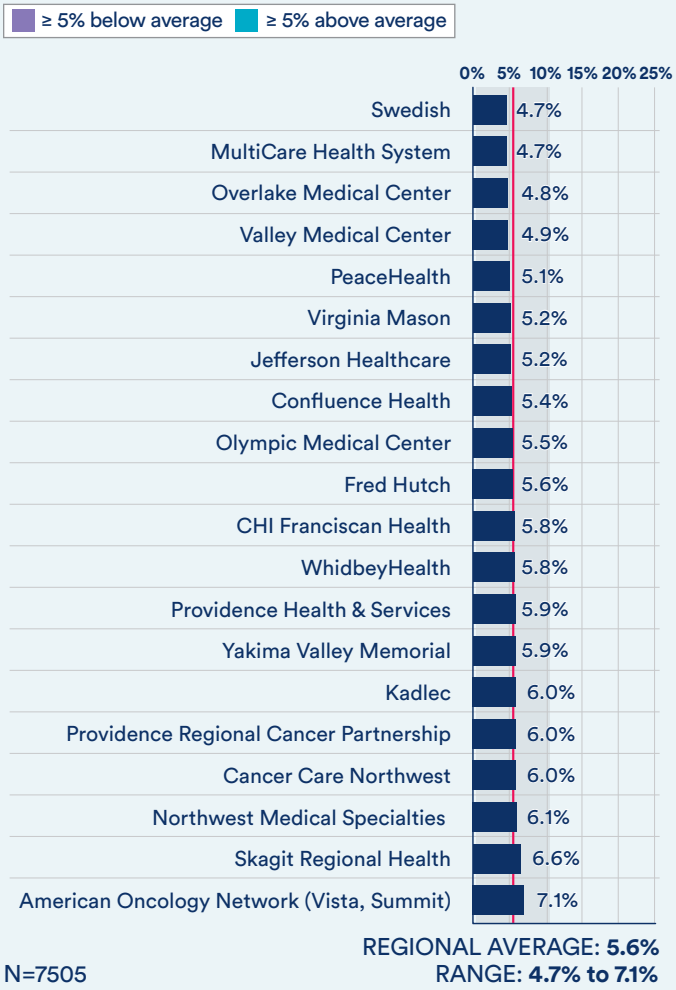


Figure 4.7: Chemotherapy in the last 14 days of life, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality

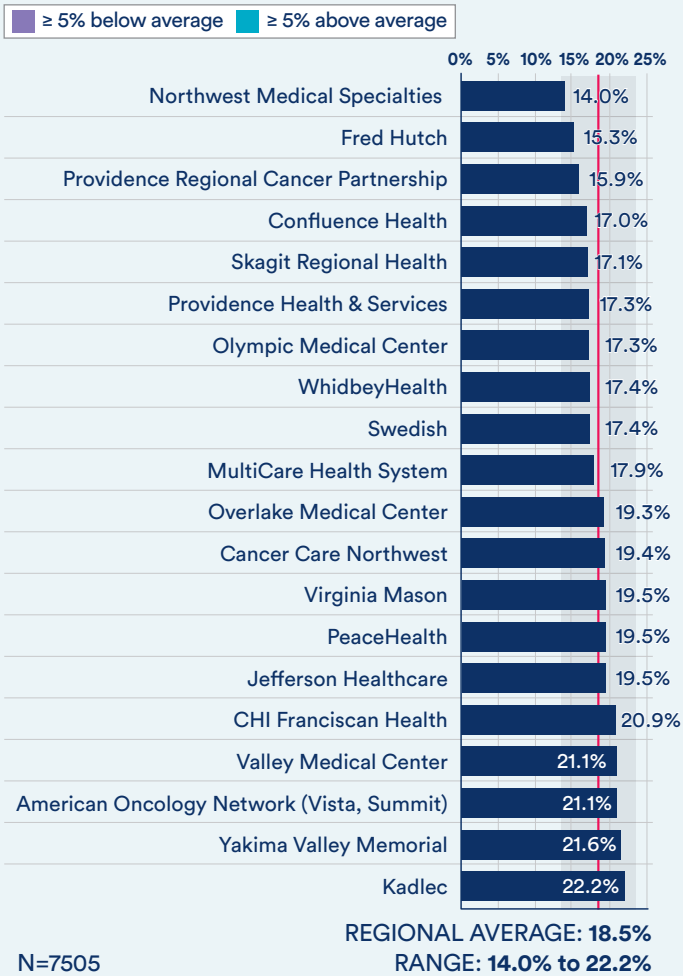


N=7505

REGIONAL AVERAGE: **5.6%**
RANGE: **4.7% to 7.1%**

Figure 4.8: Multiple emergency department (ED) visits in the last 30 days of life, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality



N=7505

REGIONAL AVERAGE: **18.5%**
RANGE: **14.0% to 22.2%**

Results: 4.7 & 4.8

- This measure includes 7,505 solid tumor patients.
- On average, 5.6 percent of patients received chemotherapy in the last 14 days of life. There is a 2.4 percentage point difference between the highest-performing clinic and lowest-performing clinic.
- On average, 18.5 percent of patients had more than one ED visit in the last 30 days of life. There is a 8.2 percentage point difference between the highest-performing clinic and lowest-performing clinic.

Puget Sound Region Results

Population: The Western Washington Cancer Surveillance System (CSS) provides data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

Reporting Years: 2022-2024

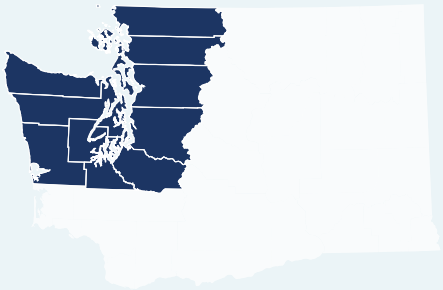
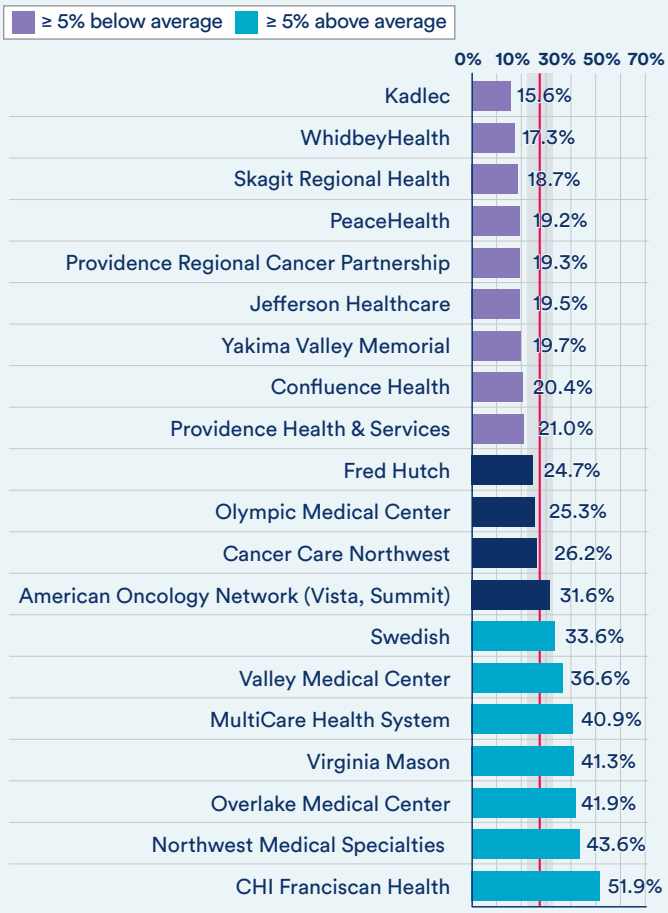


Figure 4.9: Intensive care unit (ICU) stay in the last 30 days of life, Puget Sound Region

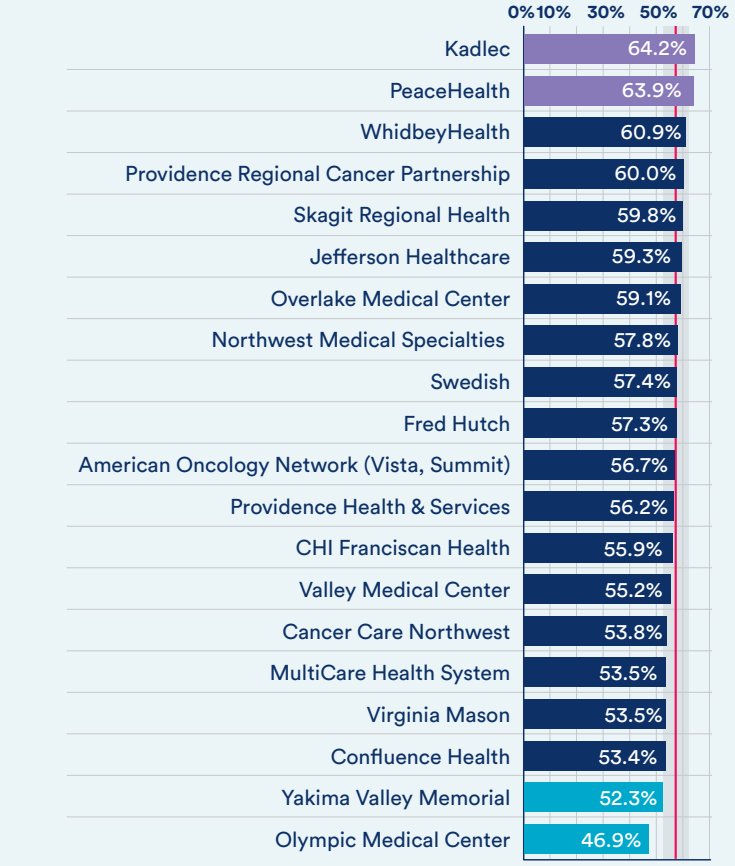
Risk-Standardized Rate | Lower rate = higher quality



REGIONAL AVERAGE: **27.9%**
N=7505 RANGE: **15.6% to 51.9%**

Figure 4.10: Hospice care three or more days prior to death, Puget Sound Region

Risk-Standardized Rate | Higher rate = higher quality



REGIONAL AVERAGE: **57.3%**
N=8696 RANGE: **46.9% to 64.2%**

Results: 4.9 & 4.10

On average, 27.9 percent of patients had an ICU stay in the last 30 days of life. There is a 36.4 percentage point difference between the highest-performing clinic and lowest-performing clinic, suggesting considerable differences in how clinics manage the intensity of care for their patients at the end of life.

There are 8,696 in the hospicare measure, which includes both solid tumors and hematologic cancers. On average, 57.3 percent of patients enrolled in hospice care three or more days prior to death. There is a 17.3 percentage point difference between the highest-performing clinic and lowest-performing clinic.

Measure 5

Germline Testing – State-Level Reporting

Clinical practice guidelines recommend germline testing for patients with breast, ovarian, pancreatic and prostate cancers. Testing enables physicians and their patients to identify inherited mutations that may help inform treatment options, guide monitoring, and clarify cancer risk for family members. With this information, patients and their relatives can make more informed decisions about treatment and the frequency of cancer screenings.

Germline is a form of genetic testing that, unlike somatic mutation testing described in Measure 1.2, identifies inherited DNA mutations that are passed from parents to children. The germline DNA changes that a person is born with are in every cell of the body. Germline testing looks at the DNA of healthy cells from your body using samples of blood, skin or saliva.

Patients with a strong family history of certain types of cancer may receive germline genetic testing to see if they carry a mutation that increases their cancer risk. Germline testing can also be used to determine if a person's cancer is caused by an inherited mutation that might put them at higher risk for developing other cancers. Family members of patients who test positive for germline mutations should also consider germline testing to see if they carry the same mutation.

For example, certain patients with breast or ovarian/peritoneum cancers may be offered germline testing for BRCA1 or BRCA2 gene mutations. Positive results can guide treatment decisions, provide prognostic information, inform risk for family members, and support consideration of preventive surgeries or screening for additional cancers.

Individual metric definitions are available in Appendix A.

MEASURE 5

Germline testing for breast cancer

- Receipt of BRCA1/2 test for male, metastatic, triple negative or patients aged less than 50 with breast cancer

Germline testing for ovarian cancer

- Receipt of germline test for patients with ovarian, fallopian tube, or peritoneum cancer

Germline testing for pancreatic cancer

- Receipt of germline test for patients with adenocarcinoma of the pancreas

Germline testing for prostate cancer

- Receipt of germline test for patients with metastatic, regional (node-positve), or high- or very-high-risk localized prostate cancer

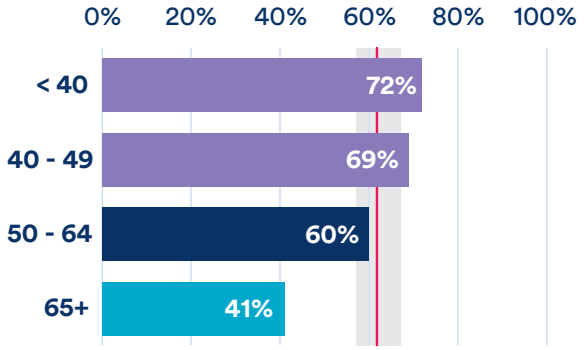
Population: Patients with breast, ovarian, pancreatic and prostate cancer who meet guidelines for germline testing

Reporting Years: 2020–2022

Time Period: The testing period begins 2 months prior to diagnosis and continues through 24 months following diagnosis

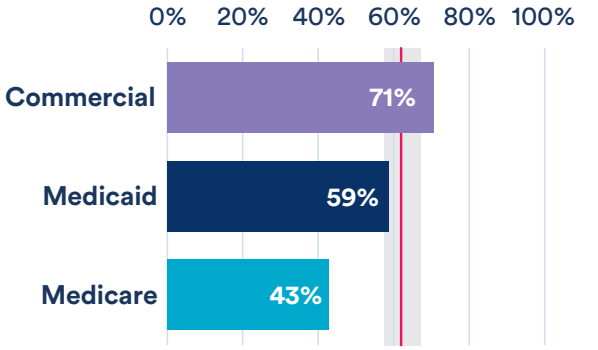
62%
of patients with
breast cancer
receive germline testing

Figure 5.1.1: Germline testing for breast cancer by age



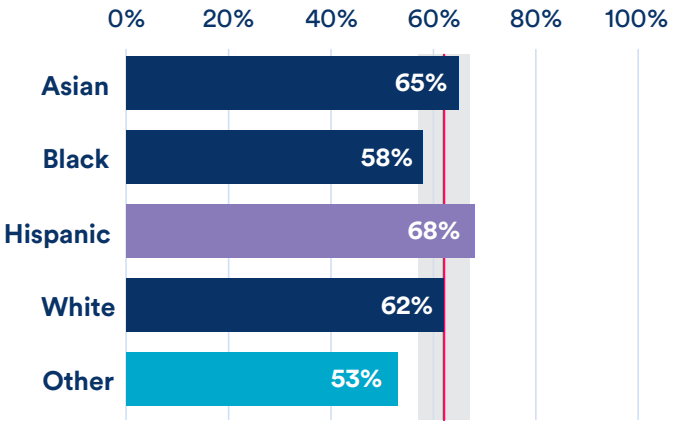
N=1820 REGIONAL AVERAGE: **61.9%**

Figure 5.1.2: Germline testing for breast cancer by insurance type



N=1820 REGIONAL AVERAGE: **61.9%**

Figure 5.1.3: Germline testing for breast cancer by race and ethnicity



N=1820 REGIONAL AVERAGE: **61.9%**

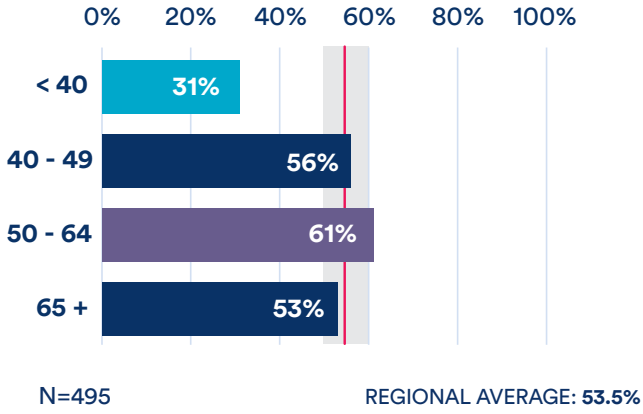
Results: 5.1.1 & 5.1.2 & 5.1.3

This measure includes 1,820 patients.

On average, 61.9 percent of eligible patients with breast cancer received BRCA1/2 testing. There is a 30.2 percentage point difference in testing rates between the highest and lowest age group, a 28.5 percentage point difference in testing rates between the highest and lowest insurer, and a 15.0 percentage point difference in testing rates between the highest and lowest racial/ethnicity category.

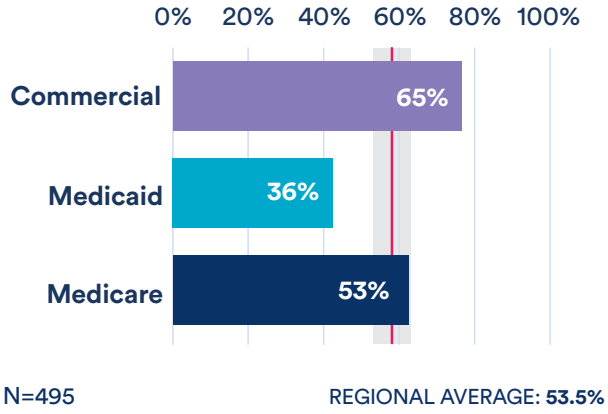
54%
of patients with
ovarian cancer
receive germline testing

Figure 5.2.1: Germline testing for ovarian cancer by age



N=495 REGIONAL AVERAGE: **53.5%**

Figure 5.2.2: Germline testing for ovarian cancer by insurance type



N=495 REGIONAL AVERAGE: **53.5%**

Results: 5.2.1 & 5.2.2

This measure includes 495 patients.

On average, 53.5 percent of patients with ovarian, fallopian tube and peritoneum cancer received germline testing. There is a 29.3 percentage point difference in testing rates between the highest and lowest age group and a 28.4 percentage point difference in testing rates between the highest and lowest insurer.

27%
of patients with
pancreatic cancer
receive germline testing

Figure 5.3.1: Germline testing for pancreatic cancer by age

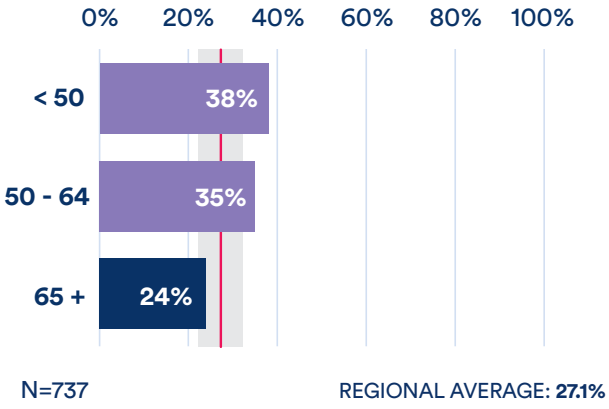
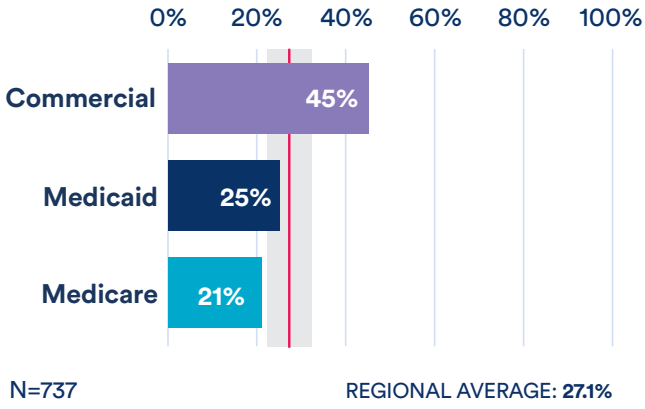


Figure 5.3.2: Germline testing for pancreatic cancer by insurance type



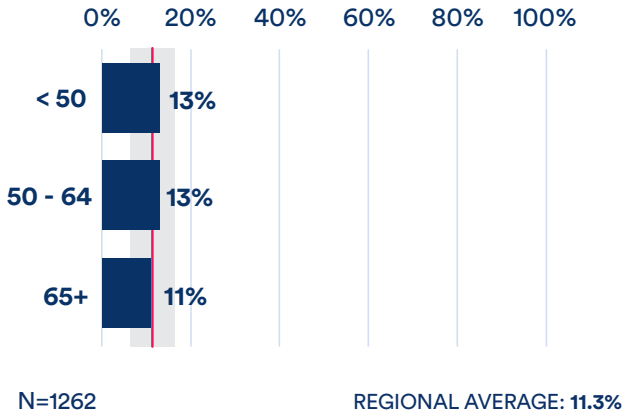
Results: 5.3.1 & 5.3.2

This measure includes 737 patients.

On average, 27.1 percent of eligible patients with pancreatic cancer received germline testing. There is a 13.4 percentage point difference in testing rates between the highest and lowest age group and a 24.2 percentage point difference in testing rates between the highest and lowest insurer.

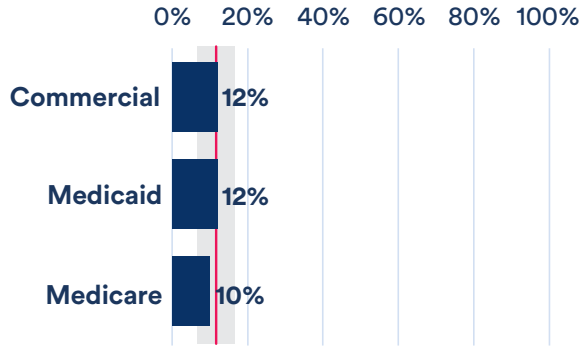
11%
of patients with
prostate cancer
receive germline testing

Figure 5.4.1: Germline testing for prostate cancer by age



N=1262 REGIONAL AVERAGE: **11.3%**

Figure 5.4.2: Germline testing for prostate cancer by insurance type



N=1262 REGIONAL AVERAGE: **11.3%**

Results: 5.4.1 & 5.4.2

This measure includes 1,262 patients.

On average, 11.3 percent of eligible patients with prostate cancer received germline testing. There is a 1.9 percentage point difference in testing rates between the highest and lowest age group and a 1.3 percentage point difference in testing rates between the highest and lowest insurer.

Discussion – Germline Testing

Our findings suggest that there is suboptimal use of germline testing, particularly among patients with pancreatic and prostate cancer. There is a relatively high prevalence of germline mutations among patients with pancreatic and prostate cancer. Test results have important implications for treatment choice (e.g., in patients with BRCA 1/2 or ATM mutations). As such, testing rates are surprisingly low. Germline testing in eligible patients with breast cancer is also lower than expected (62%), given that guidelines have recommended testing for over two decades.

We also find considerable variability in testing by insurance type, suggesting possible problems with patient access and insurance coverage. Our findings may not represent the full story on germline testing. For example, it is possible that our time frame to identify testing is too narrow for some cancers with long survival times (e.g., prostate cancer) and that testing is happening later in the disease course. It is also possible that patients are being appropriately referred to geneticists but not following through on the scheduled appointments or recommended testing. While we suspect these factors are contributors, it is also likely that there are gaps in provider and patient knowledge and awareness about the importance of such testing. Identification of germline mutations can also have substantial implications for patients and family members.

Puget Sound Region Results

Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

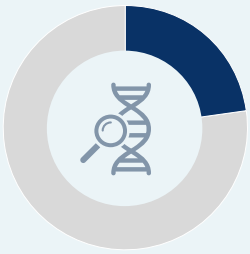
Reporting Years: 2022-2024

Breast Cancer

69%
of patients with breast cancer receive germline testing

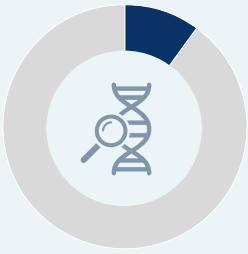
Ovarian Cancer

37%
of patients with ovarian cancer receive germline testing



Pancreatic Cancer

23%
of patients with pancreatic cancer receive germline testing



Prostate Cancer

10%
of patients with prostate cancer receive germline testing

Measure 6

Timeliness of Care – State-Level Reporting

Studies have shown that shorter times from diagnosis to first treatment can lead to better outcomes. Measuring how quickly patients begin cancer treatment following diagnosis provides an important benchmark and insights into potential disparities in care. Several studies have shown that delays in starting treatment can result in increased anxiety and poorer outcomes for patients. Therefore, practice guidelines and cancer quality measures often include time to first treatment as a quality metric.

Timeliness in initiating treatment is important for all cancers. To understand the time to begin treatment in Washington state, we examined the interval from a patient's first visit at an oncology clinic to the start of treatment among people who have been diagnosed with metastatic solid tumor cancers.

Individual metric definitions are available in Appendix A.

MEASURE 6

Time to start of treatment

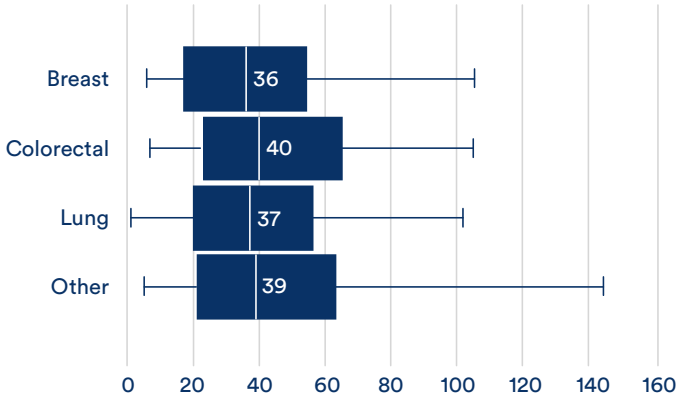
- Median number of days between first visit at an oncology clinic and date of first treatment

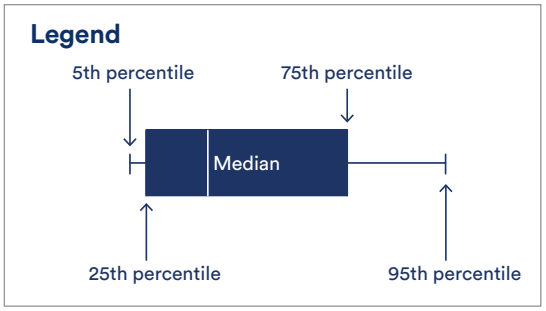
Population: Patients with metastatic cancer who start chemotherapy or radiation therapy

Reporting Years: 2020–2022

Time Period: Intial treatment period, up to 12 months

Figure 6.1.1: Time to start of treatment by cancer site (in days)

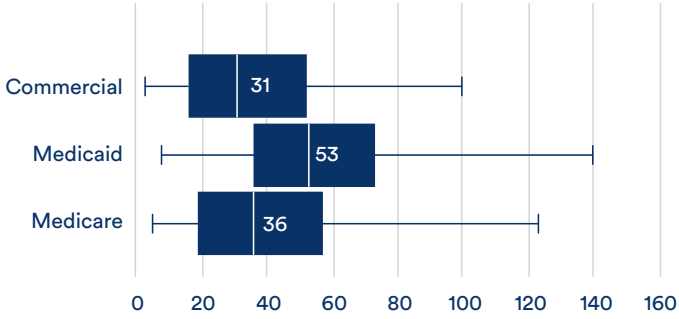




N=4022

REGIONAL MEDIAN: **38 days**

Figure 6.1.2: Time to start of treatment by insurance type (in days)



N=4022

REGIONAL MEDIAN: **38 days**

38 days

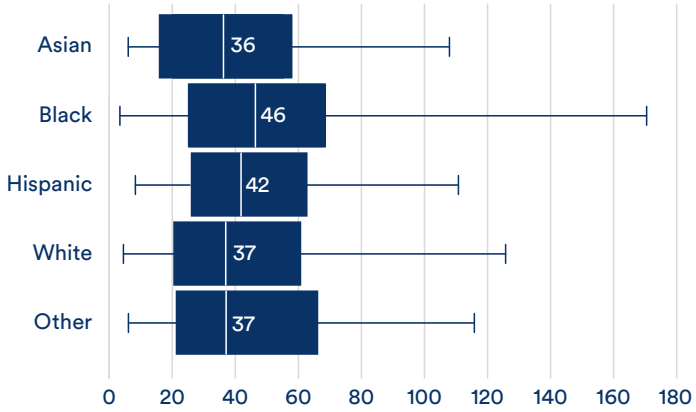
to patient's first treatment

Results: 6.1.1 & 6.1.2

This measure includes 4,022 patients.

For patients with metastatic cancer, it took a median of 38 days to start chemotherapy or radiation therapy after their first visit at their oncology clinic. Of the largest cancer types, patients with breast cancer took the shortest median time of 36 days. The difference between patients on a commercial plan (31 days) and Medicaid-enrolled patients (53 days) was 21 days.

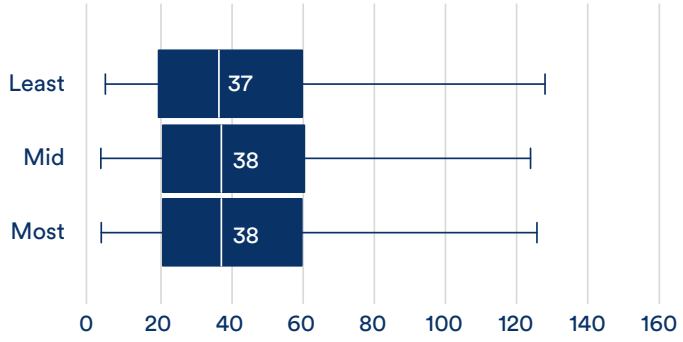
Figure 6.1.3: Time to start of treatment by race and ethnicity (in days)



N=4022

REGIONAL AVERAGE: **38 days**

Figure 6.1.4: Time to start of treatment by Area Deprivation Index (ADI) (in days)



N=4022

REGIONAL AVERAGE: **38 days**

Results: 6.1.3 & 6.1.4

The median time to treatment initiation was longest for Black patients (46 days). Patients who lived in the least deprived neighborhoods, as measured by ADI[1], had the lowest time to treatment (37 days). Which is a minimal difference from patients in the mid- and most-deprived neighborhoods who started treatment a median of 38 days following their first visit at their oncology clinic.

Discussion – Timeliness of Care

We found substantial differences in median time to first treatment for certain populations of metastatic solid tumor patients in Washington state. Specifically, Black patients and those with Medicaid insurance experienced significantly longer times to first treatment. The reasons are likely multifactorial.

An important concern is that patients with cancer with health-related social needs, such as transportation or housing challenges, have significant problems accessing treatment, even those with health insurance. Another concern is growing wait times for first appointments, possibly exacerbated by clinic staffing challenges. Understanding the factors underlying the disparities that we see in our region is critical to ensure that all patients are able to access timely and appropriate care.

1. University of Wisconsin School of Medicine and Public Health. Area Deprivation Index. Available at: https://www.neighborhoodatlas.medicine.wisc.edu/

Puget Sound Region Results

Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence to this measure for the Puget Sound region.

Reporting Years: 2022-2024

39 days

to patient's first treatment

Results:

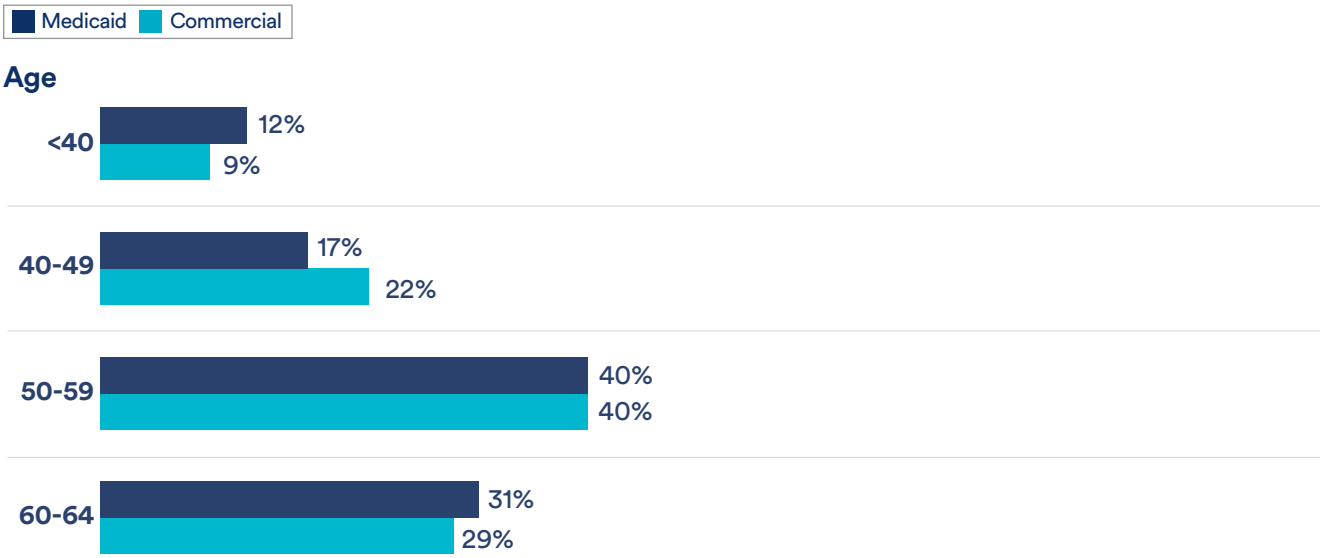
Medicaid

Demographics for Medicaid Enrollees

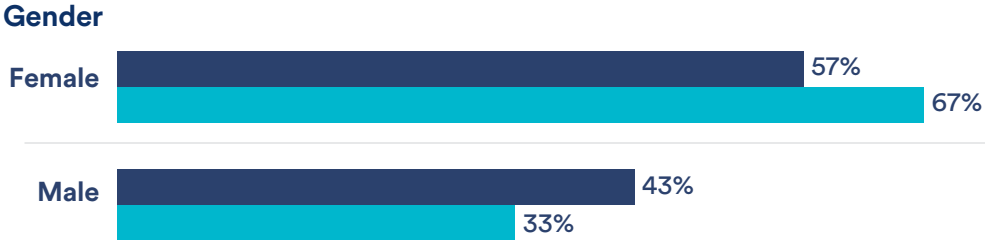
Why do we compare demographics?

Demographic differences exist between Medicaid and commercially insured populations in Washington state. Medicaid-insured patients are more likely to live in neighborhoods that face greater socioeconomic disadvantages, and Black, Hispanic and Asian/Pacific Islander populations are more likely to be enrolled in Medicaid than a commercial insurance plan. Understanding these differences helps identify disparities in cancer care and outcomes among these populations. This enables us to highlight system wide issues which impact clinical performance and outcomes.

Below, we compare demographic and clinical factors for Medicaid and commercially insured enrollees with a cancer diagnosis.

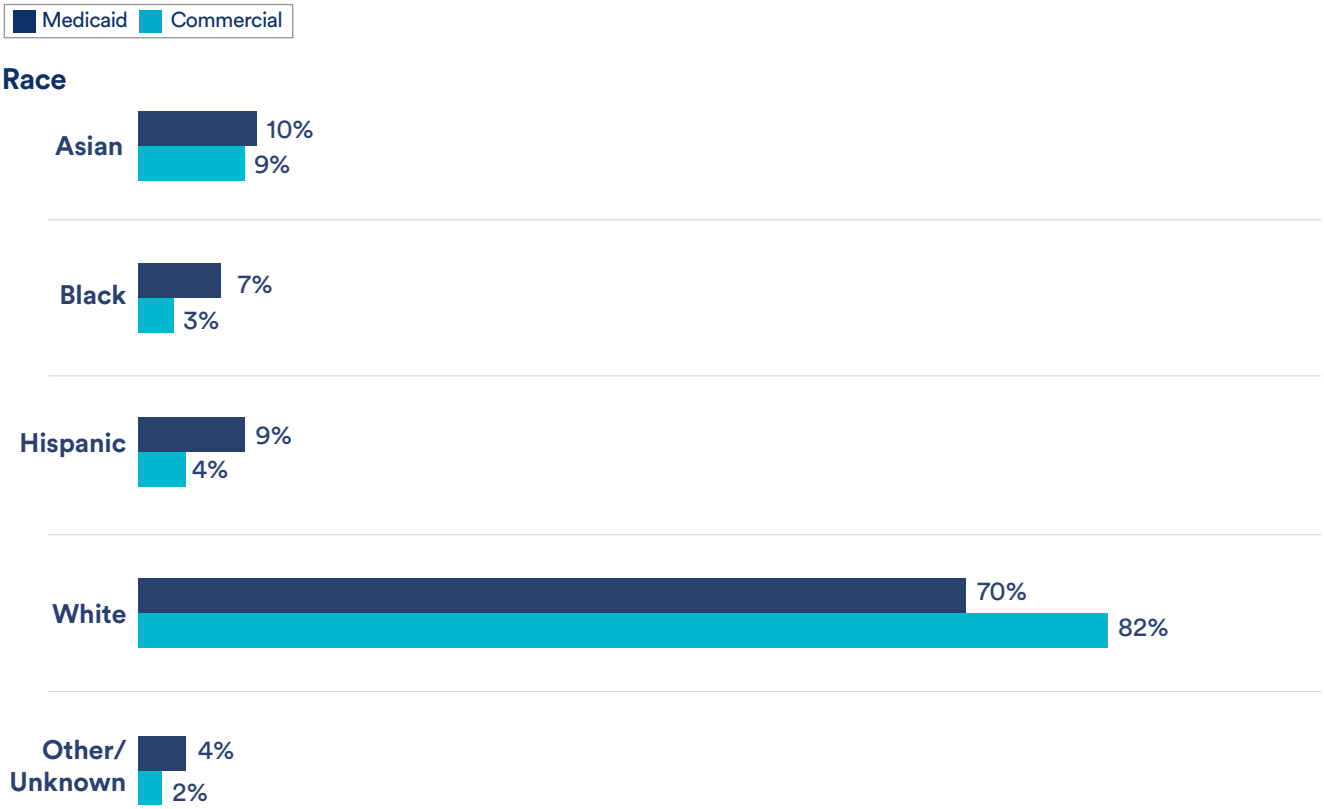


Medicaid-insured patients are more likely to be between 50 to 60 years of age. A higher proportion of young people, (under 40) are enrolled in Medicaid rather than commercial insurance.

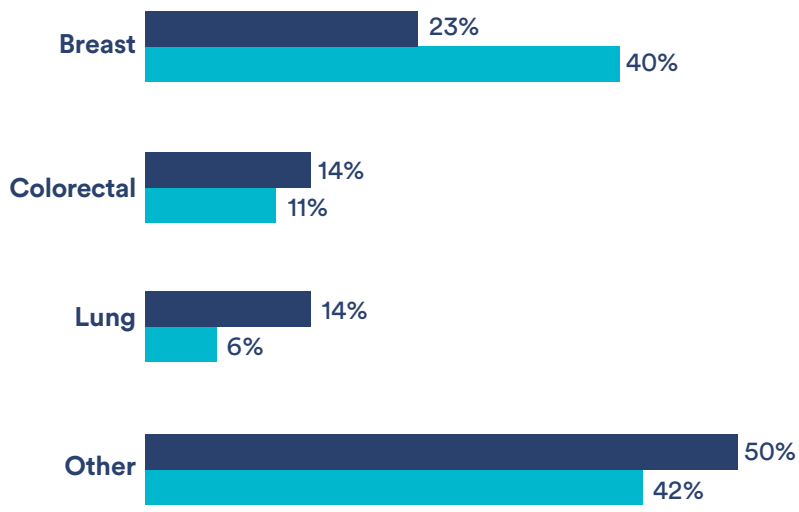


In Washington state, Medicaid-insured patients are more likely to be male than commercially insured patients.

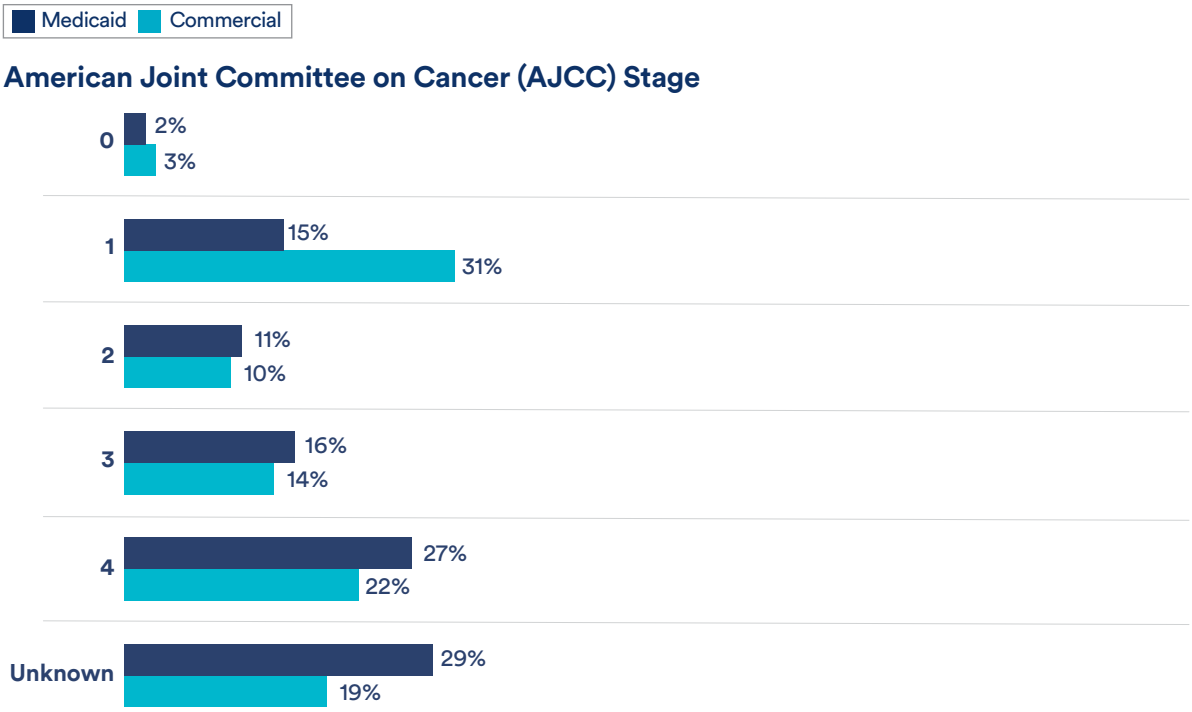
Demographics for Medicaid Enrollees



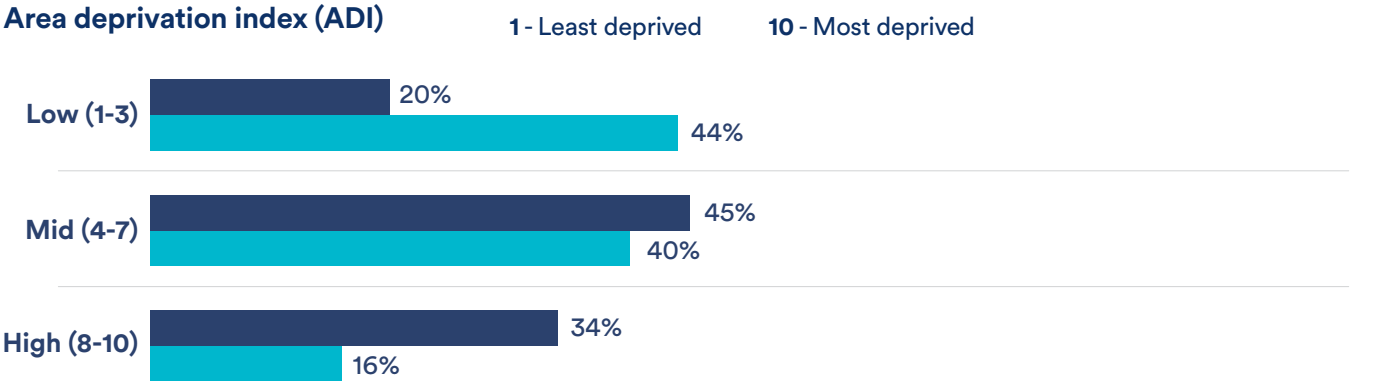
Medicaid enrollees are more likely than commercially insured patients to be non-white.



The Medicaid-insured population has a greater proportion of patients with lung cancer and a smaller proportion of patients with breast cancer compared to the commercially insured population.

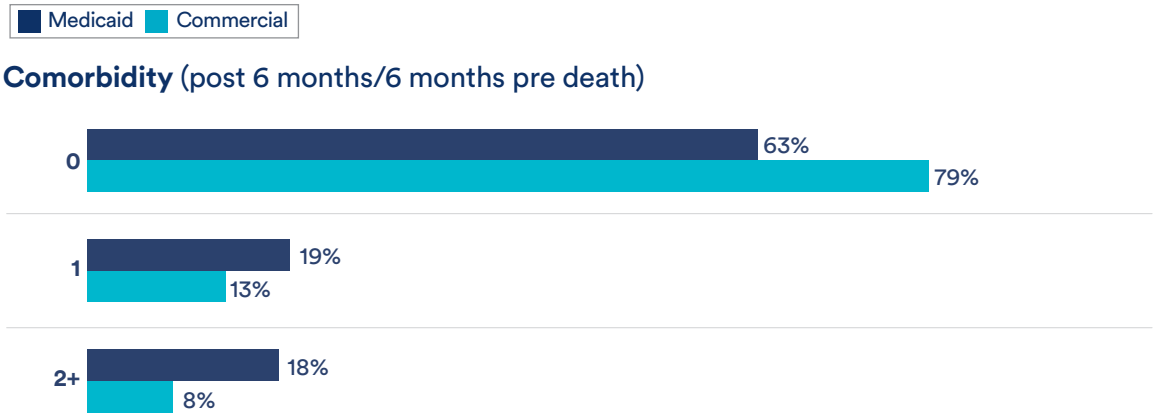


Medicaid-insured patients in Washington state are diagnosed with cancer at later stages than patients with commercial insurance.



Medicaid-insured patients are more likely to come from high-deprivation neighborhoods based on the Area Deprivation Index (ADI). The ADI measures a neighborhood's socioeconomic disadvantage at the census tract level. It includes 17 factors such as income and income disparity, education, employment and housing cost and quality. ADI ranks range from 1 (least deprived) to 10 (most deprived.)[1] ADI is used as a risk adjustor in our methodology as it is a more sensitive measure of socioeconomic status and is calibrated to Washington state rather than national disparities.

1 . University of Wisconsin School of Medicine and Public Health. Area Deprivation Index. Available at: https://www.neighborhoodatlas.medicine.wisc.edu/

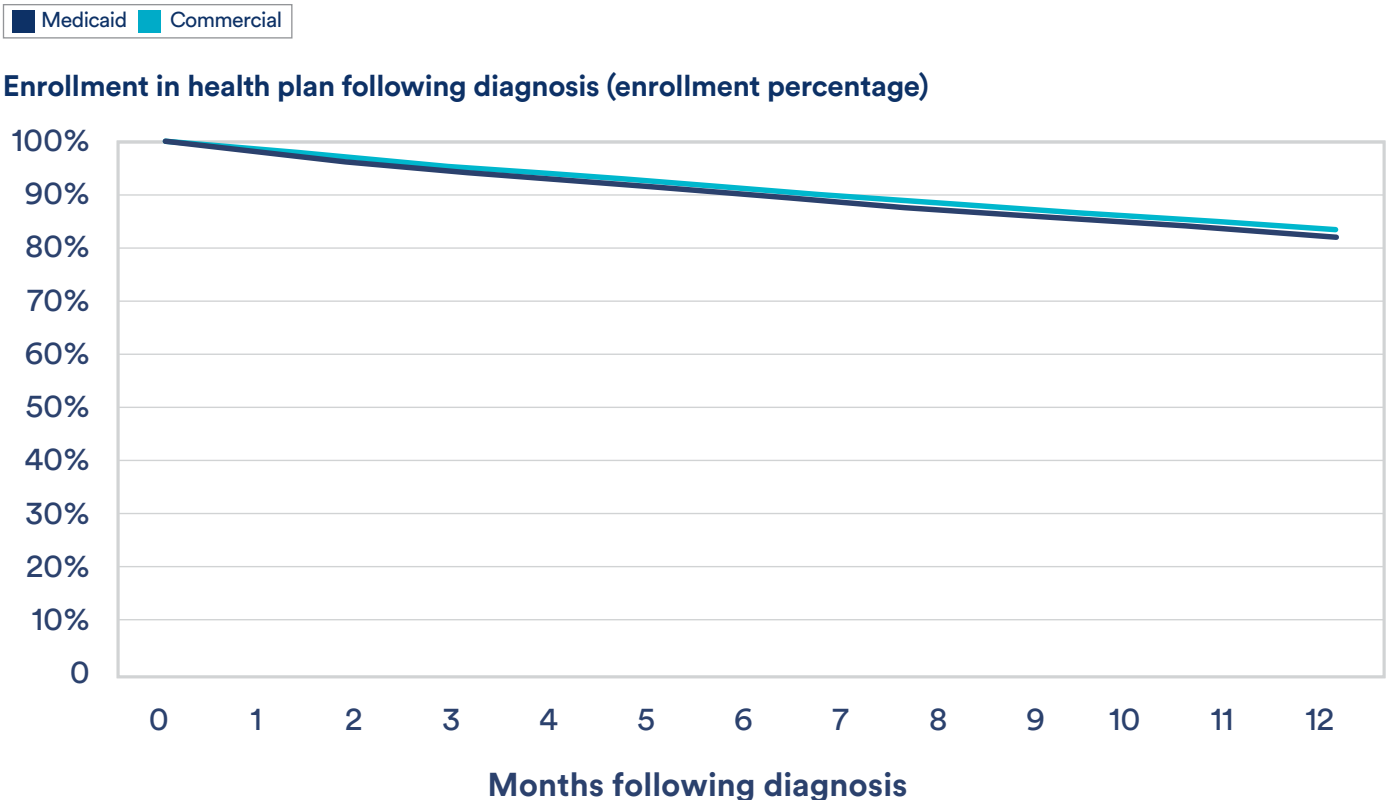


Medicaid-insured patients are more likely to have one or more comorbidities compared to the patients insured by commercial health plans.

The National Cancer Institute Comorbidity Index includes the following[1]:

- Acquired Immunodeficiency Syndrome (AIDS)
- Acute Myocardial Infarction
- History of Myocardial Infarction
- Congestive Heart Failure (CHF)
- Peripheral Vascular Disease
- Cerebrovascular Disease
- Chronic Obstructive Pulmonary Disease (COPD)
- Dementia
- Paralysis (Hemiplegia or Paraplegia)
- Diabetes
- Diabetes with Complications
- Renal Disease
- Mild Liver Disease
- Moderate/Severe Liver Disease
- Peptic Ulcer Disease
- Rheumatologic Disease

1 . NCI Comorbidity Index Overview, NIH National Cancer Institute, 23 May 2019, www.healthcaredelivery.cancer.gov/seermedicare/considerations/comorbidity.html



To measure adherence to metrics, patients are required to be continuously enrolled in one of the health plans in the dataset for specific periods of time depending on the measure. In order to understand the impact disenrollment may have on the results, disenrollment rates were compared between commercial and Medicaid health plans.

Patients were enrolled at the time of diagnosis and did not die or turn 65 in the year following. There are no differences in disenrollment rates between Medicaid and commercial enrollees suggesting that this factor does not account for disparities in care.

Medicaid-Insured Measure Results

Medicaid-insured patients face unique challenges to receiving high quality care. This section compares quality between commercial- and Medicaid-insured populations under the age of 65 at a statewide level.

Measure 1: Recommended treatment

Measure	Tumor Site	Commercial	Medicaid	p-value
Recommended cancer treatment	Breast, lung, colon, hematologic	71.1%	63.1%	0.02
Recommended treatment by cancer type	Breast	66.4%	62.8%	0.42
	Colon & lung	50.0%	43.2%	0.57
	Hematologic	88.6%	76.3%	0.03
Somatic mutation testing based on cancer type	Lung, colorectal, prostate, pancreatic, bladder, ovarian	85.0%	79.5%	0.03

RESULTS: Commercially insured patients with breast, lung, colon and hematologic cancers have higher levels of receipt of recommended treatment and testing than Medicaid-insured patients with these cancers.

DISCUSSION: The lower levels of adherence to initial recommended care among Medicaid enrollees could be due to several factors including transportation challenges, housing instability or severe financial difficulties. Note that this metric measures processes of care and not outcomes, and thus is not adjusted for factors that may be more prevalent in the Medicaid-insured population such as non-cancer illnesses.

Measure 2: Hospitalization during chemotherapy

Measure	Tumor Site	Commercial	Medicaid	p-value
Emergency department visits during chemotherapy	All except leukemia	21.6%	36.0%	<0.01
Inpatient stays during chemotherapy	All except leukemeia	23.3%	32.8%	0.62

RESULTS: Medicaid-insured patients undergoing chemotherapy have a substantially higher rate of emergency department visits and inpatient stays than similar patients enrolled in commercial health plans.

DISCUSSION: Some factors that might lead to more visits for Medicaid patients cannot be controlled for in these analyses such as the patient's financial and housing status, access to care, caregiver availability, available community resources, and non-cancer illnesses. The Medicaid-insured population in this report have a larger percentage of patients with serious non-cancer illnesses that often require more complex or intensive care and increases the risk of adverse outcomes.

Measure 3: Breast cancer tumor marker testing following treatment

Measure	Tumor Site	Commercial	Medicaid	p-value
Tumor marking testing after treatment	Breast	15.3%	14.7%	0.86

RESULTS: Adherence to tumor marker testing following treatment among Medicaid-insured patients with stage I to IIIA breast cancer were similar to commercially insured patients (for this metric, lower rates are better).

DISCUSSION: Tumor marker testing is not currently recommended by ASCO or NCCN for surveillance of asymptomatic women with treated breast cancer. Overall we see relatively low testing rates in our population.

Measure 4: End-of-life care

Measure	Tumor Site	Commercial	Medicaid	p-value
End of Life (EoL): Chemotherapy	Solid	10.1%	6.9%	<0.01
EoL: 2+ ED visits	Solid	20.5%	23.3%	0.83
EoL: ICU stay	Solid	26.3%	24.6%	0.18
EoL: Hospice	All	34.0%	38.0%	0.05

RESULTS: Overall adherence to measures of quality in end-of-life care was higher for Medicaid-insured patients compared to their commercially insured counterparts. Chemotheray in the last 14 days of life was significantly lower and enrollment in hospice care was significantly higher for the Medicaid enrollees than commercially insured patients.

DISCUSSION: The results suggest that there is room for improving end-of-life care for patients with cancer. While we are not able to understand the reasons for the differences (e.g., patient preferences for care), Medicaid enrollees appear to have a less aggresive end-of-life care compared to commercially insured patients.

Appendices

Appendix A: Individual Metric Definitions

This appendix includes specifications of metric construction. For complete methodology information please refer to the Community Cancer Care in Washington State: Methodology 2025 report available at FredHutch.org/cancer-care-report.

General inclusion criteria:

- Diagnosed with or treated for cancer in Washington state
- Known date of diagnosis, and not diagnosed at autopsy or by death certificate
- Enrolled in Premera Blue Cross, Regence BlueShield, WA State Medicaid, WA State Uniform Medical Plan or Medicare

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 1: Recommended Cancer Treatment and Testing (Summary Quality Score)				
Measure 1.1: Recommended treatment based on cancer type	*See below for appropriate therapy metrics for each cancer type*			
Breast Cancer				
Recommended therapy based on ER/PR and HER2 status	**MACRA** #450 **OCM**-10 **QOPI** BR55 **NQF** #1858	• HER2/neu positive: Claim for trastuzumab, lapatinib or pertuzumab within 365 days of diagnosis • HER2/neu negative: No claim for trastuzumab, lapatinib or pertuzumab within 365 days of diagnosis	• Age 18+ • Breast cancer • First or only cancer • AJCC stage T1c or AJCC stage II-III breast cancer • Known HER2/neu status • Alive 365 days after diagnosis • Medical coverage in 12 months following diagnosis • Claim for chemotherapy within 365 days of diagnosis • Exclude patients receiving anthracycline-based chemotherapy or radiation therapy in days 335-365 following diagnosis	HICOR Treatment Period*
	OCM-9 **QOPI** BR53 **NQF** #0559	• ER/PR Negative: Claim for two or more chemotherapy agents within 120 days of diagnosis; second agent given within three days of first agent	• Age 18+ (ER/PRpositive) or 18-69 (ER/PR negative) • Female • Breast cancer • First or only cancer • Known stage AJCC T1cN0M0 or IB-III breast cancer • Known ER and PR status • Alive 120 days (ER/PR negative) or 365 days (ER/PR positive) after diagnosis • Exclude phyllodes (9020) and rare (8940, 8950, 8980, 8981) histology types • Exclude tumors size ≤1cm2 & AJCC N0 • Alive with medical coverage for 120 days (ER/PR negative) or 365 days (ER/PR positive) after diagnosis • ER/PR negative: Lumpectomy or mastectomy in the first 120 days from diagnosis • ER/PR positive: Exclude patients receiving chemotherapy or radiation therapy in days 335-365 after diagnosis; exclude patients who received oophorectomy in year following diagnosis	HICOR Treatment Period*
	OCM-11 **QOPI** BR58 **QOPI** BR59 **NQF** #0220 **NQF** #0387 **PQRS** #71	• ER/PR Positive: Hormone therapy (tamoxifen, aromatase inhibitor or as defined by cancer registry) within 365 days of diagnosis		

* See page 60 for **Definitions of HICOR Treatment Period and HICOR Follow-up Period**

Appendix A: Individual Metric Definitions

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Breast Cancer (continued)				
Receipt of sentinel lymph-node biopsies (SLNB) for breast cancer (Stage IA)	**SSO** Choosing Wisely	• Claim for SLNB within 180 days of diagnosis	• Age 70+ • Breast cancer • First or only cancer • AJCC stage IA • ER positive and HER2 negative • Grade 1 or 2 • Alive 180 days after diagnosis • Medical coverage for 180 days after diagnosis	HICOR Treatment Period*
Receipt of surgery within 60 days (Stage I-III)	**Commission on Cancer**	• Claim for lumpectomy or mastectomy within 60 days of diagnosis	• Age 18+ • Breast cancer • First or only cancer • AJCC stage I-III • Alive 180 days after diagnosis • Medical coverage for 180 days after diagnosis • Claim for surgery within 180 days of diagnosis • Exclude patients receiving chemotherapy or hormone therapy prior to surgery	HICOR Treatment Period*
Colon Cancer				
Receipt of chemotherapy within 120 days of diagnosis for patients with stage III colon cancer	**OCM**-8 **QOPI** CRC68 **NQF** #0223 **NQF** #0385	• Claim for chemotherapy within 120 days of diagnosis	• Age 18–79 • Colon cancer • First or only cancer • AJCC stage III • Alive 120 days after diagnosis • Medical coverage for 120 days after diagnosis	HICOR Treatment Period*
Non-Small Cell Lung Cancer				
Receipt of chemotherapy within 90 days of surgery	**Commission on Cancer**	• Claim for chemotherapy 90 days before or after surgery	• Age 18+ • Non-small cell lung cancer • First or only cancer • T2 and >4cm, or AJCC Stage IIB/III, or Regional stage • Claim for surgery 30 days prior through 180 days following diagnosis • Alive 90 days after surgery • Medical coverage from diagnosis to 90 days following surgery	HICOR Treatment Period*
Hematologic Cancer				
Receipt of baseline cytogenetic testing on bone marrow for acute leukemias	**ASH** Hematology Measure 1	• Claim for cytogenic testing on bone marrow within 90 days prior or 180 days following diagnosis	• Age 18+ • Acute leukemia • First or only cancer • Medical coverage 90 days prior and 180 days following diagnosis	HICOR Treatment Period*
Receipt of baseline flow cytometry for CLL	**ASH** Hematology Measure 4	• Claim for flow cytometry withing 90 days prior or 180 days following diagnosis	• Age 18+ • Chronic lymphocytic leukemia • First or only cancer • Medical coverage 90 days prior and 180 days following diagnosis	HICOR Treatment Period*

* See page 60 for **Definitions of HICOR Treatment Period and HICOR Follow-up Period**

Appendix A: Individual Metric Definitions

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Somatic Mutation Testing for Metastatic Cancer				
Somatic mutation testing for metastatic cancer	**NCCN** guidelines for non-small cell lung, colorectal, prostate, pancreatic, bladder and ovarian cancer	• Claim for any somatic mutation testing (see list below in the two months prior to diagnosis through four months after diagnosis All Cancers: NGS, MSI, MMR IHC NSCLC: EGFR, ALK, ROS1, BRAF, NTRK1/2/3, METex14 skipping, RET, ERBB2 (HER2) Colorectal: KRAS, NRAS, BRAF Prostate: BRCA1/2, ATM, PALB2, FANCA, RAD51D, CHECK2, CDK12 Pancreatic: ALK, NRG1, NTRK, ROS1, FGFR2, RET, BRAF, BRCA1/2, KRAS, PALB2, HER2, TMB Bladder: FGFR2, HER2 Ovarian: BRCA1/2, HRD	• Age 18+ • Cancer: Non-small cell lung, colorectal, prostate, pancreatic, bladder, ovarian • First or only cancer • Includes AJCC stage IV or SEER stage distant • Alive four months after diagnosis • Medical coverage two months prior to diagnosis through four months following diagnosis	Start: Two months prior to diagnosis End: Four months following diagnosis

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 1: Recommended Cancer Treatment and Testing (Cost)				
Total cost during treatment		All amounts paid by insurers to health care providers during HICOR Treatment Period*	Patients eligible for any Recommended Cancer Treating and Testing quality metric	HICOR Treatment Period*

Appendix A: Individual Metric Definitions

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 2: Hospitalization During Chemotherapy (Summary Quality Score)				
Emergency department (ED) visits during chemotherapy	**OCM**-2	• ED claim without subsequent inpatient admission (≤1 day) within 180 days of first chemotherapy claim	• Age 18+ • All cancers except non-CLL leukemia • First or only cancer • Medical coverage in month of diagnosis and for six months from first chemotherapy claim (or until death) • Claim for outpatient chemotherapy within 180 days of diagnosis • No bone marrow transplant between diagnosis and 180 days after first outpatient chemotherapy	Start: First outpatient chemotherapy End: Start date + 180 days
Inpatient (IP) stays during chemotherapy	**OCM**-1	• Hospital IP admission not related to a cancer-directed surgery within 180 days of first chemotherapy claim	• Age 18+ • All cancers except non- CLL leukemia • First or only cancer • Medical coverage in month of diagnosis and for six months from first chemotherapy claim (or until death) • Claim for outpatient chemotherapy within 180 days of diagnosis • No bone marrow transplant between diagnosis and 180 days after first outpatient chemotherapy	Start: First outpatient chemotherapy End: Start date + 180 days
Measure 2: Hospitalization During Chemotherapy (Cost)				
Total cost within six months of initial chemotherapy		All amounts paid by insurers to health care providers from first outpatient chemotherapy through 180 days	Patients eligible for Hospitalization During Chemotherapy quality measure	Start: First outpatient chemotherapy End: Start date + 180 days

Definition of Chemotherapy:

Chemotherapy utilization is measured using administrative and drug procedure codes. Chemotherapy includes traditional chemotherapy, immunotherapy and biologics. The drugs could be delivered either through an IV or orally. Chemotherapy does not include hormone therapy (e.g., tamoxifen) or supportive care (e.g., colony-stimulating factors).

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 3: Breast Cancer Tumor Marker Testing Following Treatment (Summary Quality Score)				
Breast cancer tumor marker testing following treatment	**QOPI** BR62c1 & BR62c2	• Claim for tumor marker test (CEA, CA 15-3, CA 27.29) during HICOR Follow-up Period*	• Age 18+ • Female • Breast cancer • First and only cancer • AJCC stage I, II, IIIA • Received curative treatment (mastectomy, or lumpectomy plus radiation within 90 days) • Medical coverage from diagnosis through end of follow-up period*	HICOR Follow-up Period*
Measure 3: Breast Cancer Tumor Marker Testing Following Treatment (Cost)				
Total cost during follow-up period		All amounts paid by insurers to health care providers during HICOR Follow-up Period*	Patients eligible for Breast Cancer Tumor Marker Testing Following Treatment quality metric	HICOR Follow-up Period*

* See page 60 for **Definitions of HICOR Treatment Period and HICOR Follow-up Period**

Appendix A: Individual Metric Definitions

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 4: End-of-Life Care (Summary Quality Score)				
Chemotherapy in the last 14 days of life	**MACRA** #453 **QOPI** EOL48 **NQF** #0210	• Claim for any chemotherapy in the last 14 days of life	• Age 18+ • Patient died • Solid tumors only (excludes leukemia, lymphoma and myeloma) • Includes AJCC stage II/III/IV or SEER stage regional/distant • Medical coverage six months prior to death through date of death	Last 180 days of life
Multiple Emergency Department (ED) visits in the last 30 days of life	**MACRA** #454 **QOPI** EOL49 **NQF** #0211	• More than one ED visit in the last 30 days of life	• Age 18+ • Patient died • Solid tumors only (excludes leukemia, lymphoma and myeloma) • Includes AJCC stage II/III/IV or SEER stage regional/distant • Medical coverage six months prior to death through date of death	Last 180 days of life
Intensive Care Unit (ICU) stay in the last 30 days of life	**MACRA** #455 **QOPI** EOL49a **NQF** #0213	• Hospital ICU admission for any reason in the last 30 days of life	• Age 18+ • Patient died • Solid tumors only (excludes leukemia, lymphoma and myeloma) • Includes AJCC stage II/III/IV or SEER stage regional/distant • Medical coverage six months prior to death through date of death	Last 180 days of life
Hospice care three or more days prior to death	**MACRA** #457 **OCM**-3 **QOPI** EOL44 **NQF** #0216	• Two or more inpatient or outpatient hospice claims, with the first claim at least three days prior to death	• Ages 18+ • Patient died • All cancers • Includes AJCC stage II/III/IV or SEER stage regional/distant • Medical coverage six months prior to death through date of death	Last 180 days of life
Measure 4: End-of-Life Care (Cost)				
Total cost in last 30 days of life		All amounts paid by insurers to health care providers in last 30 days of life	Patients eligible for any End-of-Life Care quality metrics	Last 180 days of life

Definitions of HICOR Care Periods

Treatment Period:

Start: First treatment. Treatment is defined as surgery, chemotherapy or radiation therapy.
End: Earliest of:

1. 12 months following first treatment, or
2. Start of follow-up period. The follow-up period begins at the start of a four-month gap in treatment (i.e., surgery, chemotherapy or radiation therapy).

Follow-up Period:

Start: Beginning of a four-month gap in treatment. Treatment is defined as surgery, chemotherapy or radiation therapy.
End: Earliest of:

1. 13 months following start of follow-up period, or
2. Start of new treatment (i.e., surgery, chemotherapy or radiation therapy).

Appendix A: Individual Metric Definitions

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 5: Germline Testing (State-Level Reporting)				
Germline testing for breast cancer	**NCCN** guidelines for Genetic/ Familial High-Risk Assessment: Breast, Ovarian and Pancreatic	• Claim for BRCA1/2 test in the two months prior to diagnosis through 24 months after diagnosis	• Age 18+ • Breast cancer • First or only cancer • Group recommended for germline testing: metastatic, triple negative, male or age under 50 • Alive three months after diagnosis • Medical coverage two months prior to diagnosis through 24 months following diagnosis	N/A
Germline testing for ovarian cancer	**NCCN** guidelines for Genetic/ Familial High-Risk Assessment: Breast, Ovarian and Pancreatic	• Claim for germline test in the two months prior to diagnosis through 24 months after diagnosis	• Age 18+ • Ovarian, fallopian tube or peritoneum cancer • First or only cancer • Alive three months after diagnosis • Medical coverage two months prior to diagnosis through 24 months following diagnosis	N/A
Germline testing for pancreatic cancer	**NCCN** guidelines for Genetic/ Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic	• Claim for germline test in the two months prior to diagnosis through 24 months after diagnosis	• Age 18+ • Adenocarcinoma of the pancreas • First or only cancer • Alive three months after diagnosis • Medical coverage two months prior to diagnosis through 24 months following diagnosis	N/A
Germline testing for prostate cancer	**NCCN** guidelines for Prostate Cancer	• Claim for germline test in the two months prior to diagnosis through 24 months after diagnosis	• Age 18+ • Prostate cancer • First or only cancer • Stage: metastatic, regional (node positive) or high- or very-high-risk localized (see NCCN guidelines for Prostate Cancer) • Alive three months after diagnosis • Medical coverage two months prior to diagnosis through 24 months following diagnosis	N/A

HICOR METRIC	SOURCE	NUMERATOR	DENOMINATOR	CLINIC ATTRIBUTION PERIOD
Measure 6: Timeliness of Care (State-Level Reporting)				
Time to start of treatment		Median number of days between first visit at an oncology clinic (no more than 30 days prior to diagnosis) and first treatment (radiation, chemotherapy or hormone therapy) If the patient visited multiple oncology clinics, the clinic with the greatest number of visits was selected	• Age 18+ • Solid tumors only (excludes leukemia, lymphoma and myeloma) • First or only cancer • Includes AJCC stage IV or SEER stage distant • First treatment was radiation or chemotherapy • Treatment started within 12 months of diagnosis • Medical coverage one month prior to diagnosis through 12 months following diagnosis	N/A

Appendix B: Acronyms

ADI	Area Deprivation Index
AJCC	American Joint Committee on Cancer
ALK	Anaplastic Lymphoma Kinase
ASCO	American Society of Clinical Oncology
ASH	American Society of Hematology
ATM	Ataxia-Telangiesctasia Mutated
BRAF	V-Raf Murine Sarcoma Viral Oncogene Homolog B
BRCA 1/2	Breast Cancer Gene
CA 15-3	Cancer Antigen 15-3
CHI	Catholic Health Initiatives
CEA	Carcinoembryonic Antigen
CLL	Chronic Lymphocytic Leukemia
CoC	Commission on Cancer
CQMS	Clinical Quality Measures
CSS	Cancer Surveillance System
ED	Emergency Department
EGFR	Epidermal Growth Factor Receptor
EOL	End of Life
EOM	Enhancing Oncology Model
ER	Estrogen Receptor
HER2	Human Epidermal Growth Factor Receptor 2
HGLM	Hierarchical Generalized Linear Model
HICOR	Hutchinson Institute for Cancer Outcomes Research
ICU	Intensive Care Unit
IP	Inpatient
KRAS	Kirsten Rat Sarcoma Virus
MACRA	Medicare Access and CHIP Reauthorization Act of 2015
MMR IHC	Mismatch Repair Immunohistochemistry
MSI	Microsatellite Instability
NCCN	National Comprehensive Cancer Network
NGS	Next-Generation Sequencing
NQF	National Quality Forum
NRAS	Neuroblastoma RAS viral oncogene homolog
NSCLC	Non-Small Cell Lung Cancer
OCM	Oncology Care Model
PQRS	Physician Quality Reporting System
PR	Progesterone Receptor
QOPI	Quality Oncology Practice Initiative
ROS1	ROS Proto-Oncogene1, Receptor Tyrosine Kinase
SSO	Society of Surgical Oncology
SEER	Surveillance, Epidemiology and End Results
VCC	Value in Cancer Care

Appendix C: Publications

1. Ramsey SD, Fedorenko C, Chauhan R, et al. Baseline estimates of adherence to American Society of Clinical Oncology/American Board of Internal Medicine Choosing Wisely Initiative among patients with cancer enrolled with a large regional commercial health insurer. J Oncol Pract. 2015;11(4):338-343. DOI: 10.1200/JOP.2014.002717.
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