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Hutchinson Institute for Cancer Outcomes Research

Community Cancer Care in Washington State

Quality and Cost Report 2025

Fred Hutch Cancer Center

The Hutchinson Institute for Cancer Outcomes Research (HICOR®) developed the Community Cancer Care in Washington State: Quality and Cost Report 2025 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 sixth Community Cancer Care in Washington State: Quality and Cost Report. The metrics in this report cross the spectrum of cancer care delivered from 2019-2021. Our goal with the Community Cancer Care Report (CCCR) is to support practices and communities in their efforts to enhance care and improve outcomes for patients.

The results in this report are generated from a database that combines cancer registry and health insurance claims data for Washington state residents who have been diagnosed with cancer and 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

This year's report includes a new addition: results for the 13 counties covered by the Puget Sound SEER Western Washington Cancer Surveillance System (CSS) Registry are now reported separately for care primarily delivered from 2021-2023. Unfortunately, due to the recency of the data within the Washington State Cancer Registry, statewide reporting for this period is not yet available.

The metrics in this report include care delivered in 2020 and 2021, the first two years 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.

This report is the result of invaluable contributions from many individuals in our community, and we are deeply grateful for their support. As always, we hope 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

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Executive Summary

The HICOR team is pleased to provide the sixth 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 – clinicians providing cancer care, insurance plan administrators and employer groups who purchase insurance, and patients and their families. We believe that public reporting is the first step towards the goal of high-quality cancer care at a reasonable price for all Washingtonians by spurring collaboration, research and innovation.

The Community Cancer Care in Washington State: Quality and Cost Report 2025 includes metrics that are identified as meaningful and actionable by community leaders who pay for, provide and receive cancer care. 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 all patients with cancer who received care in Washington state between 2019 and 2021.

The report displays quality measures and associated costs across the spectrum of cancer care. The quality measures include recommended treatment 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 2025 report are comparable to those HICOR has previously reported and remain stable over time. Adherence to the metric **Recommended Treatments for Breast, Colorectal and Lung Cancer** remains high. 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. There has been a decline in the use of **Breast Cancer Tumor Marker Testing Following Treatment**. Finally, there is substantial variability in the clinic-level quality scores for the **End-of-Life Care** metric.

Costs for episodes of care increased 3%-19% from the 2024 report. The most notable cost increases are in the **Hospitalization During Chemotherapy** and **Breast Cancer Tumor Marker Testing Following Treatment** measures with a 19% increase, and an average increase of over $12,000 and $4,000 per episode respectively.

We have included a new measure to be reported at the clinic level, **Somatic Mutation Testing for Metastatic Lung and Colorectal Cancer**, which shows high adherence across clinics. Results from regional metrics are much like those that were reported in 2024. The findings show low levels of **Germline Testing** in breast, ovarian, pancreatic and prostate cancers. The **Timeliness of Care** metric shows it takes 37 days for patients to start treatment following the initial visit with their oncology provider, with significant differences among race and insurance types.

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

Executive Summary | Results

Reporting Years: 2019–2021

	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 1A: Recommended Treatment for Breast, Colorectal and Lung Cancer				
1A.1: Recommended therapy based on cancer type	1594	81.5% [80.3% to 83.3%]	-1.2% to 1.8%	$95,248 [$89,943 to $108,855]
Measure 1B: Recommended Treatment for Breast Cancer				
1B.1: Recommended therapy based on ER/PR and HER2 status	936	85.6%	n/a	$110,416 [$93,651 to $132,321]
Measure 1C: Somatic Mutation Testing for Metastatic Lung and Colorectal Cancer				
1C.1: Somatic mutation testing for metastatic lung and colorectal cancer	805	92.9%[3] [88.3% to 98.1%]	n/a	n/a
Measure 2: Hospitalization During Chemotherapy				
2.1: Emergency Department (ED) visits during chemotherapy	7304	29.7% [25.3% to 32.6%]	-4.2% to 4.7%	$76,976 [$66,661 to $94,394]
2.2 Inpatient (IP) stays during chemotherapy	7304	33.9% [32.4% to 35.9%]		
Measure 3: Breast Cancer Tumor Marker Testing Following Treatment				
3.1: Breast cancer tumor marker testing following treatment	880	16.4% [3.0% to 31.1%]	-14.8% to 13.3%	$20,520 [$19,841 to $21,800]
Measure 4: End-of-Life Care				
4.1: Chemotherapy in the last 14 days of life	9314	5.5% [3.7% to 11.0%]	-28.5% to 16.1%	$22,696 [$19,228 to $28,437]
4.2: Multiple Emergency Department (ED) visits in the last 30 days of life	9314	18.4% [16.8% to 20.8%]		
4.3: Intensive Care Unit (ICU) stay in the last 30 days of life	9314	25.3% [13.2% to 46.1%]		
4.4: Hospice care 3 or more days prior to death	9314	61.2% [56.2% to 67.2%]		
State-Level Reporting				
Measure 5: Germline Testing				
5.1: Germline testing for breast cancer	1644	66.6%	n/a	n/a
5.2: Germline testing for ovarian cancer	471	58.6%	n/a	n/a
5.3: Germline testing for pancreatic cancer	779	25.3%	n/a	n/a
5.4: Germline testing for prostate cancer	1264	9.7%	n/a	n/a
Measure 6: Timeliness of Care				
6: Time to start of treatment	3971	37 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.

[3] Measure 1C reports utilization rate instead of clinic risk-standardized rate.

What's New

Key updates in the 2025 Community Cancer Care in Washington State: Quality and Cost Report

Update to Reporting Years

The report includes measurement results for 2019 to 2021, an update from 2018 to 2020 in last year's report, but years may vary based on the measure. Please see the 2025 Methodology report for exact reporting years by measure.

Updates to Measures

Somatic Mutation Testing Reported at the Clinic Level

Somatic mutation testing for lung cancer was reported last year at the state-level (Titled: Measure 5 Biomarker Testing for Metastatic Lung Cancer). Based on interest and feedback from the Value in Cancer Care (VCC) Steering Committee, we added patients with metastatic colorectal cancer to this measure. The new measure is now reported under Recommended Treatment as Measure 1C.

Updated Germline Testing Codes

After feedback from clinical experts, we updated the code list of germline testing (Measure 5) to include only those which represent cancer-specific testing rather than any type of germline test. This change had a minimal effect on the results.

Updates to Attribution Methodology

For each measure, HICOR attributes patients to one clinic with the primary goal to identify the oncology provider most likely to be directing the patient's cancer care. This year, to better identify oncology practitioners, we removed hospice and home health facilities from our list of eligible clinics. The clinic list was also reviewed for ownership changes occurring through the end of 2021.

New Sections

Results for the Puget Sound SEER Region

New this year, we are reporting our measures for the Puget Sound SEER region with the most recent data we have available (2021-2023). It allows us to see the change of performance and outcomes in more recent years. The Puget Sound SEER region results are found at the end of each measure section.

Results for Medicaid

Medicaid results are now reported in a separate section, rather than under each measure. The new section includes demographic data and measure results, comparing commercial and Medicaid patients under the age of 65.

How to Read and Interpret the Report

The report provides select indicators of cancer care quality and cost for 25 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 2025. © 2025 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.

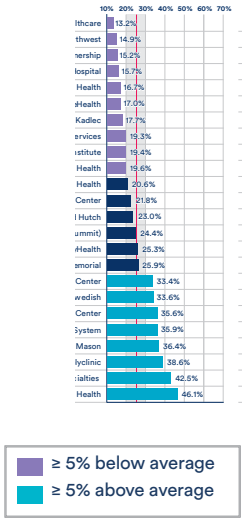
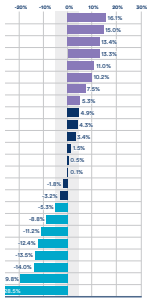
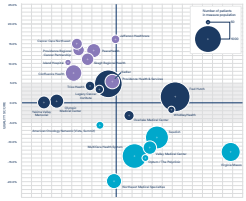
Understanding the Results Section

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 2025 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. Text at the top of each risk-standardized rate indicates one of the following: **Lower rates = higher quality** or **Higher rates = higher quality**	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 at 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% worse than the regional average while the purple bars indicate clinics that are more than 5% better than the regional average. Pay close attention to the numbers: 1. The difference between clinics can be small. 2. The scales may change.	 ≥ 5% below average ≥ 5% above average
	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.	 ≥ 5% above average ≥ 5% below 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

11 **Measure 1:** Recommended Cancer Treatment

11 **Measure 1A:** Recommended Treatment for Breast, Colorectal and Lung Cancer

16 **Measure 1B:** Recommended Treatment for Breast Cancer

18 **Measure 1C:** Somatic Mutation Testing for Metastatic Lung and Colorectal Cancer

21 **Measure 2:** Hospitalization During Chemotherapy

26 **Measure 3:** Breast Cancer Tumor Marker Testing Following Treatment

31 **Measure 4:** End-of-Life Care

38 **Measure 5:** Germline Testing (State-Level Reporting)

44 **Measure 6:** Timeliness of Care (State-Level Reporting)

MEASURE 1

Recommended Cancer Treatment

Cancer patient outcomes are better when cancer care providers follow evidence-based recommendations for treatment and testing. By measuring how well clinics follow recommentations for breast, colorectal and lung cancer, this measure provides insight into how well clinics follow cancer care recommendations overall.

MEASURE 1A

Evidenced-based clinical practice guidelines, or standards of care, are available for the treatment of all major cancers. Guidelines encompass 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.

The recommended treatments 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. They are frequently updated to reflect new data and clinical information.

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

Note in prior years we also measured the use of anti-nausea medication for moderate- or high-emetic-risk chemotherapy. Because adherence to this metric has been consistently and uniformly high for all clinics in the region over several years, this metric is no longer included in our report.

Individual metric definitions are available in Appendix A.

MEASURE 1A:
Recommended Treatment for Breast, Colorectal and Lung Cancer

Recommended therapy based on cancer type

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)

COLORECTAL CANCER
- Receipt of chemotherapy within 120 days of diagnosis for patients with colon cancer (stage III)
- Receipt of chemotherapy within 270 days of diagnosis for patients with rectal cancer (stage II-III)

NON-SMALL CELL LUNG CANCER
- Receipt of chemotherapy within 60 days of surgery (stage II-IIIA)
- No bevacizumab use for metastatic tumors within three months of diagnosis

Population: Patients with breast, colorectal and lung cancer undergoing cancer treatment

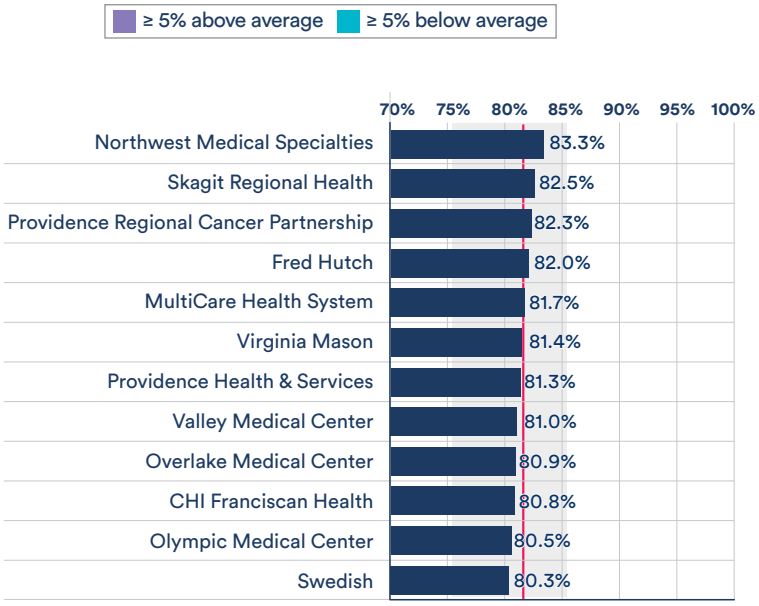
Reporting Years: 2019–2021

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.

1A: RECOMMENDED TREATMENT FOR BREAST, COLORECTAL AND LUNG CANCER

Figure 1A.1: Recommended therapy based on cancer type

Risk-Standardized Rate | Higher rate = higher quality



N=1594

REGIONAL AVERAGE: **81.5%**

RANGE: **80.3% to 83.3%**

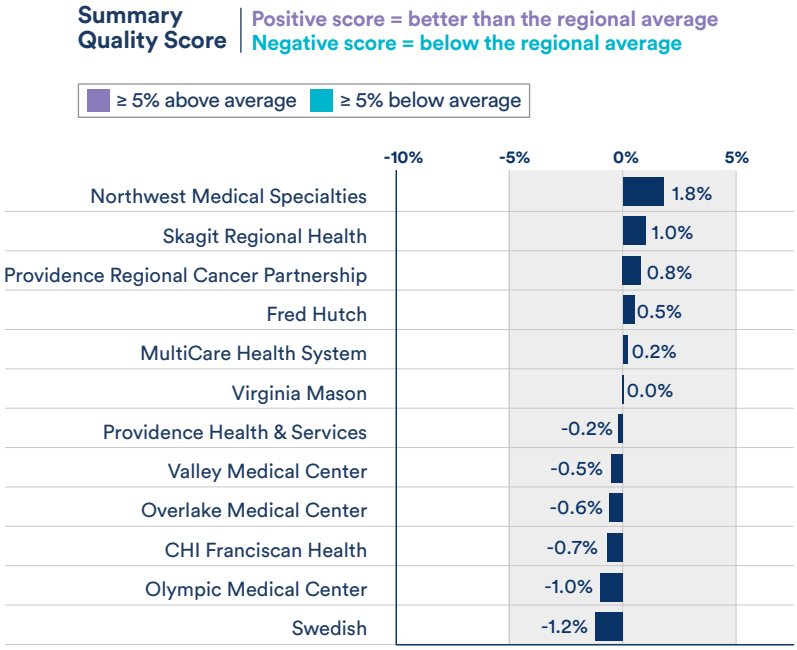
RESULTS: 1A.1

The **Recommended therapy** metric (1A.1) includes 1,594 patients.

On average, 81.5 percent of patients received recommended therapy based on cancer type. There is a 3.0 percentage point difference between the highest and the lowest clinic rate. In general, patients are receiving appropriate therapy based on their cancer type.

1A: RECOMMENDED TREATMENT FOR BREAST, COLORECTAL AND LUNG CANCER

Figure 1A.2: Recommended treatment for breast, colorectal and lung cancer



Zero represents clinic performance at the regional average

RANGE: **-1.2% to 1.8%**

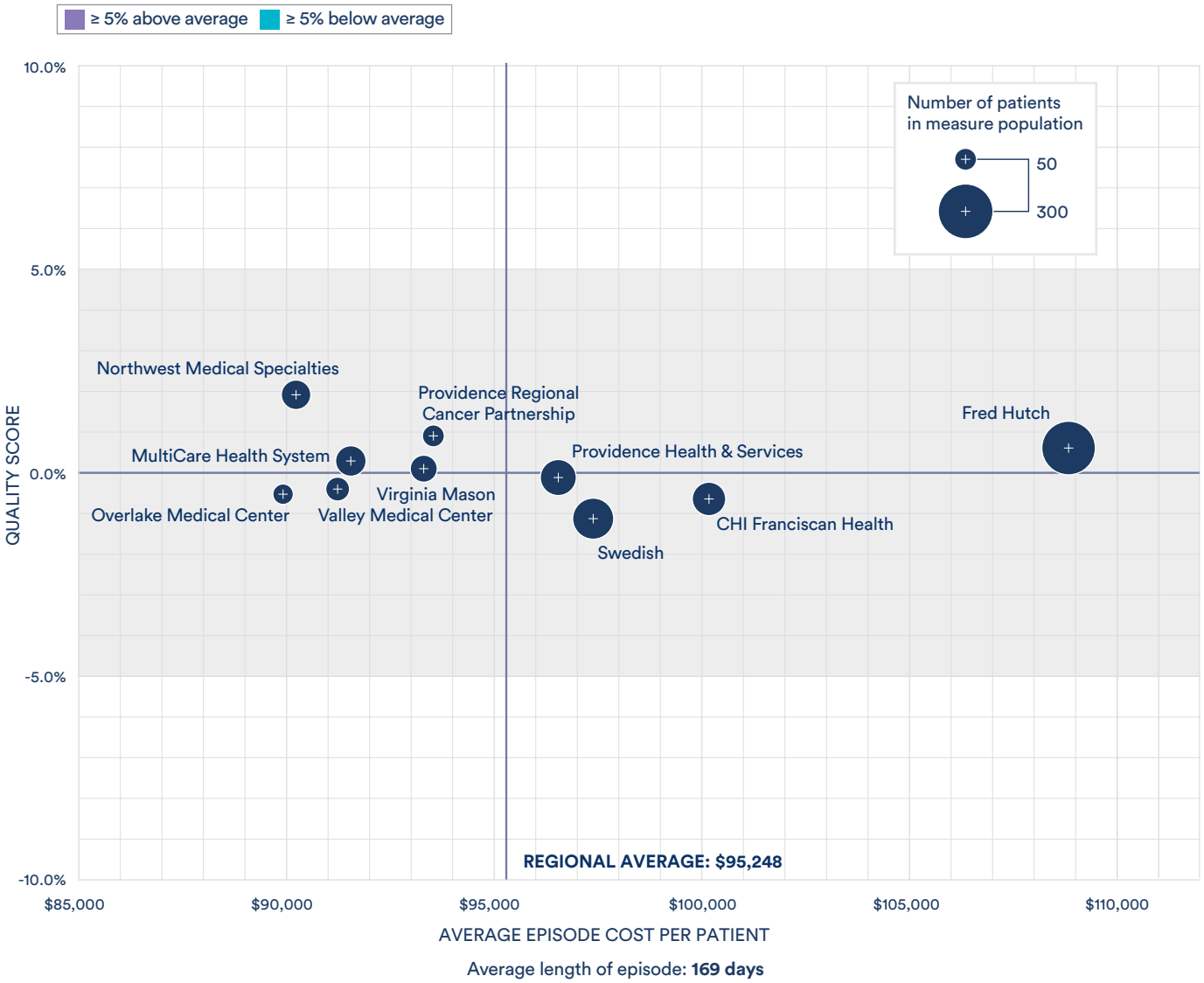
RESULTS: 1A.2

The summary quality scores, indicating clinic performance relative to the regional average, show a difference of 3.0 percentage points between the highest-performing clinic and lowest-performing clinic. The majority of the clinics are clustered around the regional average.

1A: RECOMMENDED TREATMENT FOR BREAST, COLORECTAL AND LUNG CANCER

Figure 1A.3: Recommended treatment for breast, colorectal and lung cancer

Summary quality score and cost



Average length of episode: **169 days**

Summary Quality Score Range: **-1.2% to 1.8%**

Cost Range: **$89,943 to $108,855**

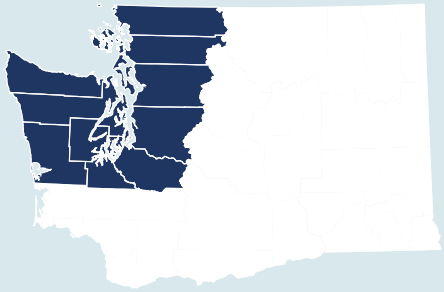
Only 10 of the 12 clinics reported for Measure 1A are included on this graph due to the requirement that each clinic have 40+ patients to calculate average cost. The quality measures are calculated using a different time period than the cost measure and, as a result, more patients and clinics were able to be included in graphs 1A.1 and 1A.2.

RESULTS: 1A.3

The regional average for cost of care over the period is $95,248, with an average treatment episode length of 169 days. The cost range is $18,912 ($89,943 to $108,855). The quality score, indicating clinic performance relative to the regional average, shows a difference of 3.0 percentage points between the highest-performing clinic and lowest-performing clinic — a minimal difference. The majority of the clinics are clustered around the regional average for quality.

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

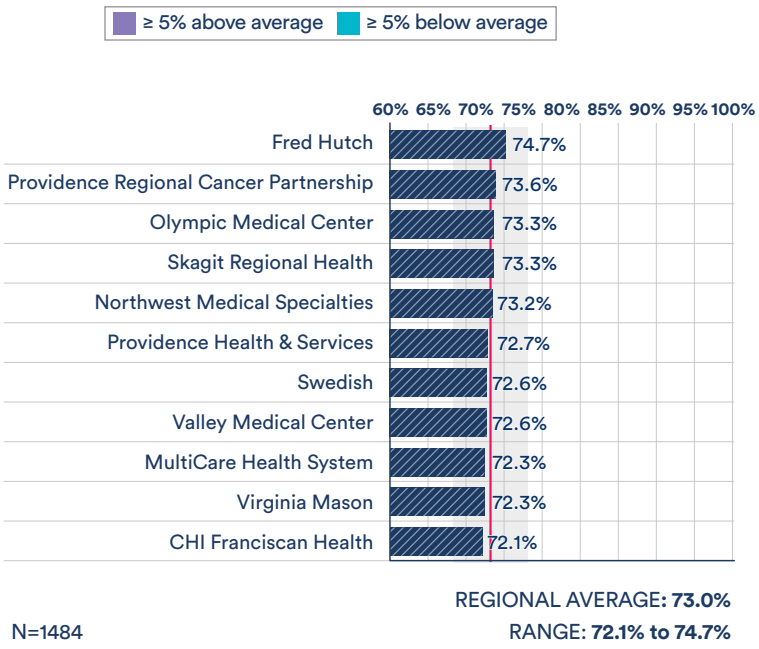


Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence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

Reporting Years: 2020-2022

Figure 1A.4: Recommended therapy based on cancer type, Puget Sound Region

Risk-Standardized Rate | Higher rate = higher quality



N=1484

REGIONAL AVERAGE: **73.0%**

RANGE: **72.1% to 74.7%**

RESULTS: 1A.4

The **Recommended therapy** metric for the Puget Sound Region (1A.4) includes 1,484 patients.

On average, 73.0 percent of patients received recommended therapy based on cancer type. There is a 2.6 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.

There is a meaningful difference (8.5%) between statewide results for 2019-2021 (81.5%) and Puget-Sound region results for 2020-2022 (73.0%).

MEASURE 1B

Recommended Treatment for Breast Cancer

MEASURE 1B

Breast cancer is the most common cancer in Washington state. As such, there were sufficient numbers of patients to analyze quality and cost information separately for breast cancer.

Individual metric definitions are available in Appendix A.

MEASURE 1B:
Recommended Treatment for Breast Cancer

Recommended therapy based on ER/PR and HER2 status for 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)

Population: Patients with breast cancer undergoing cancer treatment

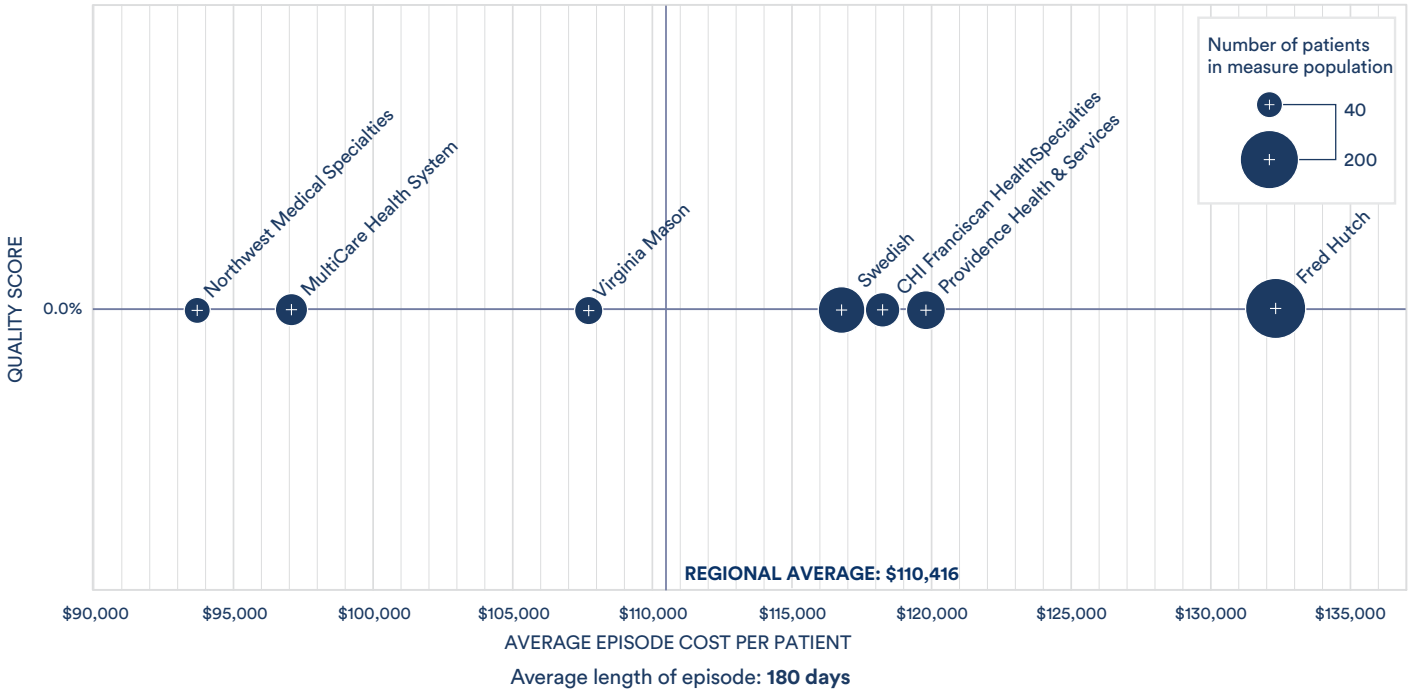
Reporting Years: 2019–2021

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.

1B: RECOMMENDED TREATMENT FOR BREAST CANCER

For the Washington state region, 85.6 percent of patients with breast cancer are receiving appropriate therapy based on ER/PR and HER2 status. Clinic-level break-downs are not shown as they do not vary significantly from the regional average. Cost of care during the treatment period does vary between clinics. Results are presented below.

Figure 1B.1: Recommended treatment for breast cancer



Average length of episode: **180 days**

Cost Range: **$93,651 to $132,321**

RESULTS: 1B.1

The regional average cost of care is $110,416 and the average treatment episode length is 180 days. The cost range is $38,670 ($93,651 to $132,321). There is no difference in quality measures among clinics, suggesting that there may be an opportunity to lower costs without sacrificing quality.

Since clinic-level results do not vary significantly from the regional average, Puget-Sound region results are not presented for Measure 1B.

MEASURE 1C

Somatic Mutation Testing for Metastatic Lung and Colorectal Cancer

MEASURE 1C

National guidelines recommend biomarker testing to identify mutations in the tumor for patients with metastatic lung and colorectal cancer. This testing is important because many newer prescribed treatments specifically target certain mutations that can only be identified through testing. This measure provides insight into how well clinics follow biomarker testing recommendations.

Testing patients with cancer for predictive and prognostic biomarkers is prerequisite to the delivery of precision medicine, or personalized medicine. Biomarker or somatic mutation testing looks for mutations or alterations in genes or protein expression within the cancer to determine which specific treatments may be more or less effective. 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. Biomarker testing has been recommended by cancer clinical guidelines across a variety of cancers and represents an important component of quality care.

Biomarker testing is important in non-small cell lung and colorectal cancers. Testing for mutations in a variety of genes, including epidermal growth factor receptor (EGFR), anaplastic lymphoma kinase (ALK) and the ROS1 gene, for example, is critically important in determining initial therapy in lung cancers. Similarly, testing for mutations in a variety of genes including the KRAS, NRAS, and BRAF genes, along with microsatellite instability (MSI) and mismatch repair immunohistochemistry (MMR IHC) testing, is important for treatment of colorectal cancers. Patients with these mutations are better served by the drugs that target them versus more typical chemotherapeutics. Moreover, testing should be done quickly at diagnosis to inform first-line treatment.

Individual metric definitions are available in Appendix A.

MEASURE 1C:
Somatic Mutation Testing for Metastatic Lung and Colorectal Cancer

Biomarker testing for metastatic lung cancer

- Receipt of NGS, EGFR, ALK or ROS1 test

Biomarker testing for metastatic colorectal cancer

- Receipt of MSI, MMR IHC, KRAS, NRAS or BRAF test

Population: Patients with non-small cell lung or colorectal cancer with metastatic disease

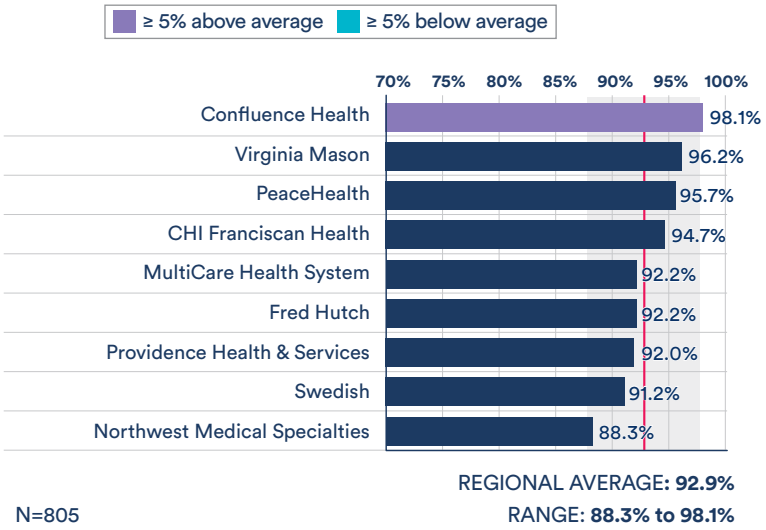
Reporting Years: 2019–2021

Time Period: The testing period begins two months prior to diagnosis and continues through four (lung cancer) or six months (colorectal cancer) following diagnosis.

1C: SOMATIC MUTATION TESTING FOR METASTATIC LUNG AND COLORECTAL CANCER

Figure 1C.1: Somatic mutation testing based on cancer type

Utilization Rate* | Higher rate = higher quality



REGIONAL AVERAGE: **92.9%**

N=805

RANGE: **88.3% to 98.1%**

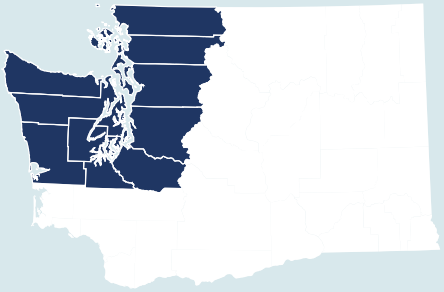
* Since the HGLM model with risk-adjusted rates did not converge, measure 1C is reported at the clinic level using unadjusted utilization rates.

RESULT: 1C.1

The **recommended testing** metric (1C.1) includes 805 patients.

On average, a high proportion (92.9 percent) of patients received recommended somatic mutation testing based on cancer type. There is a 9.7 percentage point difference between the highest and the lowest clinic rate.

PUGET-SOUND REGION RESULTS

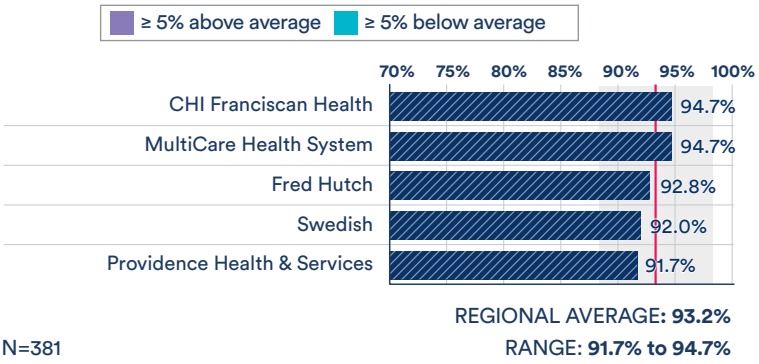


Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence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

Reporting Years: 2021-2023

Figure 1C.2: Somatic mutation testing based on cancer type, Puget Sound Region

Utilization Rate* | Higher rate = higher quality



REGIONAL AVERAGE: **93.2%**

RANGE: **91.7% to 94.7%**

N=381

* Since the HGLM model with risk-adjusted rates did not converge, measure 1C is reported at the clinic level using unadjusted utilization rates.

RESULTS: 1C.2

The **recommended testing** metric for the Puget Sound Region (1C.2) includes 381 patients.

On average, a high proportion (93.2 percent) of patients received recommended somatic mutation testing based on cancer type. There is a 3.1 percentage point difference between the highest and the lowest clinic rate.

MEASURE 2

Hospitalization During Chemotherapy

Hospitalization during chemotherapy includes visits to the emergency department or an inpatient 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 emergency department and hospital stays.

MEASURE 2

Many patients with cancer who receive chemotherapy experience symptoms that require urgent attention, such as pain or nausea. Although cancer clinics often can manage these symptoms through telephone calls and urgent visits to the clinic, patients with cancer often seek care in the emergency department (ED) instead of the cancer clinic. The reasons are many and can include limited clinic hours, lack of understanding of symptom self-management 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]

The drawbacks of ED care for chemotherapy-related problems are numerous and can include long wait times in crowded and uncomfortable settings, lack of ED staff expertise in managing chemotherapy-related side effects, exposure to infections that can be dangerous to immune-compromised patients and high costs. ED visits can disrupt the continuum of care received from oncology providers. If a patient's symptoms are severe or if clinicians cannot manage them during an ED visit, the patient may require admission to the hospital.

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

Individual metric definitions are available in Appendix A.

MEASURE 2:
Hospitalization During Chemotherapy

Emergency department (ED) visits during chemotherapy

- ED visit without subsequent inpatient admission within six months of first chemotherapy

Inpatient (IP) stays during chemotherapy

- Hospital IP admission for any reason within six months of first chemotherapy

Population: Patients with cancer receiving chemotherapy

Reporting Years: 2019–2021

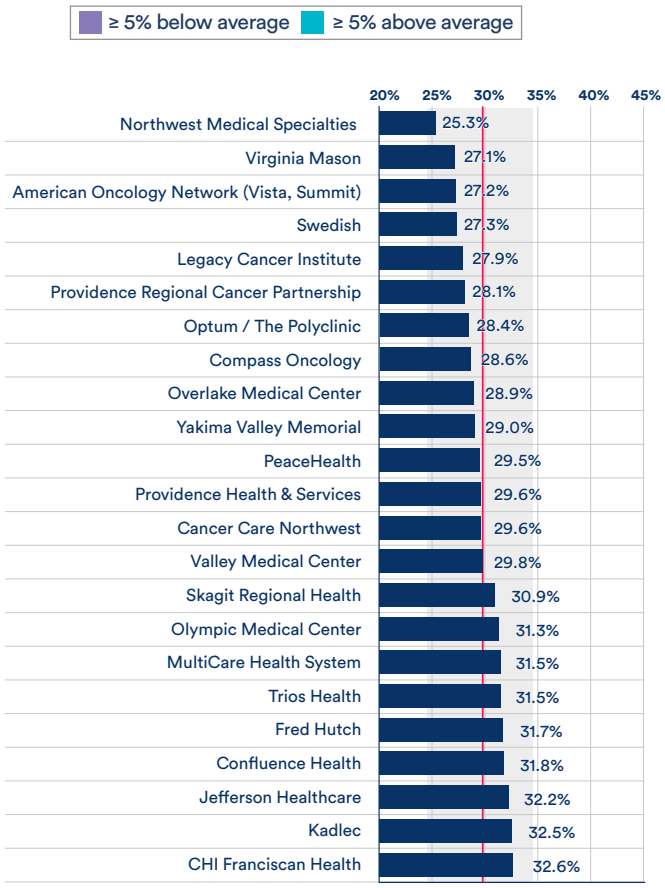
Time Period: Six months following the start of chemotherapy

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.

2: HOSPITALIZATION DURING CHEMOTHERAPY

Figure 2.1: ED visits during chemotherapy

Risk-Standardized Rate | Lower rate = higher quality



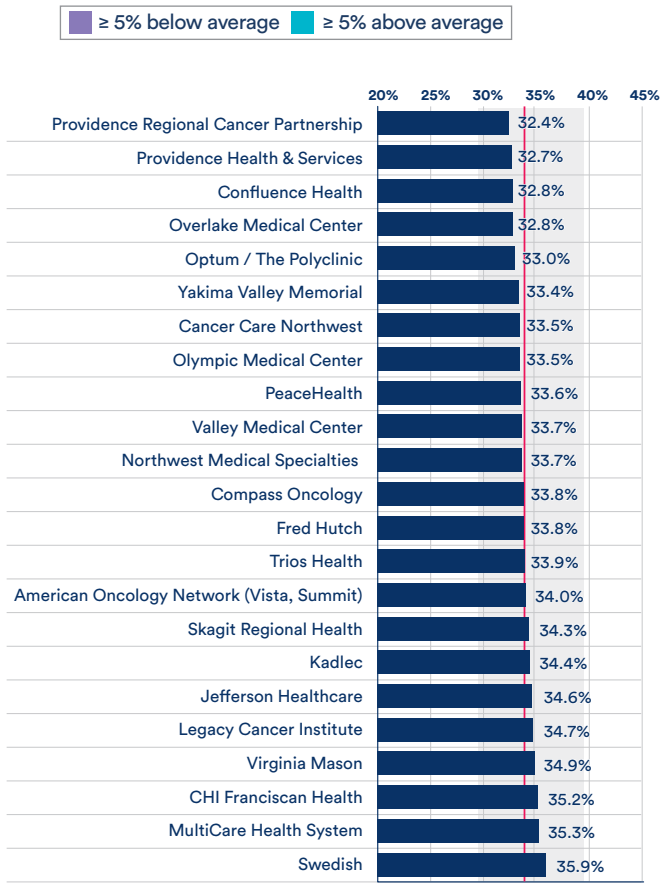
N=7304

REGIONAL AVERAGE: **29.7%**

RANGE: **25.3% to 32.6%**

Figure 2.2: IP stays during chemotherapy

Risk-Standardized Rate | Lower rate = higher quality



N=7304

REGIONAL AVERAGE: **33.9%**

RANGE: **32.4% to 35.9%**

RESULTS: 2.1 & 2.2

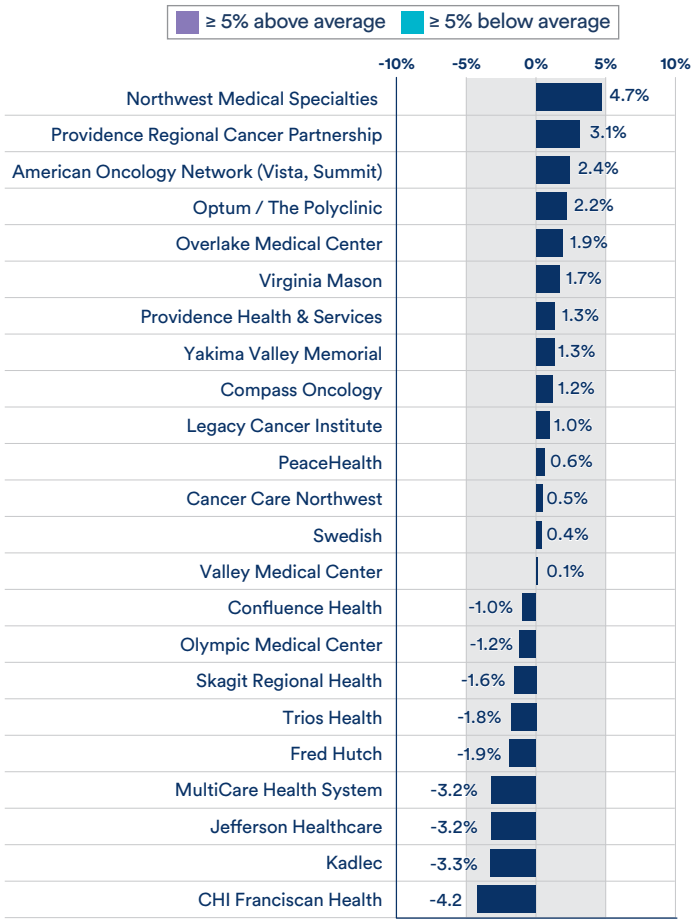
There are 7,304 patients included in this measure.

On average, 29.7 percent of patients had an emergency department (ED) visit during chemotherapy. There is a 7.3 percentage point difference between the highest and the lowest clinic rate.

On average, 33.9 percent of patients had an inpatient (IP) stay during chemotherapy. There is a 3.5 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: **-4.2% to 4.7%**

RESULTS: 2.3

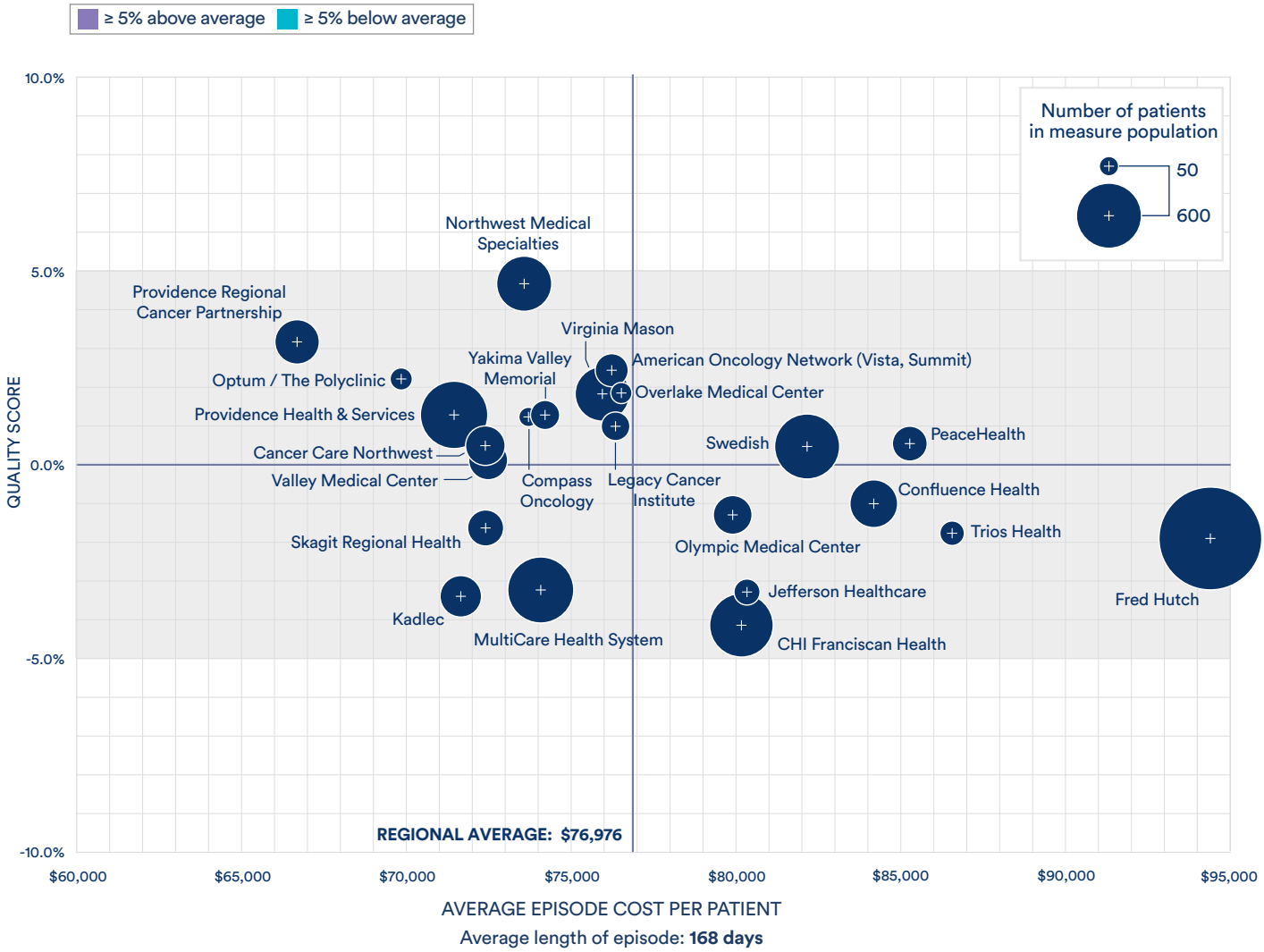
The summary quality scores, indicating clinic performance relative to the regional average for both metrics, show a difference of 8.9 percentage points between the highest-performing clinic and lowest-performing clinic.

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.

2: HOSPITALIZATION DURING CHEMOTHERAPY

Figure 2.4: Hospitalization during chemotherapy

Summary quality score and cost



Average length of episode: **168 days**

Summary Quality Score Range: **-4.2% to 4.7%**

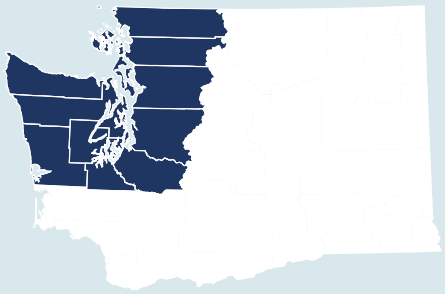
Cost Range: **$66,661 to $94,394**

RESULTS: 2.4

The regional average cost of care over the period of interest is $76,976, for an average observation period of 168 days. The cost range is $27,733 ($66,661 to $94,394). The quality scores, indicating clinic performance relative to the regional average for both metrics, show a difference of 8.9 percentage points between the highest-performing clinic and lowest-performing clinic, which is a marginal difference.

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

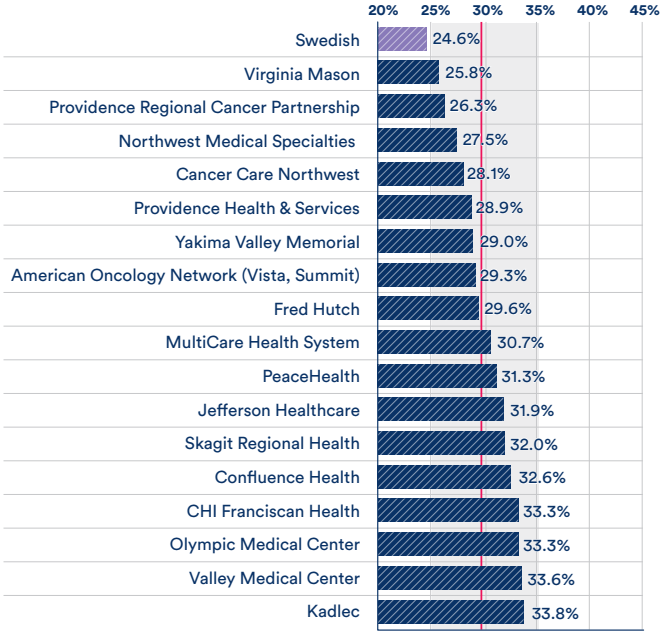


Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence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

Reporting Years: 2021-2023

Figure 2.5: ED visits during chemotherapy, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality



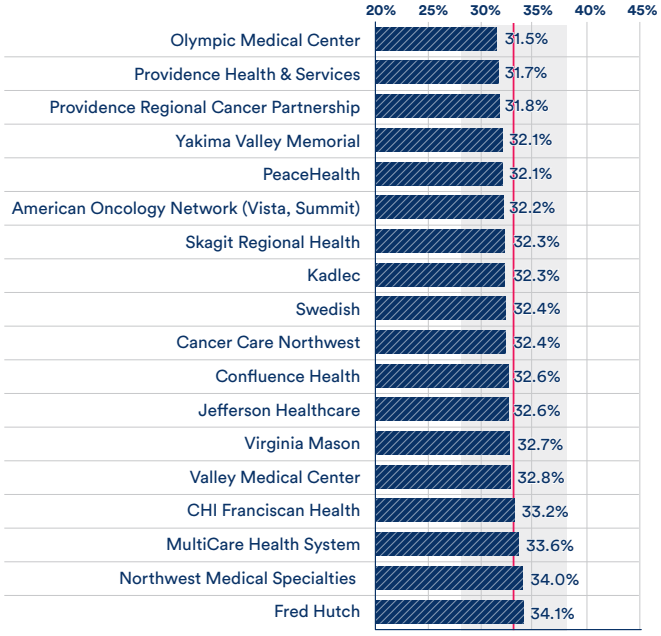
N=5253

REGIONAL AVERAGE: **30.1%**

RANGE: **24.6% to 33.8%**

Figure 2.6: IP stays during chemotherapy, Puget Sound Region

Risk-Standardized Rate | Lower rate = higher quality



N=5253

REGIONAL AVERAGE: **32.6%**

RANGE: **31.5% to 34.1%**

RESULTS: 2.5 & 2.6

There are 5,253 patients included in this measure.

On average, 30.1 percent of patients had an emergency department (ED) visit during chemotherapy. There is a 9.2 percentage point difference between the highest and the lowest clinic rate.

On average, 32.6 percent of patients had an inpatient (IP) stay during chemotherapy. There is a 2.6 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.

MEASURE 3

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

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

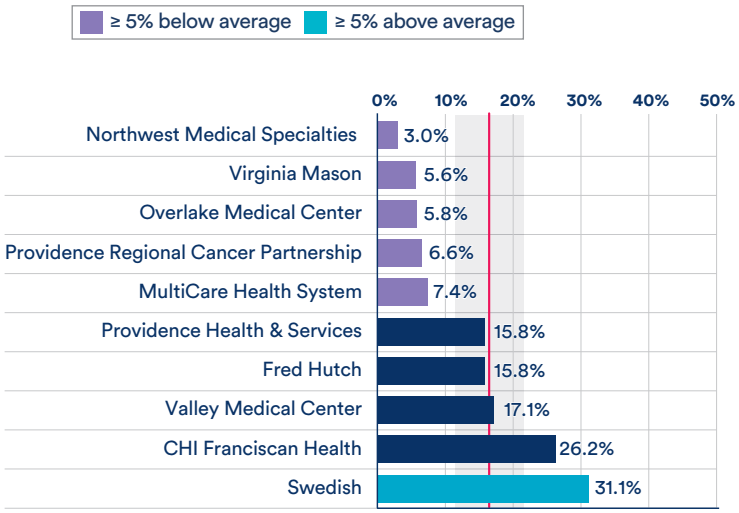
Reporting Years: 2019–2021

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 a four-month gap in active treatment to be considered to have completed treatment.

3: BREAST CANCER TUMOR MARKER TESTING FOLLOWING TREATMENT

Figure 3.1: Breast cancer tumor marker testing following treatment

Risk-Standardized Rate | Lower rate = higher quality



REGIONAL AVERAGE: **16.4%**

N=880

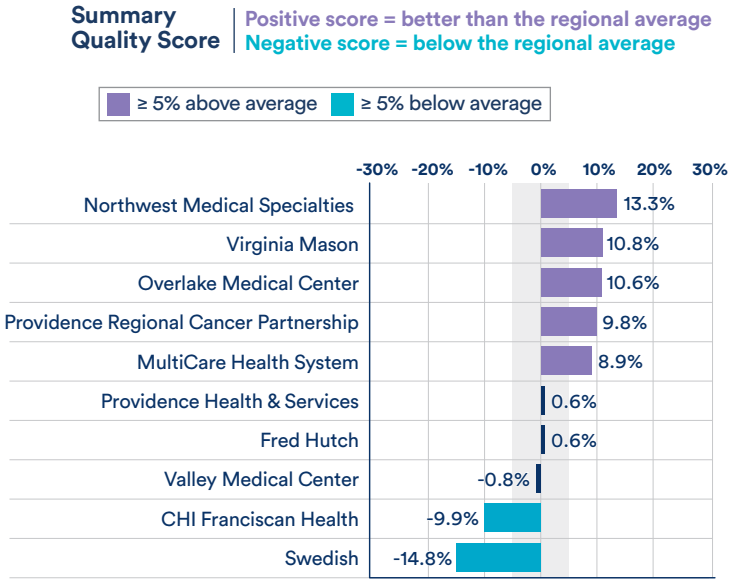
RANGE: **3.0% to 31.1%**

RESULTS: 3.1

This measure includes 880 patients with stage I to IIIA breast cancer.

On average, 16.4 percent of patients received tumor marker tests (CA 15-3, CA 27.29, CEA) in the 13 months following treatment. There is a 28.1 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



Zero represents clinic performance at the regional average
RANGE: **-14.8% to 13.3%**

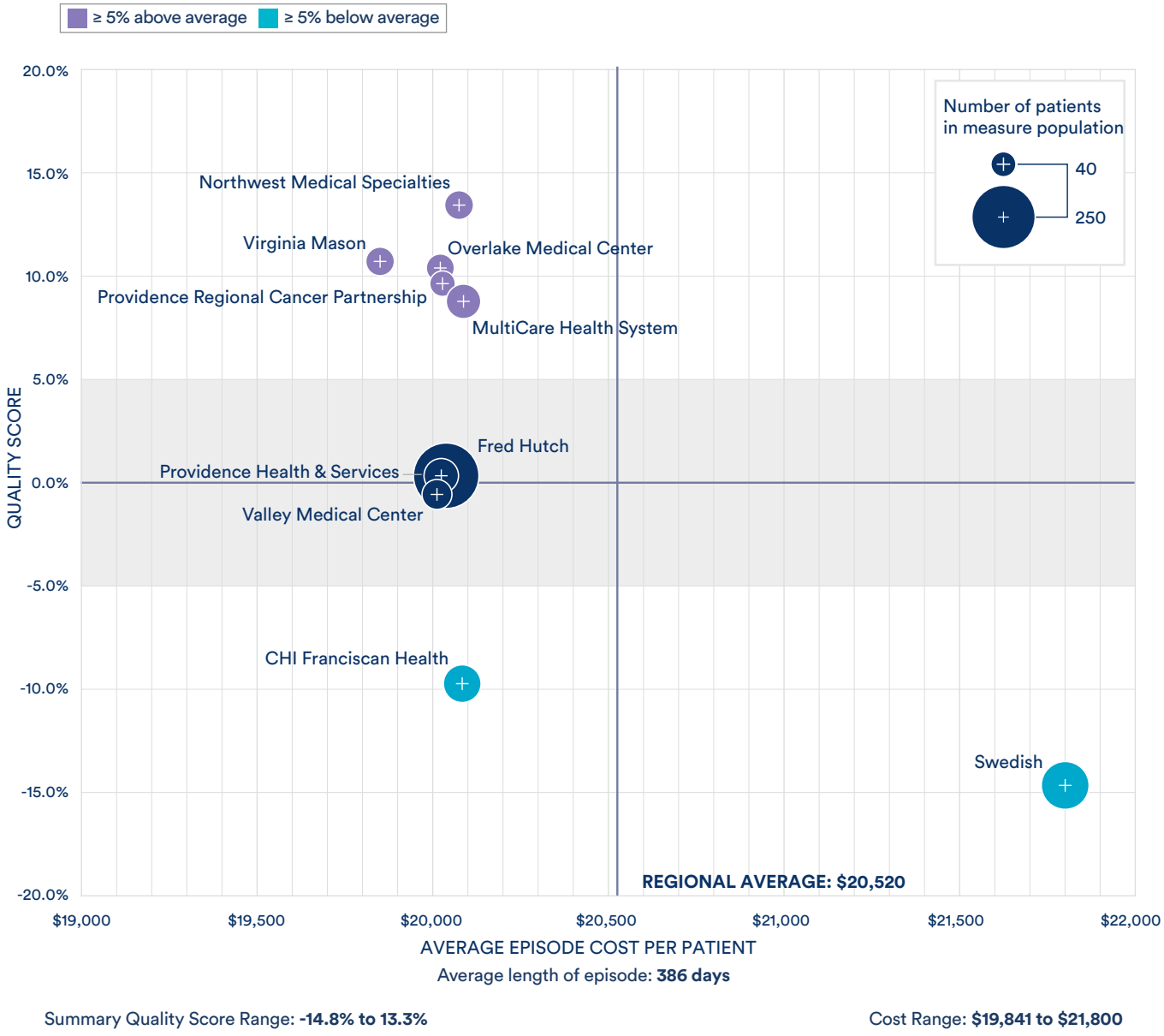
RESULTS: 3.2

The summary quality scores, indicating clinic performance relative to the regional average, show a difference of 28.1 percentage points between the highest-performing clinic and lowest-performing clinic.

3: BREAST CANCER TUMOR MARKER TESTING FOLLOWING TREATMENT

Figure 3.3: Breast cancer tumor marker testing following treatment

Summary quality score and cost



Summary Quality Score Range: **-14.8% to 13.3%**

Cost Range: **$19,841 to $21,800**

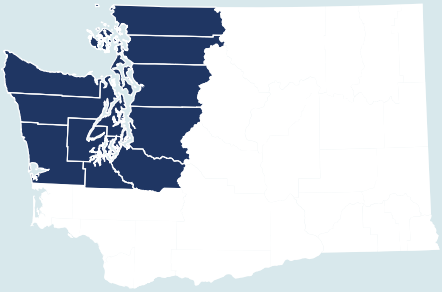
Note scale for cost results is narrower compared to other measures.

RESULTS: 3.3

The regional average cost of care over the period is $20,520, and the average length of a follow-up episode is 386 days. The cost range is $1,958 ($19,841 to $21,800). The quality scores, indicating clinic performance relative to the regional average, show a difference of 28.1 percentage points between the highest-performing clinic and lowest-performing clinic.

Clinics with lower testing rates (i.e. better adherence to the quality metric) also have lower episode costs.

PUGET-SOUND REGION RESULTS

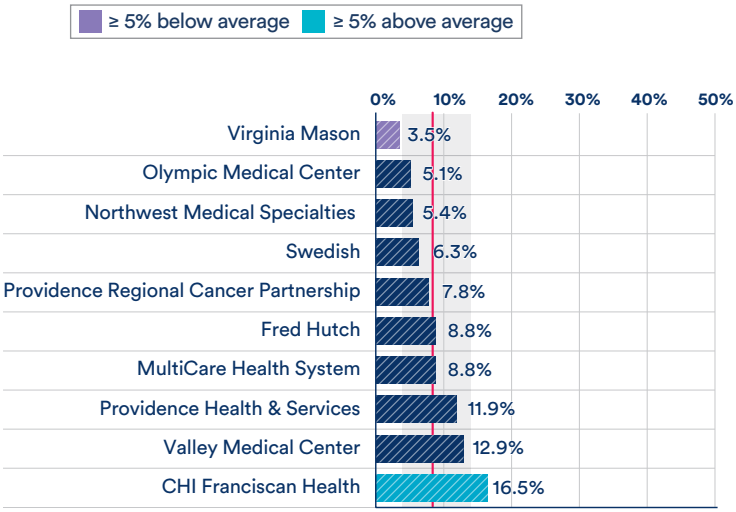


Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence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

Reporting Years: 2020-2022

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

Risk-Standardized Rate | Lower rate = higher quality



REGIONAL AVERAGE: **8.7%**

N=955

RANGE: **3.5% to 16.5%**

RESULTS: 3.4

This measure includes 955 patients with stage I to IIIA breast cancer.

On average, 8.7 percent of patients received tumor marker tests (CA 15-3, CA 27.29, CEA) in the 13 months following treatment. There is a 13.0 percentage point difference in the rate of tumor marker test ordering between the highest-performing clinic and the lowest-performing clinic, a meaningful difference.

There is a meaningful difference (7.7%) between statewide results for 2019-2021 (16.4%) and the Puget-Sound region results for 2020-2022 (8.7%).

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.

MEASURE 4

Appropriate end-of-life care depends on each patient's needs and should reflect 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. It is up to clinicians to clearly communicate 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:
End-of Life Care

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

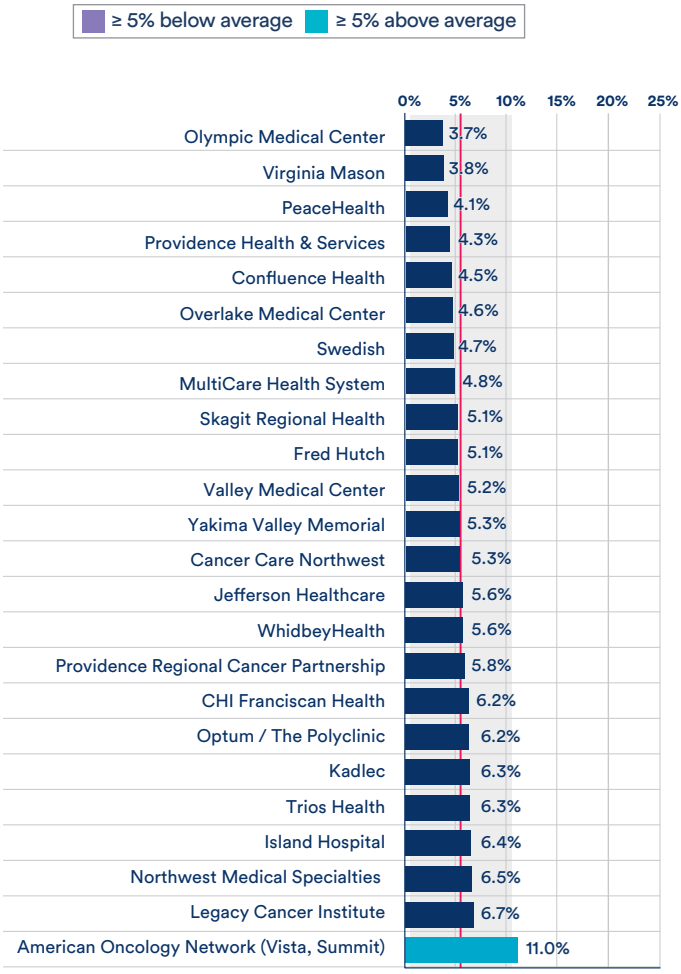
Reporting Years: 2019–2021

Time Period: Patient's last 30 days of life.

4: END-OF-LIFE CARE

Figure 4.1: Chemotherapy in the last 14 days of life

Risk-Standardized Rate | Lower rate = higher quality



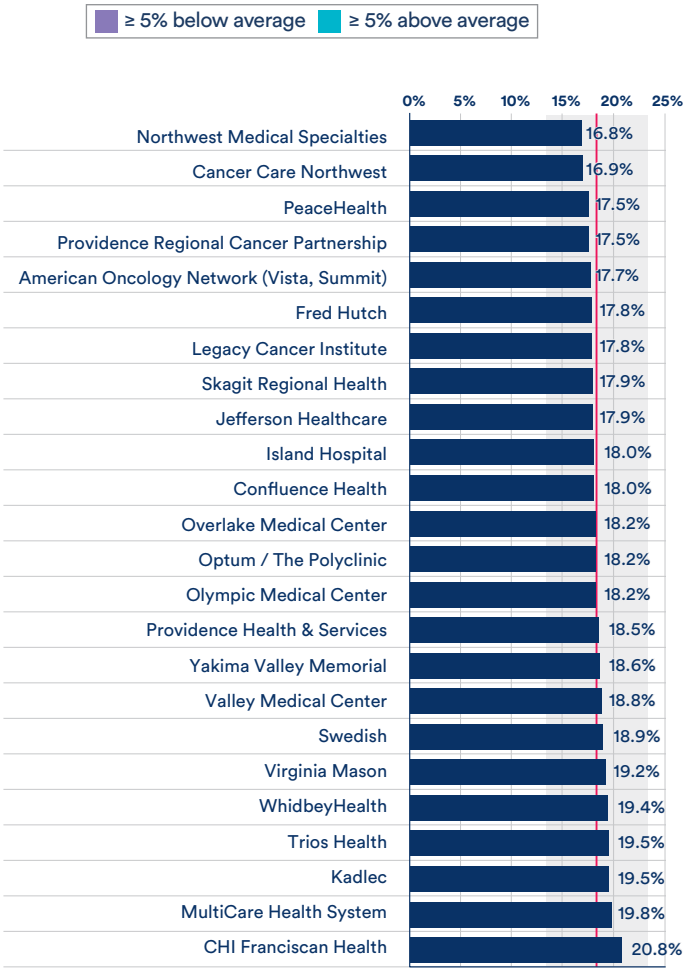
N=9314

REGIONAL AVERAGE: **5.5%**

RANGE: **3.7% to 11.0%**

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

Risk-Standardized Rate | Lower rate = higher quality



N=9314

REGIONAL AVERAGE: **18.4%**

RANGE: **16.8% to 20.8%**

RESULTS: 4.1 & 4.2

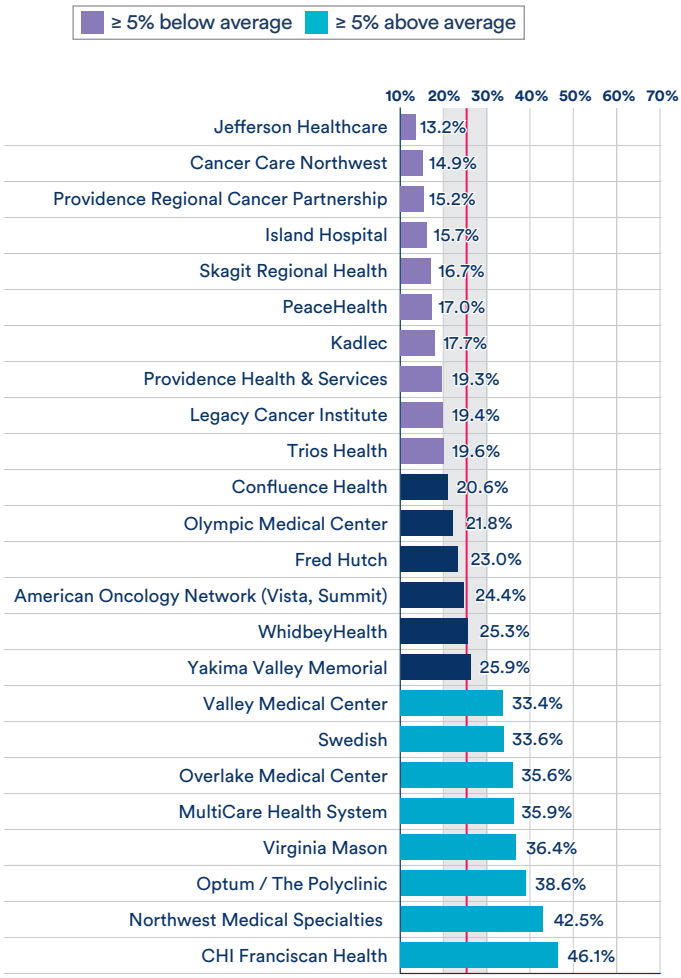
This measure includes 9,314 patients.

On average, 5.5 percent of patients received chemotherapy in the last 14 days of life. There is a 7.3 percentage point difference between the highest-performing clinic and lowest-performing clinic.

On average, 18.4 percent of patients had more than one ED visit in the last 30 days of life. There is a 4.0 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

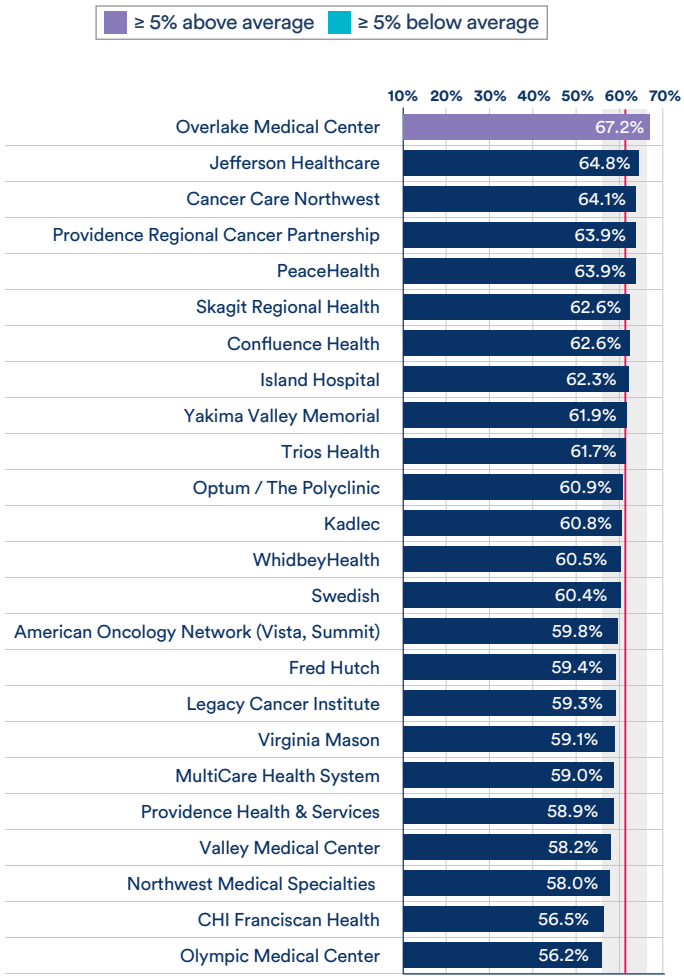


N=9314

REGIONAL AVERAGE: **25.3%**
RANGE: **13.2% to 46.1%**

Figure 4.4: Hospice care 3 or more days prior to death

Risk-Standardized Rate | Higher rate = higher quality



N=9314

REGIONAL AVERAGE: **61.2%**
RANGE: **56.2% to 67.2%**

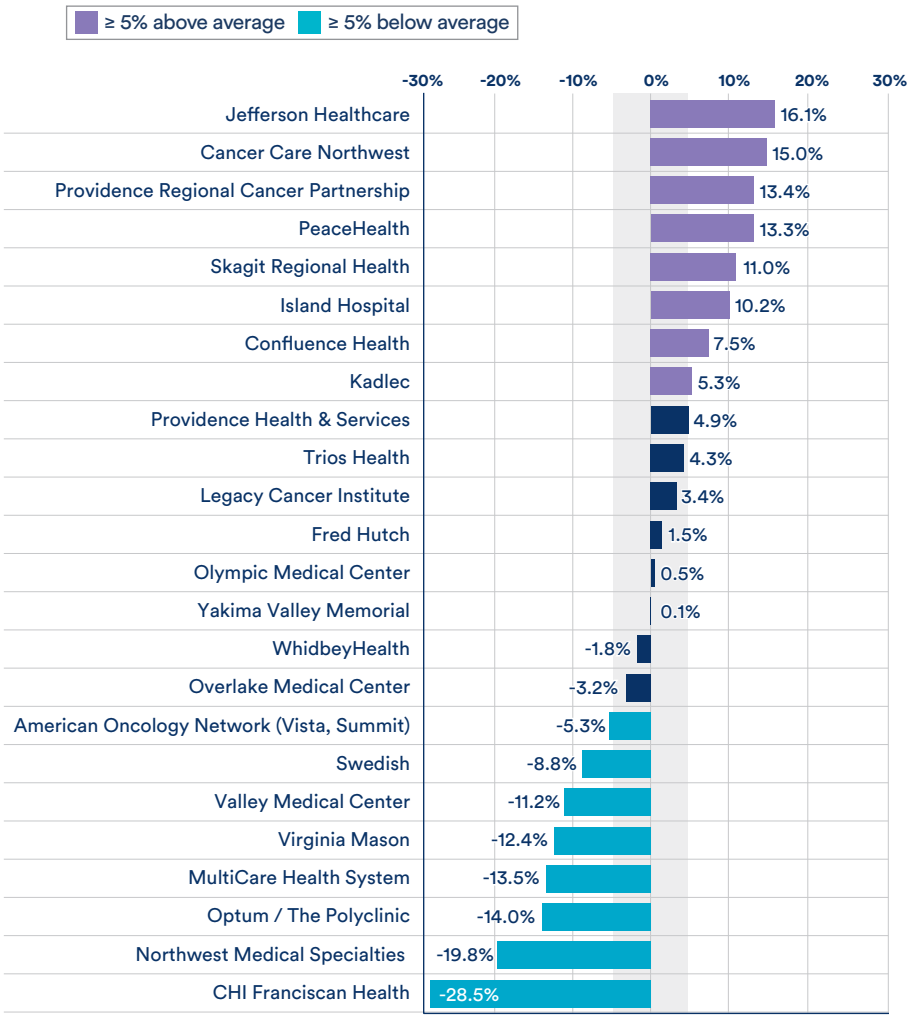
RESULTS: 4.3 & 4.4

On average, 25.3 percent of patients had an ICU stay in the last 30 days of life. There is a 33.0 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.

On average, 61.2 percent of patients enrolled in hospice care three or more days prior to death. There is a 11.0 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: **-28.5% to 16.1%**

RESULTS: 4.5

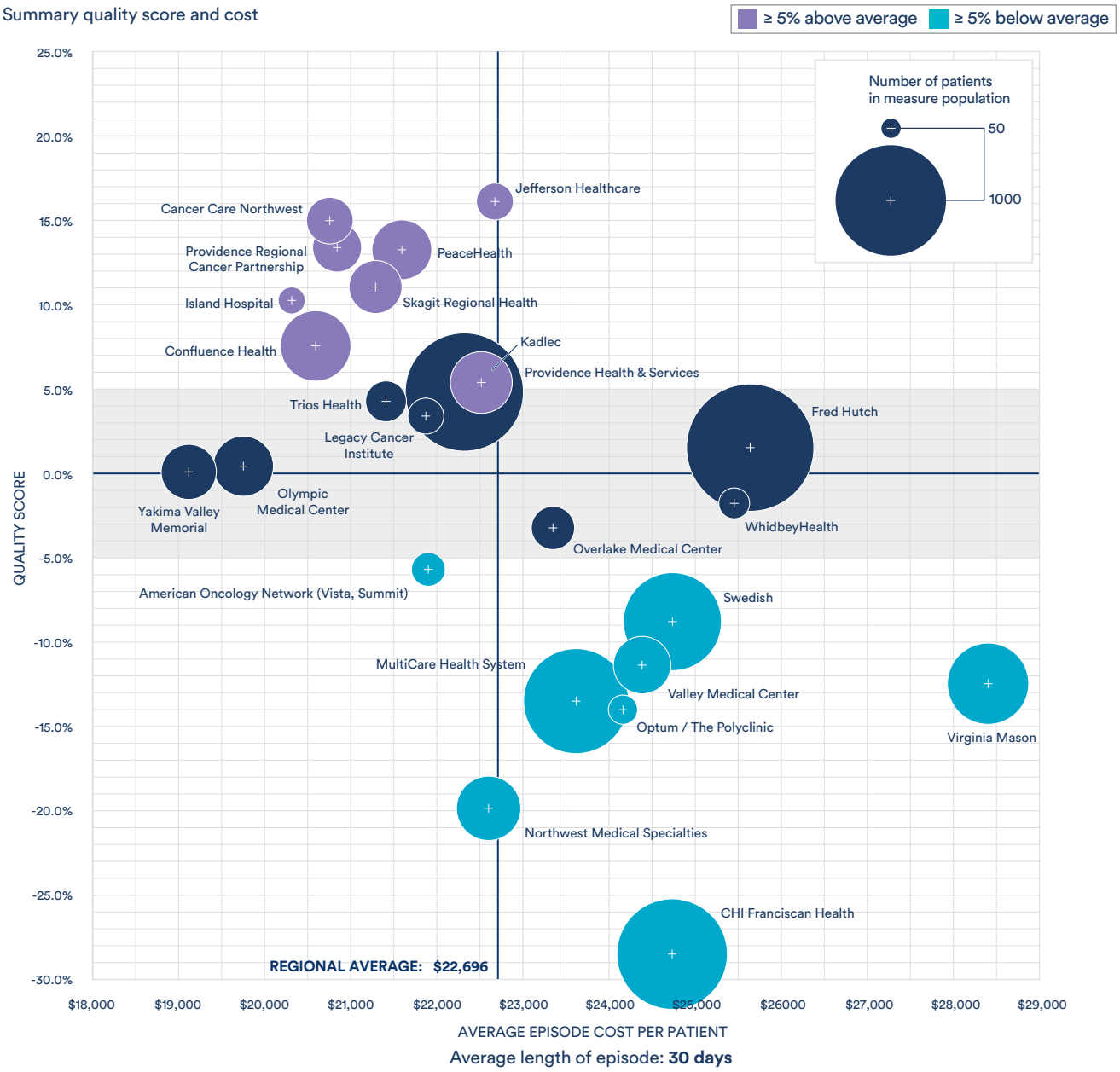
The summary quality scores, indicating clinic performance relative to the regional average for all four end-of-life metrics, show a difference of 44.6 percentage points between the highest-performing clinic and lowest-performing clinic.

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: **-28.5% to 16.1%**

Cost Range: **$19,228 to $28,437**

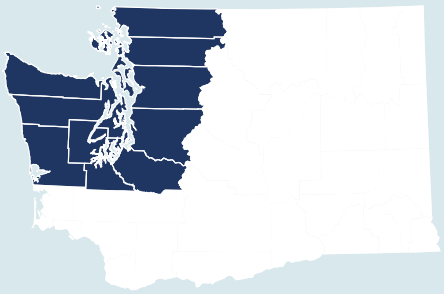
RESULTS: 4.6

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 44.6 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

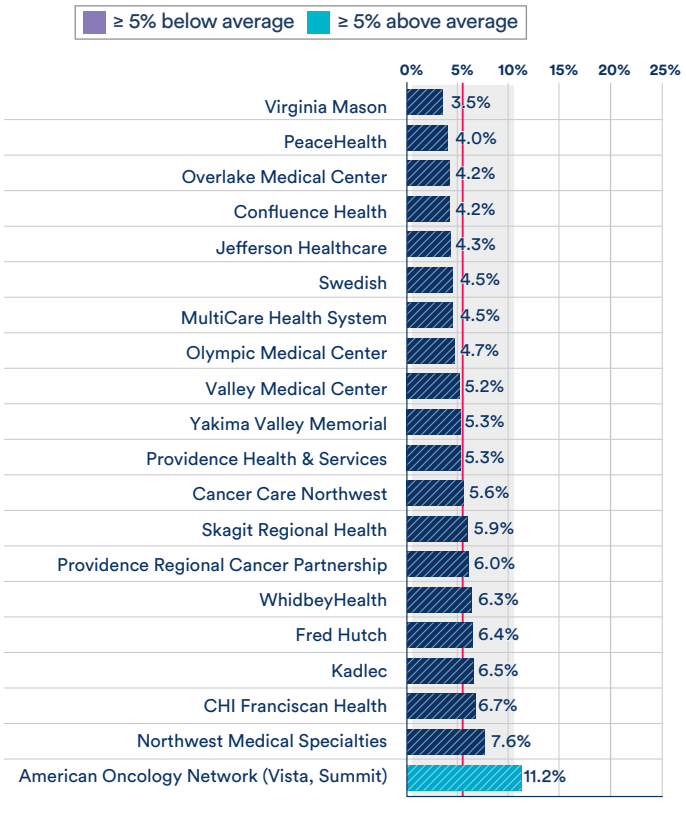


Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data on cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence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

Reporting Years: 2021-2023

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

Risk-Standardized Rate | Lower rate = higher quality

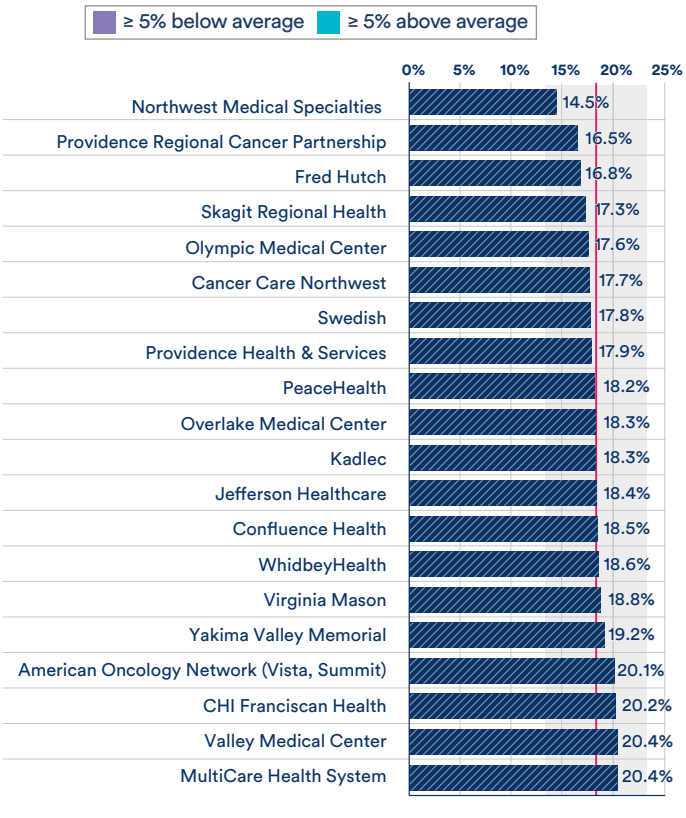


N=7455

REGIONAL AVERAGE: **5.5%**
RANGE: **3.5% to 11.2%**

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=7455

REGIONAL AVERAGE: **18.3%**
RANGE: **14.5% to 20.4%**

RESULTS: 4.7 & 4.8

This measure includes 7,455 patients.

On average, 5.5 percent of patients received chemotherapy in the last 14 days of life. There is a 7.6 percentage point difference between the highest-performing clinic and lowest-performing clinic.

On average, 18.3 percent of patients had more than one ED visit in the last 30 days of life. There is a 5.9 percentage point difference between the highest-performing clinic and lowest-performing clinic.

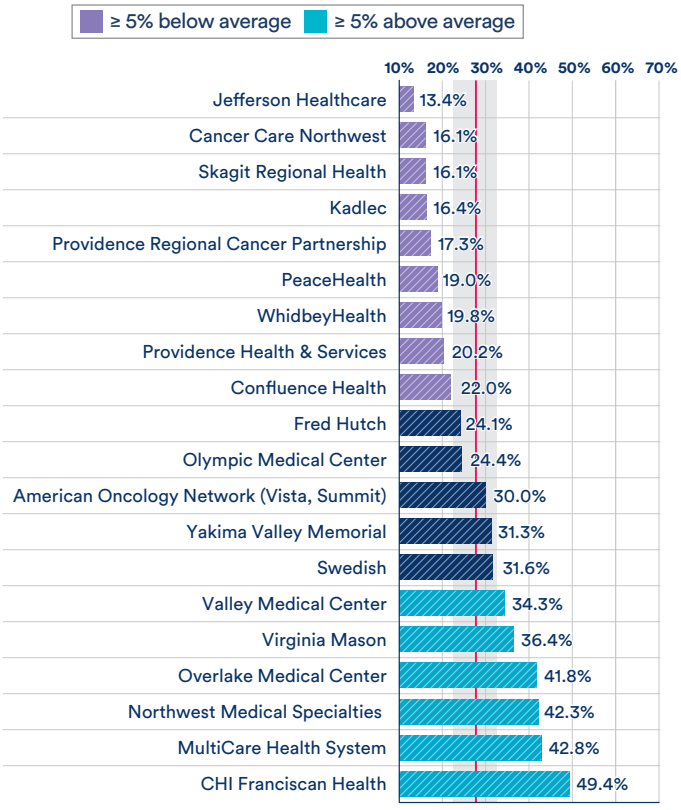
PUGET-SOUND REGION RESULTS

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: 2021-2023

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

Risk-Standardized Rate | Lower rate = higher quality



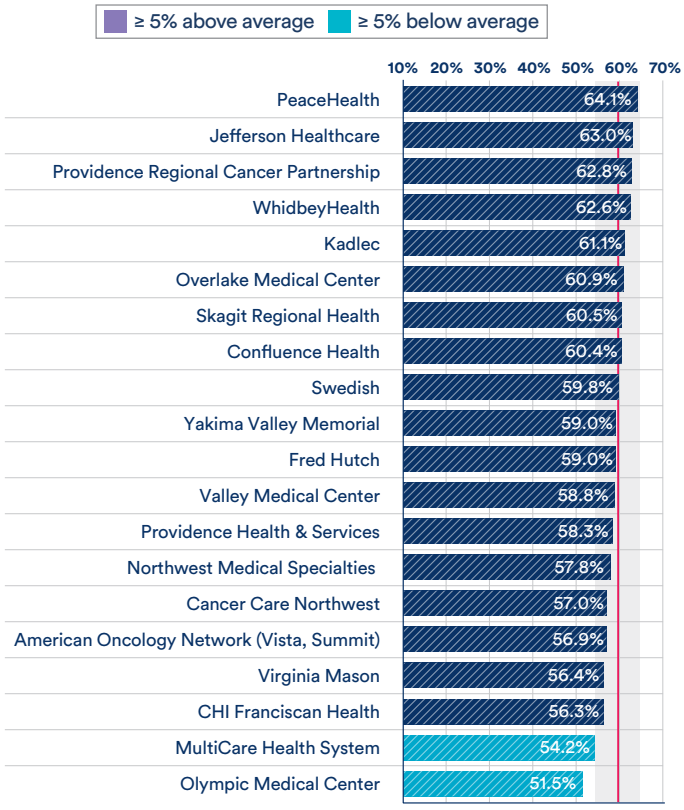
N=7455

REGIONAL AVERAGE: **27.1%**

RANGE: **13.4% to 49.4%**

Figure 4.4: Hospice care 3 or more days prior to death, Puget Sound Region

Risk-Standardized Rate | Higher rate = higher quality



N=7455

REGIONAL AVERAGE: **59.3%**

RANGE: **51.5% to 64.1%**

RESULTS: 4.9 & 4.10

On average, 27.1 percent of patients had an ICU stay in the last 30 days of life. There is a 36.0 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.

On average, 59.3 percent of patients enrolled in hospice care three or more days prior to death. There is a 12.6 percentage point difference between the highest-performing clinic and lowest-performing clinic.

MEASURE 5 - State-Level Reporting

Germline Testing

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 guide treatment and monitoring and help family members understand their risk of cancer. Information about inherited mutations can help patients and their relatives make choices about treatment and the frequency of cancer screenings.

MEASURE 5

Germline is a form of genetic testing that, unlike somatic mutation testing described in Measure 1C, identifies inherited DNA mutations that were 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, patients with breast or ovarian/peritoneum cancers are commonly recommended to undergo germline testing for BRCA1 or BRCA2 gene mutations. Positive tests may affect clinical decision-making. People with BRCA mutations may consider preventative surgery to remove both breasts and/or ovaries. Presence of a germline BRCA1/2 mutation may also influence choice of chemotherapies. Similarly, germline mutations are found more commonly than previously thought in pancreatic and prostate adenocarcinoma and may not only influence risk of family members but may also inform treatment choice for the patient and screening for secondary cancers.

Individual metric definitions are available in Appendix A.

MEASURE 5:
Germlife Testing

Germline testing for breast cancer

- Receipt of BRCA1/2 test for male, 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: 2019–2021

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

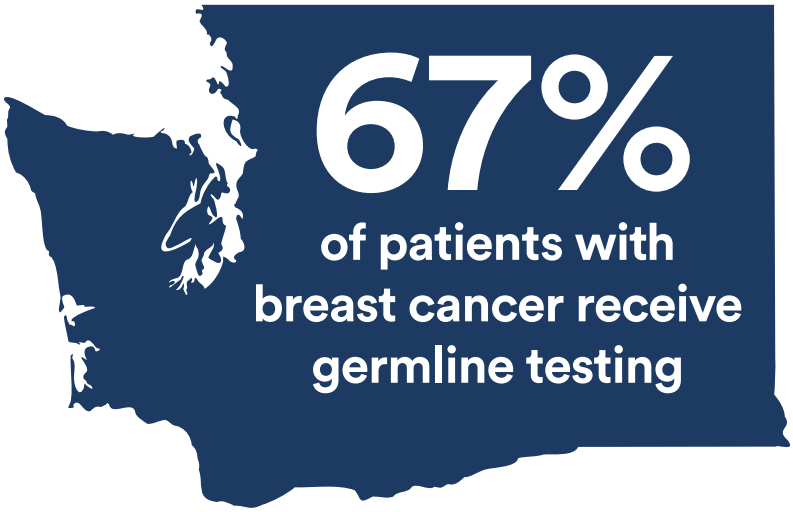
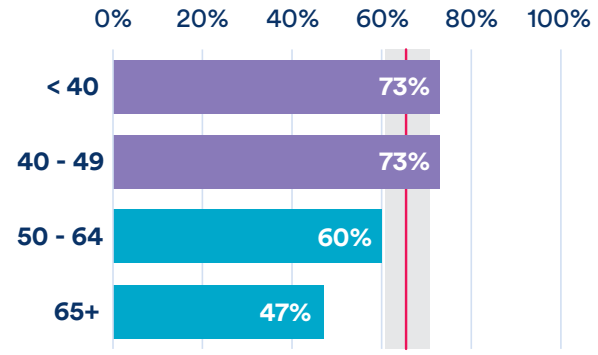


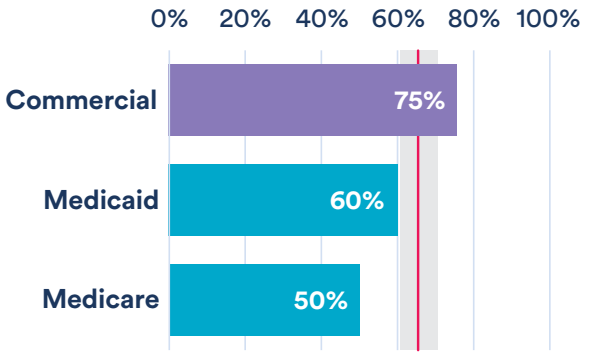
Figure 5.1.1: Germline testing for breast cancer by age



N=1644

REGIONAL AVERAGE: **66.6%**

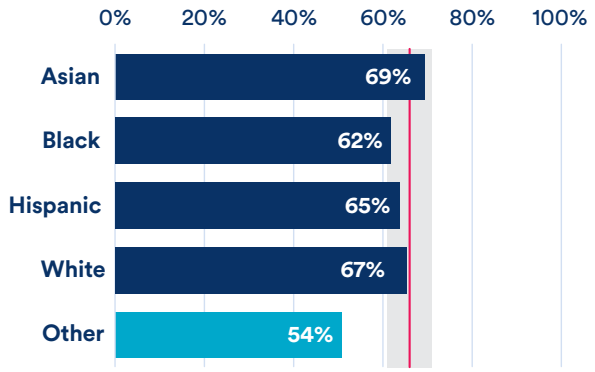
Figure 5.1.2: Germline testing for breast cancer by insurance type



N=1644

REGIONAL AVERAGE: **66.6%**

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



N=1644

REGIONAL AVERAGE: **66.6%**

RESULTS: 5.1.1 & 5.1.2 & 5.1.3

This measure includes 1,644 patients.

On average, 66.6 percent of eligible patients with breast cancer received BRCA1/2 testing. There is a 25.7 percentage point difference in testing rates between the highest and lowest age group, a 24.8 percentage point difference in testing rates between the highest and lowest insurer, and a 14.7 percentage point difference in testing rates between the highest and lowest racial/ethnicity category.

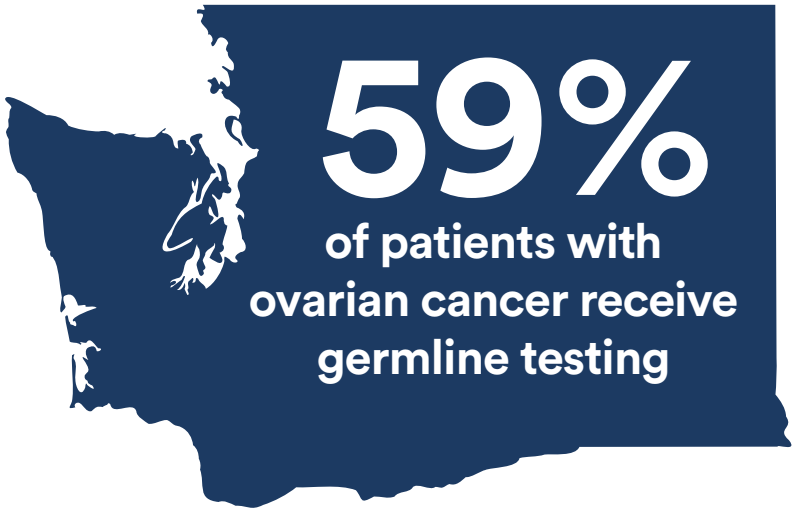


Figure 5.2.1: Germline testing for ovarian cancer by age

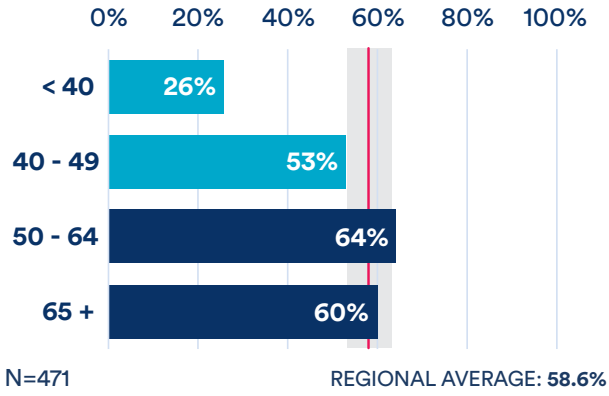
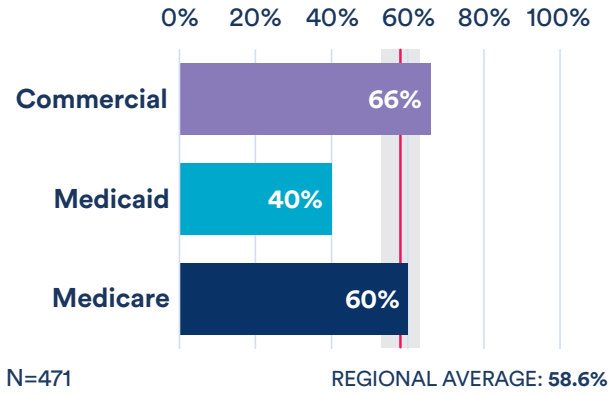


Figure 5.2.2: Germline testing for ovarian cancer by insurance type



RESULTS: 5.2.1 & 5.2.2

This measure includes 471 patients.

On average, 58.6 percent of patients with ovarian, fallopian tube and peritoneum cancer received germline testing. There is a 37.5 percentage point difference in testing rates between the highest and lowest age group and a 26.2 percentage point difference in testing rates between the highest and lowest insurer.

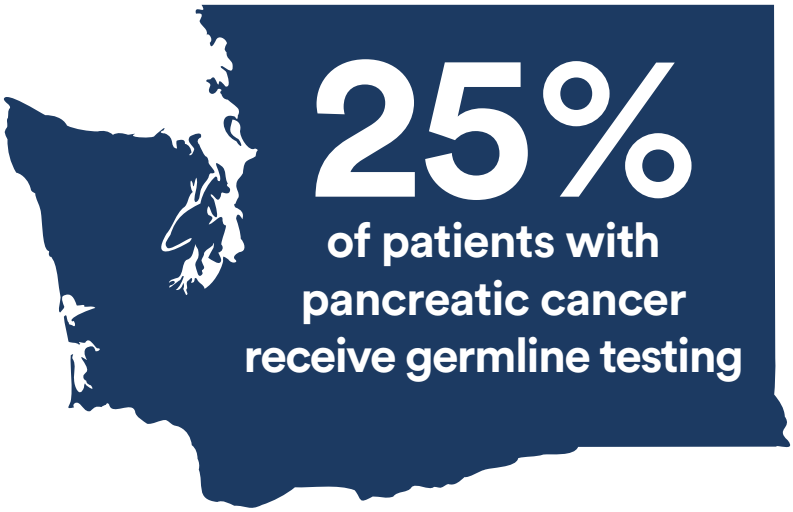
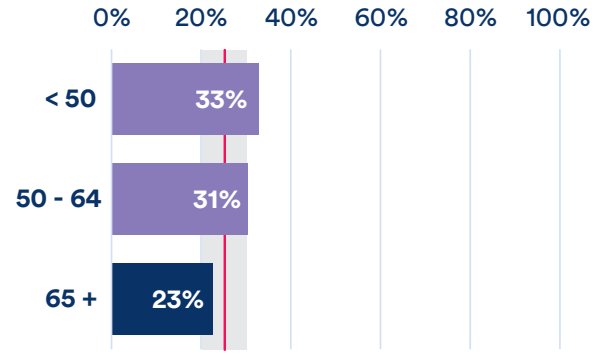
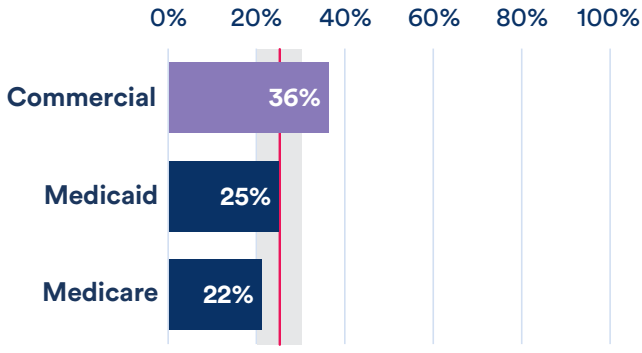


Figure 5.3.1: Germline testing for pancreatic cancer by age



N=779 REGIONAL AVERAGE: **25.3%**

Figure 5.3.2: Germline testing for pancreatic cancer by insurance type



N=779 REGIONAL AVERAGE: **25.3%**

RESULTS: 5.3.1 & 5.3.2

This measure includes 779 patients.

On average, 25.3 percent of eligible patients with pancreatic cancer received germline testing. There is a 10.1 percentage point difference in testing rates between the highest and lowest age group and a 14.4 percentage point difference in testing rates between the highest and lowest insurer.

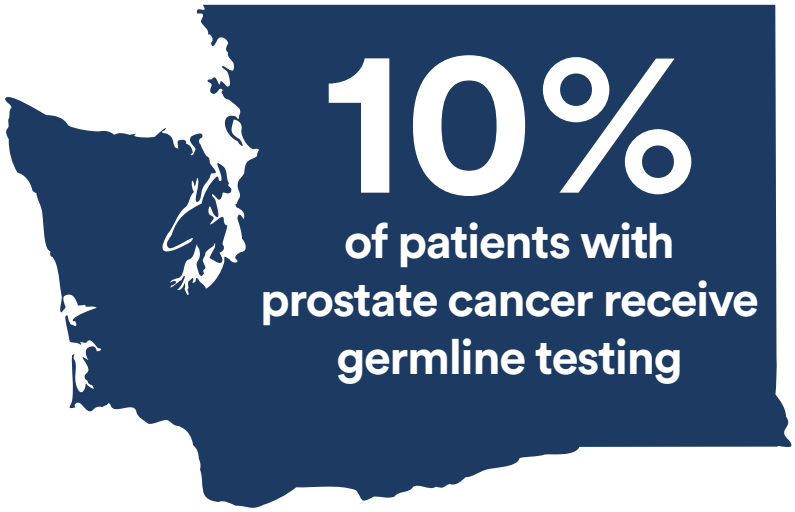
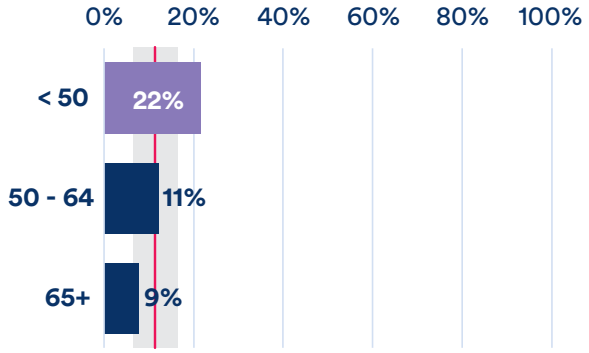


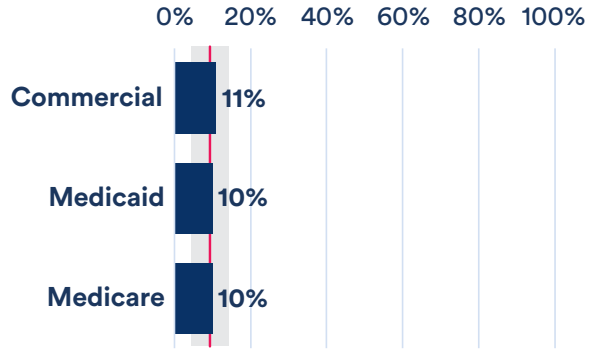
Figure 5.4.1: Germline testing for prostate cancer by age



N=1264

REGIONAL AVERAGE: **9.7%**

Figure 5.4.2: Germline testing for prostate cancer by insurance type



N=1264

REGIONAL AVERAGE: **9.7%**

RESULTS: 5.4.1 & 5.4.2

This measure includes 1,264 patients.

On average, 9.7 percent of eligible patients with prostate cancer received germline testing. There is a 13.0 percentage point difference in testing rates between the highest and lowest age group and a 1.1 percentage point difference in testing rates between the highest and lowest insurer.

DISCUSSION - GERMLINE TESTING

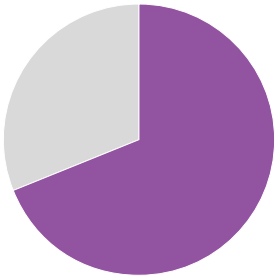
Our findings suggest that there is suboptimal use of germline testing, particularly among patients with pancreatic and prostate cancer. Given the relatively high prevalence of germline mutations among patients with pancreatic and prostate cancer and the implications of the results for treatment choice (e.g., in patients with BRCA 1/2 or ATM mutations) testing rates of 25% and 10% respectively are surprisingly low. Germline testing in eligible patients with breast cancer is also lower than expected (67%), given that guidelines have recommended testing for over a decade.

We also find considerable variability in testing by insurance type, suggesting (as in the case of metastatic non-small cell lung cancer) 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 time (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. Testing for germline mutations can have substantial implications for patients and family members.

PUGET-SOUND REGION RESULTS

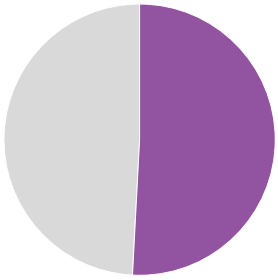
Population: The Western Washington Cancer Surveillance System (CSS) provides clinical and demographic data for cancer metrics across 13 Puget Sound counties—Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom. These results show adherence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

Reporting Years: 2021-2023



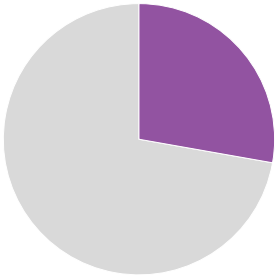
69%

of patients with breast cancer receive germline testing



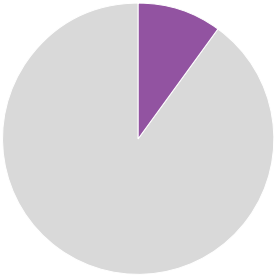
51%

of patients with ovarian cancer receive germline testing



28%

of patients with pancreatic cancer receive germline testing



10%

of patients with prostate cancer receive germline testing

MEASURE 6 - State-Level Reporting

Timeline of Care

Studies have shown that shorter times from diagnosis to first treatment can lead to better outcomes. Measuring how quickly patients begin cancer treatment can help clinics understand this important benchmark and provides insights into potential disparities in care.

MEASURE 6

An important component of high quality cancer care is getting patients to treatment as quickly as possible after they are diagnosed with cancer. Several studies have shown that delays in treatment can result in anxiety and poorer outcomes for patients. Accordingly, practice guidelines and measures of cancer quality often measure time to first treatment as a quality metric.

There are some delays associated with factors outside of the clinic. Delays in treatment may be related to patient preferences or schedules (i.e., waiting for after a special occasion, vacation, etc). Situations that may account for a reasonable delay include patients waiting for additional testing or imaging, or for second opinions.

Timeliness of care is important for all cancers. As our first step to understand timeliness of care in Washington state, we started by measuring time from first visit at an oncology clinic to treatment for persons who have been diagnosed with metastatic solid tumor cancers.

Individual metric definitions are available in Appendix A.

MEASURE 6:
Timeliness of Care

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: 2019–2021

Time Period: Intial treatment period, up to 12 months

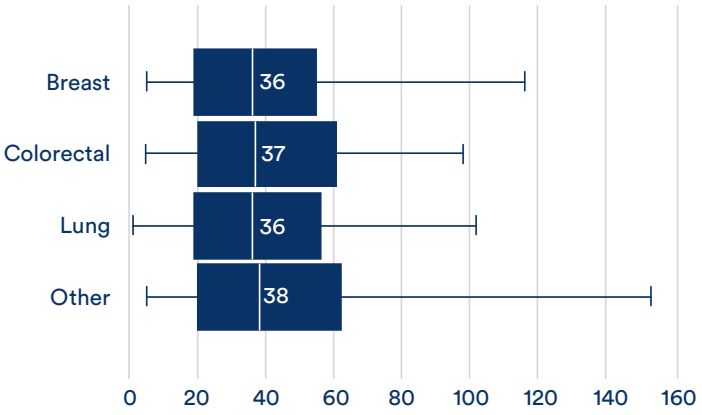
Patients with Metastatic Cancer

3,253 patients do not receive treatment

2,155 patients receive surgery as first treatment

3,971 patients receive radiation, chemotherapy, hormone or other systemic therapy as first treatment

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



N=3971

REGIONAL AVERAGE: **37 days**

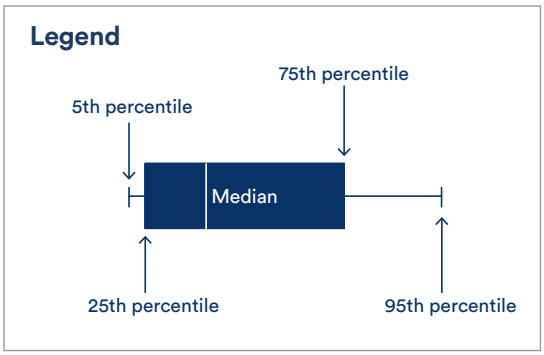
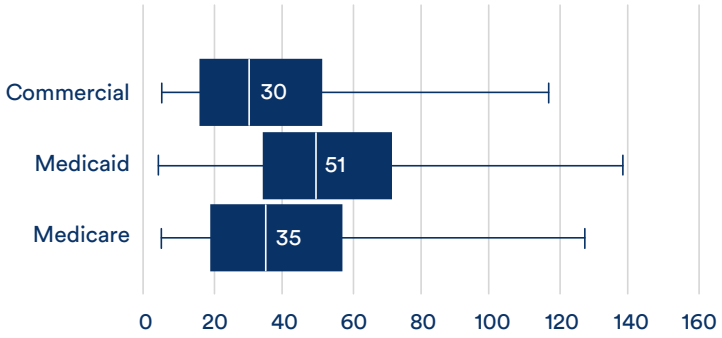


Figure 6.1.2: Time to start of treatment by insurance type (in days)



N=3971

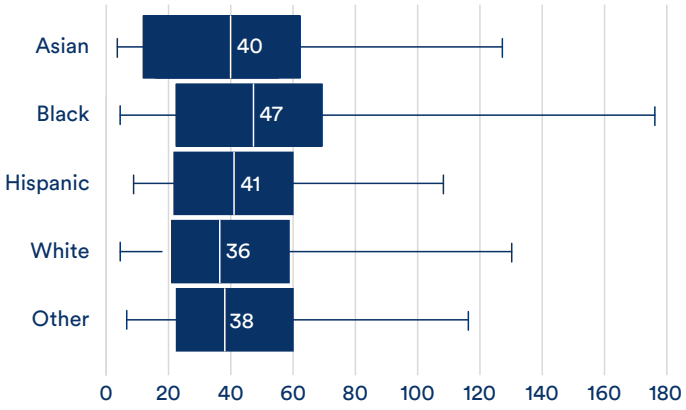
REGIONAL AVERAGE: **37 days**

RESULTS: 6.1.1 & 6.1.2

This measure includes 3,971 patients.

For patients with metastatic cancer, it took a median of 37 days to start chemotherapy or radiation therapy after their first visit at their oncology clinic. Of the largest cancer types, patients with breast and lung cancer took the shortest median time of 36 days. The difference between patients on a commercial plan (30 days) and Medicaid-enrolled patients (51 days) was 21 days.

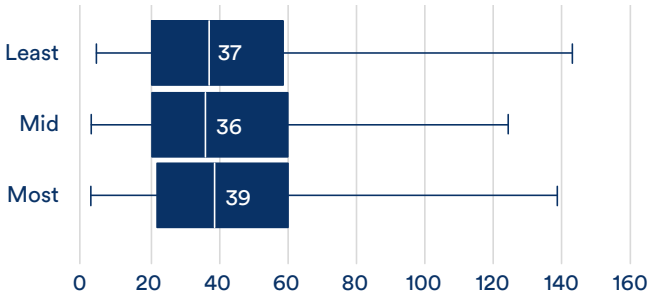
Figure 6.1.3: Time to start of treatment by race and ethnicity (in days)



N=3971

REGIONAL AVERAGE: **37 days**

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



N=3971

REGIONAL AVERAGE: **37 days**

RESULTS: 6.1.3 & 6.1.4

The median time to treatment initiation was longest for Black patients (47 days). Patients who lived in the least and mid deprived neighborhoods, as measured by ADI[1], had the lowest time to treatment (37 and 36 days, respectively). Which is a minimal difference from patients in the most-deprived neighborhoods who started treatment a median of 39 days following their first visit at their oncology clinic.

DISCUSSION — TIMELINESS OF CARE

We found substantial differences in median time to first treatment for metastatic solid tumor patients in Washington state. Specifically, Black patients and those with Medicaid insurance experienced significantly longer times to first treatment. However, we don't see the same differences by neighborhood deprivation. The reasons are likely multifactorial. An important concern is that patients with cancer with significant 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.

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

39
days to patient's first treatment

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

RESULTS:

Medicaid

48 Demographics for Medicaid Enrollees

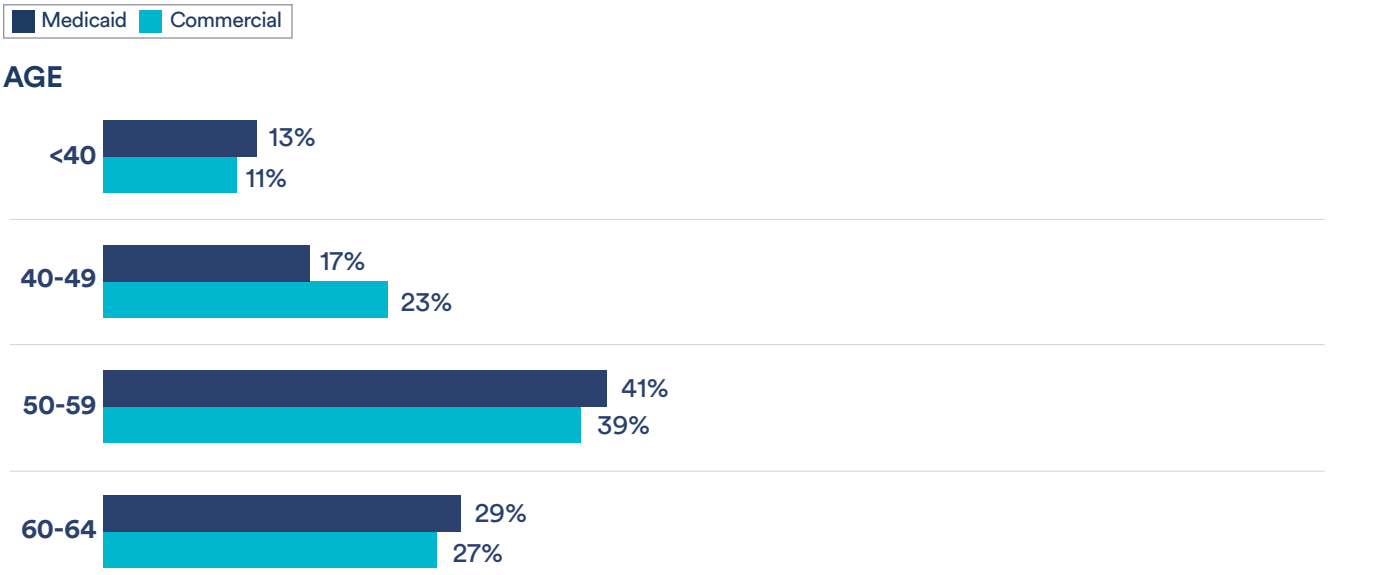
53 Medicaid-Insured Measure Results

Demographics for Medicaid Enrollees

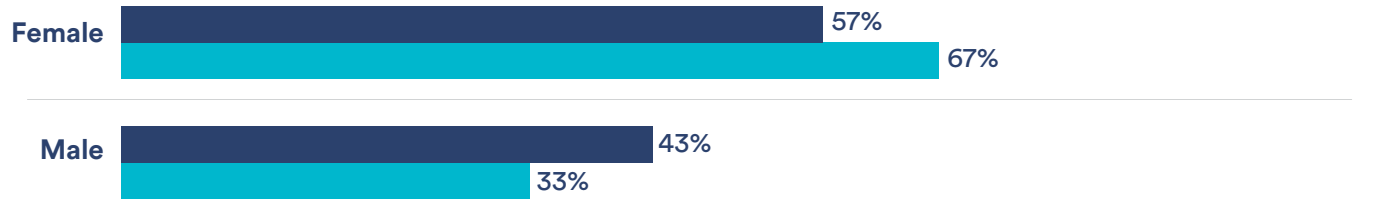
WHY DO WE COMPARE DEMOGRAPHICS?

Demographic differences exist between the Medicaid and commercially insured populations in Washington state. We know that Medicaid-insured patients are more likely to live in neighborhoods that face greater socioeconomic disadvantages. We also know that Black, Hispanic and Asian/Pacific Islander populations are more likely to be enrolled in Medicaid rather than a commercial insurance plan. Understanding these population differences enables us to recognize areas of disparity in care and outcomes between and among populations. This enables us to highlight system wide issues which impact performance and outcomes.

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

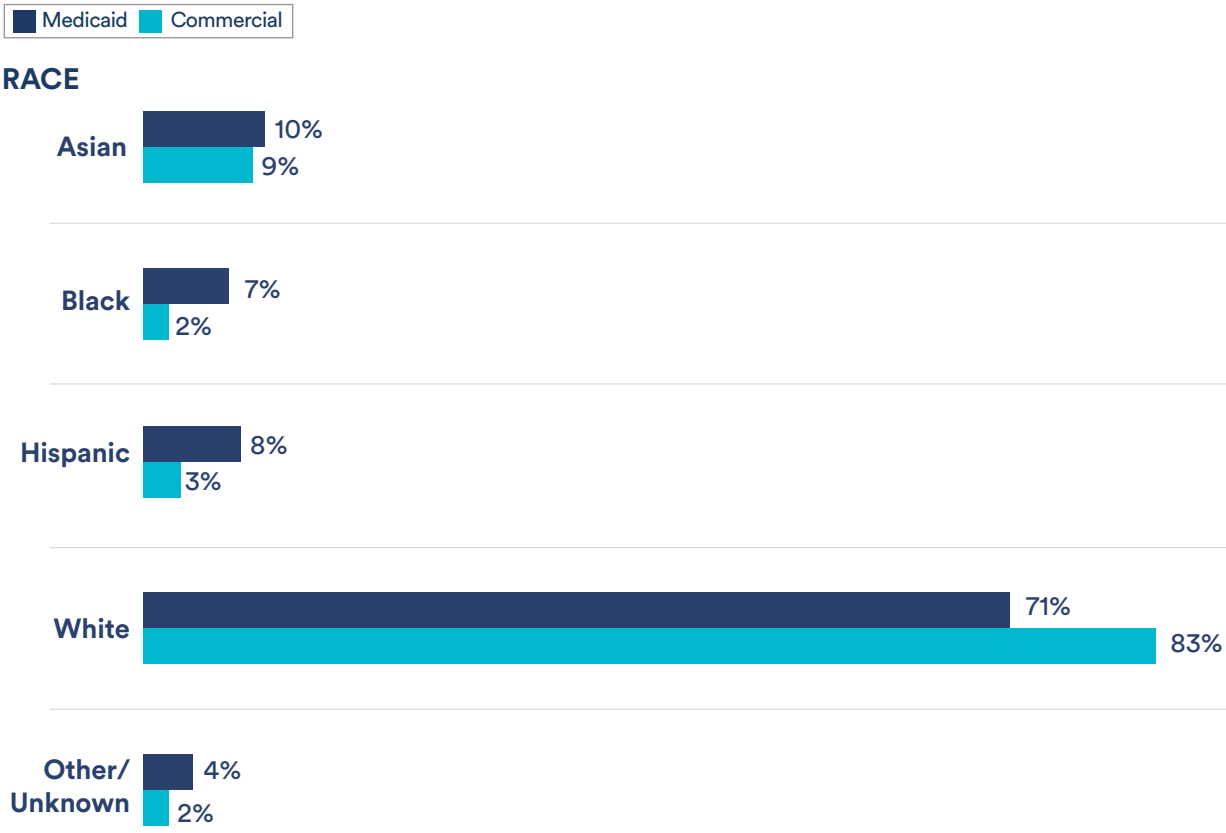


Medicaid-insured patients are more likely to be between 50 to 60 years of age. A higher proportion of young people, (under 40) are enrolled in Medicaid rather than commercial insurance.

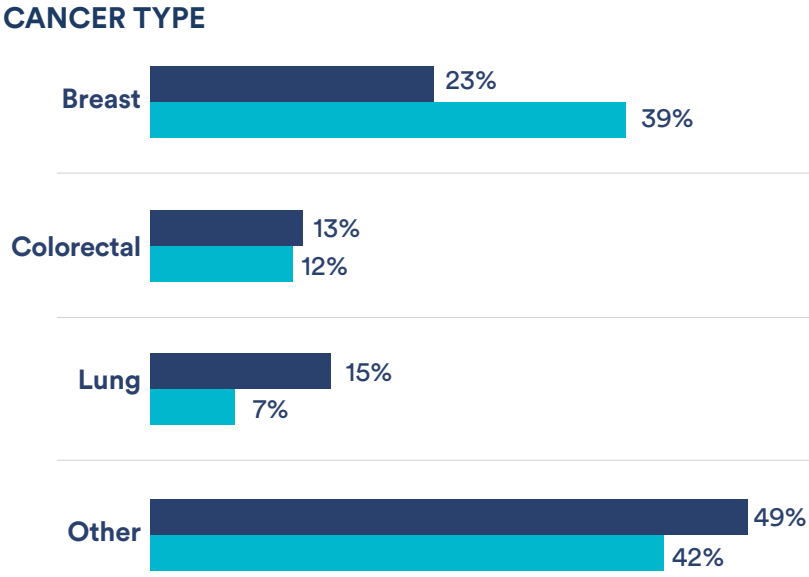


In Washington state, Medicaid-insured patients are more likely to be male than commercially insured patients.

Demographics for Medicaid Enrollees

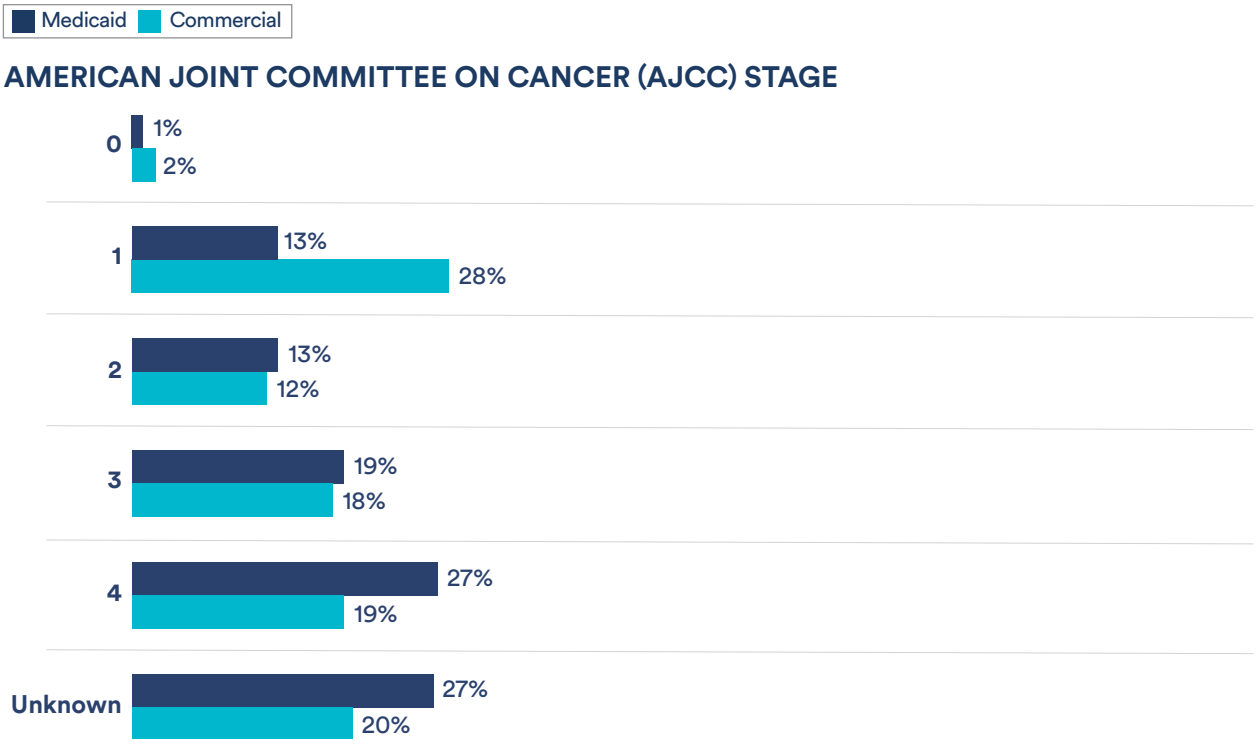


Medicaid enrollees are more likely than commercially insured patients to be non-white.

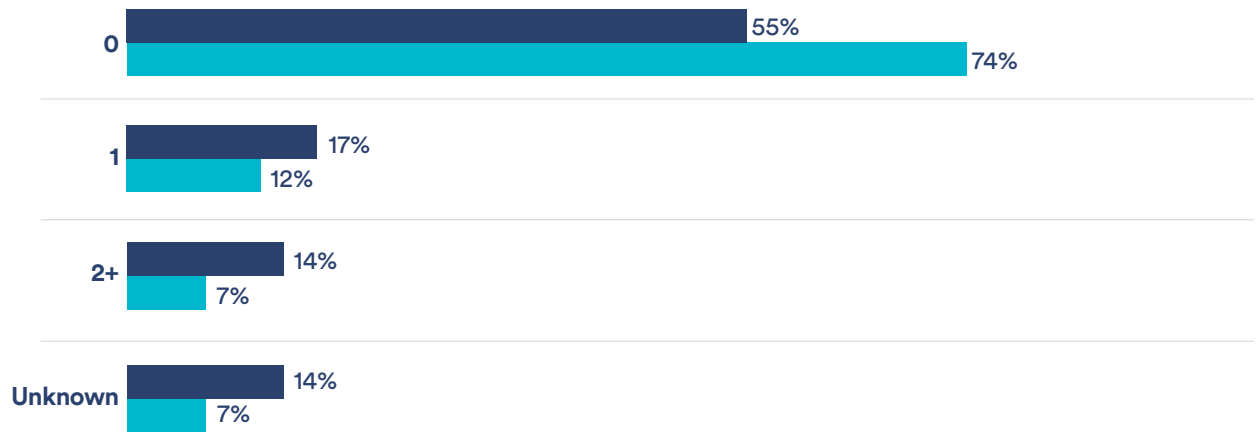


The Medicaid-insured population has a greater proportion of patients with lung cancer and a smaller proportion of patients with breast cancer compared to the commercially insured population.

Demographics for Medicaid Enrollees



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



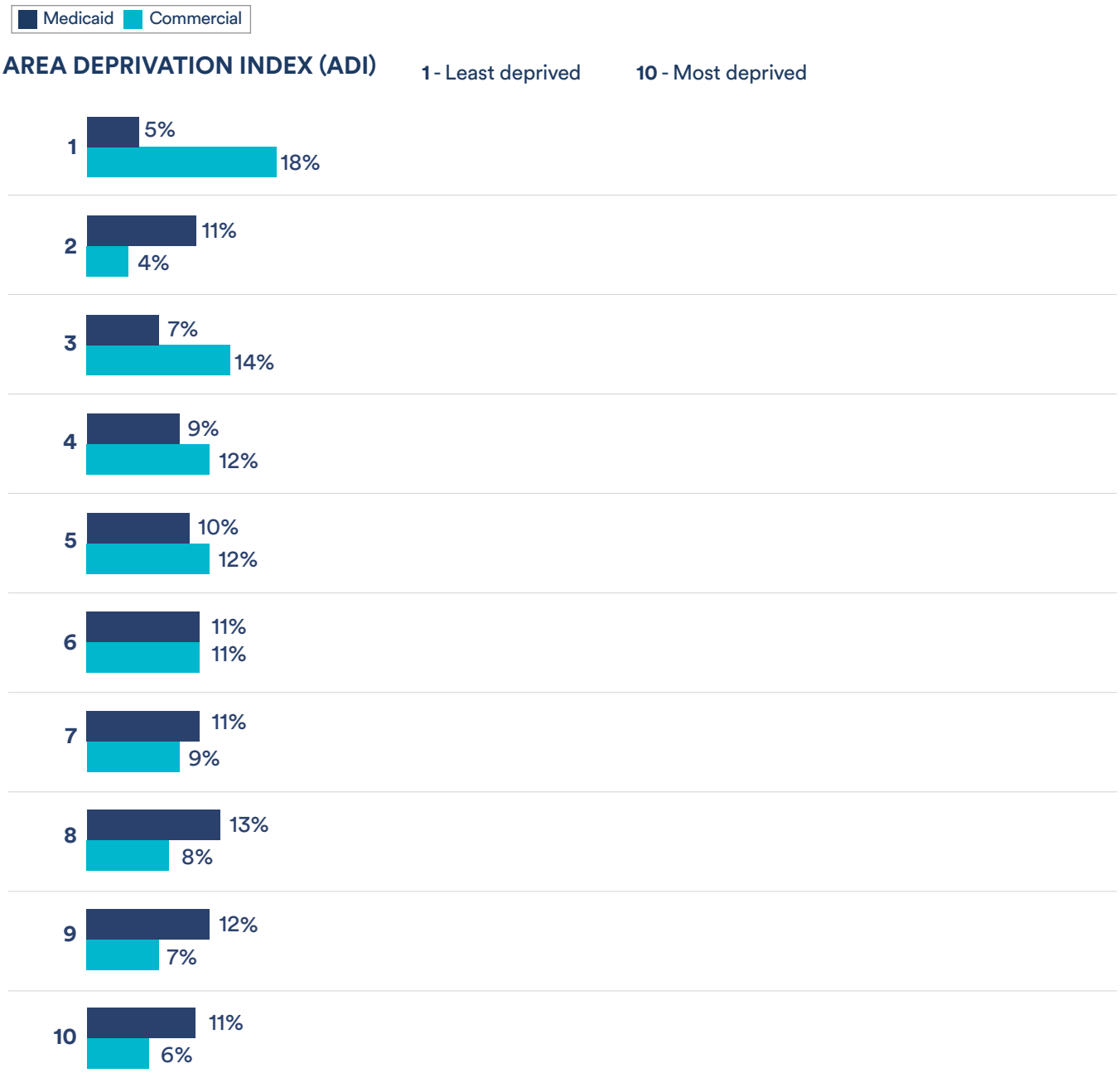
Medicaid-insured patients are more likely to have one or more comorbidities compared to the patients insured by commercial health plans.

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

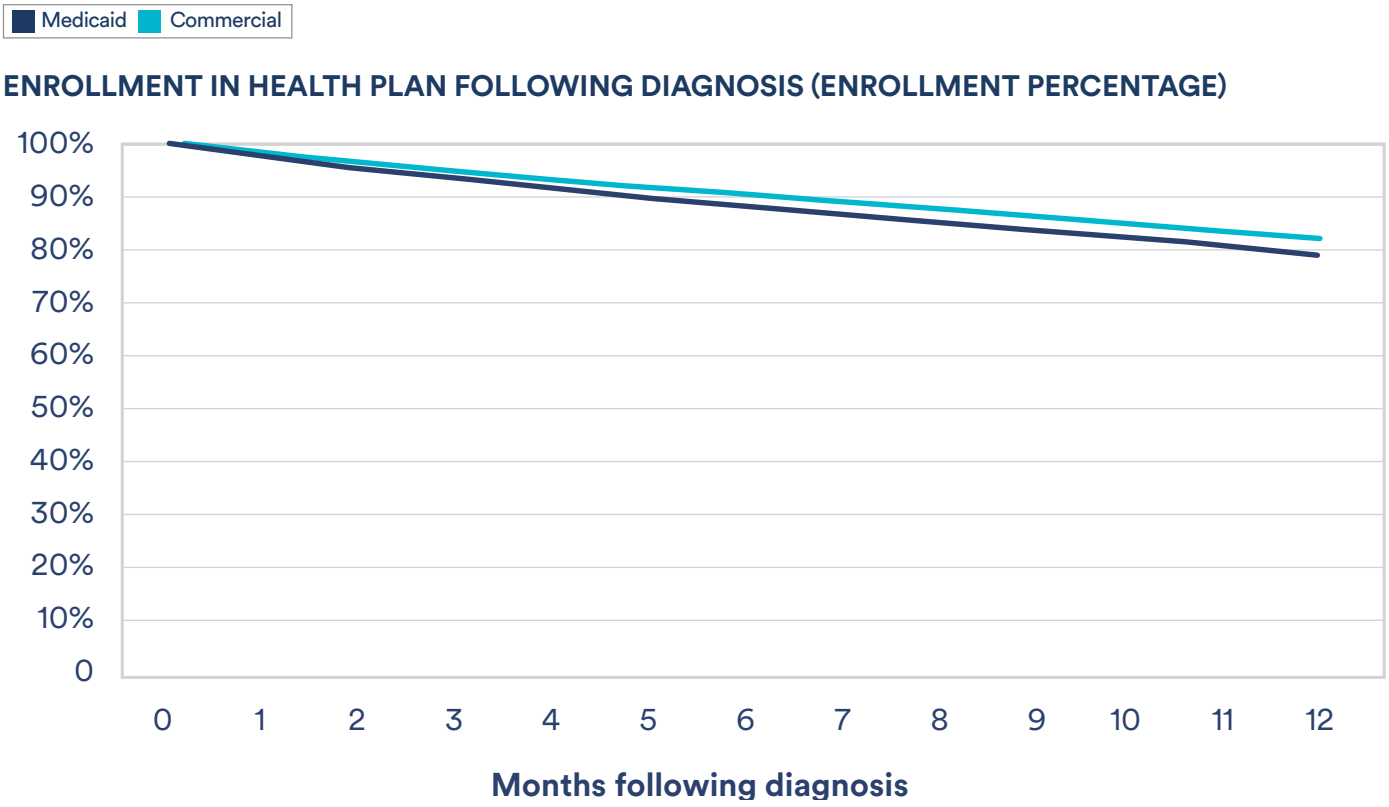
Demographics for Medicaid Enrollees



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/

Demographics for Medicaid Enrollees



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 all enrolled in their plan at the time of diagnosis and did not die or turn 65 in the year following. Results indicate that patients insured by Medicaid disenrolled at a slightly faster rate; however, patients with both commercial and Medicaid plans either changed (or lost) coverage during that time period.

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, colorectal	85.5%	74.8%	<0.01
Recommended treatment for breast cancer	Breast	84.7%	69.8%	<0.01
Somatic mutation testing based on cancer type	Lung, colorectal	97.6%	90.6%	0.01

RESULTS: Commercially insured patients with breast, lung and colorectal cancer 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	22.9%	35.9%	<0.01
Inpatient stays during chemotherapy	All except leukemeia	25.8%	34.0%	

RESULTS: Medicaid-insured patients undergoing chemotherapy have a significantly and 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	18.7%	11.2%	

RESULTS: Adherence to tumor marker testing following treatment among Medicaid-insured patients with stage I to IIIA breast cancer were better than for 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, though commercially insured patients are more likely to receive tumor marker testing than Medicaid patients. While we are not able to capture the reason for increased testing, we hypothesize that the greater testing rate in commercially insured patients may be due to increased testing opportunity due to more follow-up visits, increased patient requests for testing or provider factors.

MEASURE 4: END-OF-LIFE CARE

Measure	Tumor Site	Commercial	Medicaid	p-value
End of Life (EoL): Chemotherapy	Solid	9.7%	5.5%	<0.01
EoL: 2+ ED visits	Solid	20.4%	22.8%	
EoL: ICU stay	Solid	26.0%	21.3%	<0.01
EoL: Hospice	Solid	35.3%	41.3%	<0.01

RESULTS: Overall adherence to measures of quality in end-of-life care was higher for Medicaid-insured patients compared to their commercially insured counterparts. ICU stays were 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 better end-of-life care experience compared to commercially insured patients.

Appendices

56 **Appendix A:** Individual Metric Definitions

62 **Appendix B:** Acronyms

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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 1A: Recommended Cancer Treatment for Breast, Colorectal and Lung Cancer (Summary Quality Score)				
Recommended therapy 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+ • Female • 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 18–79 • 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
Colorectal 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*
Receipt of chemotherapy within 270 days of diagnosis for patients with stage II-III rectal cancer	**QOPI** CRC72	• Claim for chemotherapy within 270 days of diagnosis	• Age 18–79 • Rectal cancer • First or only cancer • AJCC stage II-III • Alive 270 days after diagnosis • Medical coverage for 270 days after diagnosis	HICOR Treatment Period*
Non-Small Cell Lung Cancer				
Receipt of chemotherapy within 60 days of surgery	**QOPI** NSCLC80 & 81	• Claim for chemotherapy within 60 days of curative surgery	• Age 18+ • Non-small cell lung cancer • First or only cancer • AJCC stage II-IIIA • Claim for curative surgery • Medical coverage from diagnosis to two months following surgery	HICOR Treatment Period*
No bevacizumab use for metastatic tumors within three months of diagnosis	**QOPI** NSCLC86a	• No claim for bevacizumab within three months of diagnosis	• Age 18+ • Non-small cell lung cancer • First or only cancer • AJCC stage IV or registry stage distant • Squamous histology • Medical coverage from diagnosis to three months after diagnosis or death	HICOR Treatment Period*
Measure 1B: Recommended Treatment for Breast Cancer (Summary Quality Score)				
Recommended therapy based on HER2 status	*See the above measure Recommended Treatment for Breast, Colorectal and Non-Small Cell Lung Cancer for specifications related to breast cancer quality metrics on page 49.*			
Recommended therapy based on ER/PR status				
Measure 1C: Somatic Mutation Testing for Metastatic Lung and Colorectal Cancer				
Somatic mutation testing for metastatic lung cancer	**NCCN** guidelines for non-small cell lung cancer	• Claim for NGS, EGFR, ALK or ROS1 in the two months prior to diagnosis through four months after diagnosis	• Age 18+ • Non-small cell lung cancer • First or only cancer • Includes AJCC stage IV or SEER stage distant • Alive three months after diagnosis • Medical coverage two months prior to diagnosis through four months following diagnosis	N/A
Somatic mutation testing for metastatic colorectal cancer	**NCCN** guidelines for colorectal cancer	• Claim for MSI, MMR IHC, KRAS, NRAS or BRAF in the two months prior to diagnosis through six months after diagnosis	• Age 18+ • Colorectal cancer • First or only cancer • Includes AJCC stage IV or SEER stage distant • Alive three months after diagnosis • Medical coverage two months prior to diagnosis through six months following diagnosis	N/A

* 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 1: Recommended Cancer Treatment (Cost)				
Total cost during treatment		• All amounts paid by insurers to health care providers during HICOR Treatment Period*	Measure 1A: Patients eligible for any Recommended Treatment for Breast, Colorectal and Non-Small Cell Lung Cancer quality metrics Measure 1B: Patients eligible for any Recommended Treatment for Breast Cancer quality metrics	HICOR Treatment Period*

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 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 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).

Appendix A: Individual Metric Definitions

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 • 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
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: 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 or chemotherapy) 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
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
CSS	Cancer Surveillance System
ED	Emergency Department
EGFR	Epidermal Growth Factor Receptor
EOL	End of Life
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
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.
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3. Fedorenko C KK, Schwartz JS, Cheteri MK, Janes T, Potts M, et al. Linking Cancer Registries with Claims Data to Enable Community Oncology Reporting. NAACCR Annual Conference; June 19-26 2018; Pittsburgh, PA.
4. Fedorenko C WJ, Panattoni L, Kreizenbeck K, Ramsey SD. Comparing Quality of Care for Medicaid and Commercially Insured Patients with Cancer in Washington State. ASCO Quality Care Symposium; September 28-29 2018; Phoenix, AZ.
5. Panattoni L FC, Kreizenbeck K, Sun Q, Li L, Barger S, et al. Washington State Community Cancer Care Report: Implications for Value-based Purchasing. ASCO Quality Care Symposium; September 28-29 2018; Phoenix, AZ.
6. Panattoni L, Fedorenko C, Kreizenbeck K, et al. Lessons From Reporting National Performance Measures in a Regional Setting: Washington State Community Cancer Care Report. Journal of Oncology Practice. 2018;14(12):e801-e814.
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15. Shankaran V, Li L, Fedorenko C, Sanchez H, Du Y, Khor S, Kreizenbeck K, Ramsey S. Risk of Adverse Financial Events in Patients With Cancer: Evidence From a Novel Linkage Between Cancer Registry and Credit Records. J Clin Oncol. 2022 Mar 10;40(8):884-891. doi: 10.1200/JCO.21.01636. Epub 2022 Jan 7. PMID: 34995125.

Appendix C: Publications

16. Poorni Manohar, Catherine R. Fedorenko, Qin Sun, Jenna M. Voutsinas, Vicky Wu, Josh Roth, Hannah M. Linden, and Veena Shankaran. Real-world practice patterns in the diagnosis of recurrent metastatic breast cancer in Washington state. Journal of Clinical Oncology 2022 40:16_suppl, e13640-e13640
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