



**PRELIMINARY REPORT:**  
**Cost and Market Impact Review of**  
**Dana-Farber Cancer Institute,**  
**Beth Israel Deaconess Medical Center,**  
**and Harvard Medical Faculty Physicians**  
**(HPC-CMIR-2024-1)**

## About the Health Policy Commission

The Massachusetts Health Policy Commission (HPC), established in 2012, is an independent state agency charged with monitoring health care spending growth in Massachusetts and providing data-driven policy recommendations regarding health care delivery and payment system reform. The HPC is committed to better health and better care – at a lower cost – for all residents of the Commonwealth. Through market oversight, data-driven analysis, and independent policy insights, our goal is to make health care more affordable, transparent, and equitable. For more information, visit <https://masshpc.gov>.

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## INTRODUCTION

Health care provider market changes, including consolidation and alignments between providers under new care delivery and payment models, can impact health care market functioning and the performance of the health care system in delivering high-quality, cost-effective care. Yet, due to confidential payer-provider contracts and limited information about provider organizations, the mechanisms by which market changes impact the cost, quality, and availability of health care services have not historically been apparent to government, consumers, and businesses which ultimately bear the costs of the health care system. Recognizing the importance and lack of transparency surrounding health care provider market changes, one of the Health Policy Commission's (HPC) core responsibilities is to monitor and publicly report on the evolving structure and composition of the provider market using the best available evidence.

Through the filing of notices of material change by provider organizations, the HPC tracks the frequency, type, and nature of changes in our health care market.<sup>1</sup> The HPC may also engage in a more comprehensive review of particular transactions anticipated to have a significant impact on health care costs or market functioning. The result of such "cost and market impact reviews" (CMIRs) is a public report detailing the HPC's findings. In order to allow for public assessment of the findings, the transactions may not be finalized until the HPC issues its Final Report. Where appropriate, such reports may identify areas for further review or monitoring or be referred to other state agencies in support of their work on behalf of health care consumers. This first-in-the-nation public reporting process, which has now been replicated in states throughout the country,<sup>2</sup> is a unique opportunity to enhance the transparency of significant changes to our health care system and can inform and complement the many important efforts of other agencies, such as the Attorney General's Office, the Department of Public Health, the Center for Health Information and Analysis, and the Division of Insurance, in monitoring and overseeing our health care market.

The HPC conducts its work during continued dynamic change among provider organizations in Massachusetts, including recent hospital closures, ongoing consolidation, new contractual and clinical alignments, and greater direct investment by national, international, and private equity actors in the health care market. This market instability is occurring while many providers across the health care continuum are still wrestling with capacity constraints, financial volatility, unnecessary administrative burdens, and workforce recruitment and retention challenges. The economic pressures placed on many health care providers are compounded by persistent wide variation in

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<sup>1</sup> See MASS. GEN. LAWS ch. 6D, § 13 (requiring health care providers to notify the HPC before making material changes to their operations or governance). See also MASS. HEALTH POLICY COMM'N, 958 CMR 7.00: NOTICES OF MATERIAL CHANGE AND COST AND MARKET IMPACT REVIEWS (Jan. 2, 2015), available at <https://masshpc.gov/sites/default/files/2023-04/958cmr7.00-noticesofmcnandcmir.pdf> (last visited February 27, 2025).

<sup>2</sup> Many other states, including Connecticut, California, Illinois, New York, Oregon, and Washington, have since adopted processes for oversight and assessment of proposed transactions among health care entities, modeled in part on the system established in Massachusetts through the HPC. See National Academy for State Health Policy, *State Action on Health Market Oversight Chart*, <https://nashp.org/state-tracker/state-action-on-health-market-oversight-chart/> (Dec. 2024).

commercial health insurance payments, or prices, for the same types of services, without commensurate differences in value.

The CMIR process allows us to improve our understanding and increase the transparency of these trends, the opportunities and challenges they may pose, and their impact on short- and long-term health care spending, quality, access and equity. In addition, our reviews enable us to identify particular factors for market participants to consider in proposing and responding to potential future organizational changes. Through this process, we seek to encourage providers and payers alike to evaluate and take steps to minimize negative impacts and enhance positive outcomes of any given material change.

This document is the Preliminary Report on the HPC's tenth CMIR, examining the proposed clinical affiliation between Dana-Farber Cancer Institute, Beth Israel Lahey Health, Beth Israel Deaconess Medical Center, and Harvard Medical Faculty Physicians at BIDMC and the related construction of a freestanding, adult inpatient cancer facility. Based on criteria articulated in Massachusetts' health care cost containment legislation, Chapter 224 of the Acts of 2012, and informed by the facts of the transaction, we analyzed the likely impact of this transaction, relying on the best available data and information. Our work included review of the parties' stated goals for the transaction and the information they provided in support of how and when it would result in efficiencies and care delivery improvements.

Following an opportunity for the parties to respond to these findings in our Preliminary Report, we look forward to publishing our Final Report.

## ACRONYMS AND ABBREVIATIONS

ACO	Accountable Care Organization
AGO	Massachusetts Attorney General's Office
AMC	Academic Medical Center
APCD	All-Payer Claims Database
BIPOC	Black, Indigenous, and People of Color
CHIA	Massachusetts Center for Health Information and Analysis
CHNA	Community Health Needs Assessment
CMIR	Cost and Market Impact Review
CMS	Centers for Medicare and Medicaid Services
CPT	Current Procedural Terminology
DOJ	Department of Justice
DoN	Determination of Need
DPH	Massachusetts Department of Public Health
DRG	Diagnosis Related Group
ED	Emergency Department
EHR	Electronic Health Record
FTC	Federal Trade Commission
GPSR	Gross Patient Service Revenue
HHI	Herfindahl-Hirschman Index
HPC	Health Policy Commission
HSA TME	Health Status Adjusted Total Medical Expenses
IQI	Inpatient Quality Indicator
NPSR	Net Patient Service Revenue
PCP	Primary Care Physician
PPO	Preferred Provider Organization
PPS	Prospective Payment System
PSA	Primary Service Area
PSI	Patient Safety Indicator
MA-RPO	Massachusetts Registration of Provider Organizations
TME	Total Medical Expenses

## NAMING CONVENTIONS

### Parties and Related Organizations

BIDCO	Beth Israel Deaconess Care Organization
BIDMC	Beth Israel Deaconess Medical Center
BILH	Beth Israel Lahey Health
BILHPN	Beth Israel Lahey Health Performance Network
DFCI	Dana-Farber Cancer Institute
HMFP	Harvard Medical Faculty Physicians
Lahey	Lahey Hospital and Medical Center

### Payers

BCBS	Blue Cross Blue Shield of Massachusetts
HNE	Health New England
HPHC	Harvard Pilgrim Health Care
MGBHP	Mass General Brigham Health Plan
THP	Tufts Health Plan

### Other Providers

Atrius	Atrius Health
BCH	Boston Children's Hospital
BMC	Boston Medical Center
BWH	Brigham and Women's Hospital
MGB	Mass General Brigham
MGH	Mass General Hospital
UMass	UMass Memorial Health Care

## EXECUTIVE SUMMARY

On October 24, 2023, Dana-Farber Cancer Institute (DFCI), Beth Israel Deaconess Medical Center (BIDMC), and Harvard Medical Faculty Physicians at Beth Israel Deaconess Medical Center (HMFP) filed Notices of Material Change (MCNs) with the Massachusetts Health Policy Commission (HPC) regarding a new clinical affiliation.<sup>3</sup> Under the proposed affiliation, the parties plan to provide coordinated and integrated cancer care for adults in the Longwood Medical and Academic Area in Boston and coordinate on the construction of a new freestanding cancer hospital. The 300-bed cancer hospital would be constructed by DFCI and would be adjacent to and connected with BIDMC.

Under the proposed affiliation, DFCI would employ HMFP medical oncologists practicing in Longwood and BIDMC would discontinue independently providing medical oncology services, instead using DFCI as its preferred medical oncology and infusion provider.<sup>4</sup> BIDMC and HMFP would become DFCI's preferred providers of surgical oncology services, and HMFP would provide clinical cancer pathology and certain other physician services to DFCI.<sup>5</sup> DFCI and BIDMC would each continue to provide diagnostic radiology and laboratory and pathology services. DFCI and BIDMC would form a joint venture to coordinate technical radiation therapy services, and DFCI, BIDMC, and HMFP would jointly form a physician organization for the purpose of providing professional radiation oncology services.<sup>6</sup> The proposed affiliation represents a significant realignment among major Massachusetts health care providers, replacing a nearly 30-year clinical affiliation between DFCI and Brigham and Women's Hospital (BWH) through which DFCI currently provides inpatient oncology services in beds it leases from BWH as well as to BWH patients in BWH beds.

The parties state the clinical affiliation would increase access to high-quality tertiary and quaternary adult oncology services for the highest acuity patients with the most complex diagnoses in the new DFCI facility.<sup>7</sup> DFCI states that "need cannot be met by other hospitals within the Commonwealth because of the highly specialized nature of inpatient oncology care required by [DFCI's] patient panel and the growing demand for such care,"<sup>8</sup> and that this level of care is most

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<sup>3</sup> See DANA-FARBER CANCER INSTITUTE, INC., NOTICE OF MATERIAL CHANGE TO THE HEALTH POLICY COMM'N (Oct. 24, 2023) AS REQUIRED UNDER MASS. GEN. LAWS ch. 6D § 13 (2012) [hereinafter DFCI MCN], available at <https://masshpc.gov/sites/default/files/20231024%20DFCI-BIDMC-HMFP%20MCN.pdf>; BETH ISRAEL DEACONESS MEDICAL CENTER, INC., NOTICE OF MATERIAL CHANGE TO THE HEALTH POLICY COMM'N (Oct. 24, 2023), AS REQUIRED UNDER MASS. GEN. LAWS ch. 6D § 13 (2012) [hereinafter BIDMC MCN], available at <https://masshpc.gov/sites/default/files/20231024%20BIDMC-HMFP-DFCI%20MCN.pdf>; HARVARD MEDICAL FACULTY PHYSICIANS AT BETH ISRAEL DEACONESS MEDICAL CENTER, INC., NOTICE OF MATERIAL CHANGE TO THE HEALTH POLICY COMM'N (Oct. 24, 2023), AS REQUIRED UNDER MASS. GEN. LAWS ch. 6D § 13 (2012) [hereinafter HMFP MCN], available at <https://masshpc.gov/sites/default/files/20231024%20HMFP-DFCI-BIDMC%20MCN.pdf>. Beth Israel Lahey Health, the corporate parent of BIDMC, is also a signatory to the collaboration agreement among the parties.

<sup>4</sup> DFCI MCN, *supra* note 3.

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> DANA-FARBER CANCER INSTITUTE, INC., APPLICATION FOR DETERMINATION OF NEED FOR SUBSTANTIAL CAPITAL EXPENDITURE AND SUBSTANTIAL CHANGE IN SERVICE, DoN APPLICATION #: DFCI-23040915-HE at 23 (Oct. 24, 2023) [hereinafter

appropriately provided through “dedicated inpatient cancer beds in a specialty hospital setting.”<sup>9</sup> DFCI additionally states that these beds would increase access to innovative and complex cancer treatments that require hospitalization.<sup>10</sup> The project, according to DFCI, “will provide patients with improved health outcomes, quality of life and access to cancer care services.”<sup>11</sup>

After a 30-day initial review, the HPC determined that the proposed transaction was likely to have a significant impact on costs and market functioning in Massachusetts and warranted further review.<sup>12</sup> The proposed construction of the new DFCI hospital in connection with this transaction also requires a Determination of Need (DoN), and DFCI filed a DoN application with the Department of Public Health (DPH) concurrently with the filing of its MCN.<sup>13</sup> DPH’s review included requiring an Independent Cost Analysis of the project,<sup>14</sup> and DoN program staff issued a staff report on February 18, 2025, recommending approval of the DFCI project with conditions.<sup>15</sup> A Notice of DoN does not go into effect until 30 days after the CMIR final report and DPH may rescind or amend an approved Notice of DoN on the basis of findings in a CMIR.<sup>16</sup>

This report is organized into four parts. Part I outlines our analytic approach and the data we utilized. Part II describes the parties to this CMIR and their goals and plans for undertaking the transaction. Part III then presents our findings. We conclude in Part IV. Below is a summary of the findings presented in Part III:

- A. **Cost and Market:** DFCI and BIDMC both serve patients primarily from eastern Massachusetts, and Mass General Brigham (in conjunction with DFCI) and Beth Israel Lahey

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DFCI DoN NARRATIVE], available at <https://www.mass.gov/doc/project-description-narrative-pdf-dana-farber-cancer-institute-inc-expenditure/download>. See also MASS. DEPT. PUBLIC HEALTH, *Dana-Farber Cancer Institute, Inc. – Hospital/Clinic Substantial Capital Expenditure*, <https://www.mass.gov/info-details/dana-farber-cancer-institute-inc-hospitalclinic-substantial-capital-expenditure> (last visited February 27, 2025).

<sup>9</sup> *Id.* at 29.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.* at 30.

<sup>12</sup> See MASS. HEALTH POLICY COMM’N, MINUTES OF THE HEALTH POLICY COMM’N (Jan. 25, 2024) (voting to initiate the cost and market impact review of the DFCI-BIDMC-HMFP transaction), available at <https://masshpc.gov/sites/default/files/2024-07/Minutes%20from%20the%20January%2025%202024%20Board%20Meeting.pdf> (last visited February 27, 2025).

<sup>13</sup> DFCI DoN NARRATIVE, *supra* note 8. See also MASS. DEPT. PUBLIC HEALTH, *Dana-Farber Cancer Institute, Inc. – Hospital/Clinic Substantial Capital Expenditure*, <https://www.mass.gov/info-details/dana-farber-cancer-institute-inc-hospitalclinic-substantial-capital-expenditure> (last visited February 27, 2025).

<sup>14</sup> Independent Cost Analysis for Dana-Farber Cancer Institute Determination of Need DoN Application #: DFCI-23040915-HE (Jan. 10, 2025) [hereinafter DFCI ICA], available at <https://www.mass.gov/doc/commonwealth-of-massachusetts-health-policy-commission-pdf-0/download>; Independent Cost Analysis for Dana-Farber Cancer Institute Determination of Need DoN Application #: DFCI-23040915-HE Appendix (Jan. 10, 2025) [hereinafter DFCI ICA Appendix], available at <https://www.mass.gov/doc/independent-cost-analysis-report-appendix-pdf-dana-farber-cancer-institute-inc-expenditure/download>.

<sup>15</sup> MASS. DEPT. PUBLIC HEALTH, STAFF REPORT TO THE PUBLIC HEALTH COUNCIL FOR THE DETERMINATION OF NEED FOR DoN APPLICATION #: DFCI-23040915-HE (Feb. 18, 2025) [hereinafter DFCI STAFF REPORT], available at <https://www.mass.gov/doc/staff-report-pdf/download>.

<sup>16</sup> DPH may rescind or amend an approved Notice of DoN if the Commissioner determines that the parties would fail to meet one or more of the specified DoN Factors. See 105 CMR 100, <https://www.mass.gov/files/documents/2017/10/11/105cmr100.pdf> (last visited February 27, 2025).

Health (BILH) are the two largest providers of oncology services in their service areas and in the Commonwealth generally. DFCI and BIDMC commercial prices for *inpatient* medical and surgical oncology services, respectively, are generally lower than prices for the same services at BWH, but higher than those of some other hospitals. DFCI commercial *outpatient* prices are generally higher than outpatient oncology prices of other Massachusetts hospitals, while BIDMC's are generally moderate.

The proposed transaction and the construction of the new DFCI facility would likely shift a large volume of oncology care from BIDMC, BWH, and other oncology providers to DFCI. BIDMC would also likely gain surgical oncology volume. BIDMC and BWH are also likely to backfill any volume that shifts to DFCI. Each of these volume shifts would impact health care spending.

For commercial insurers, shifts in inpatient care are likely to reduce spending at current price levels. Specifically, shifts in inpatient oncology care from BIDMC, BWH, and other oncology providers to DFCI would likely reduce annual commercial spending by approximately \$18.5 million to \$23 million at current prices. Backfill of newly available inpatient capacity at BIDMC would likely additionally reduce annual commercial spending by \$3.5 million to \$5.3 million at current prices, while backfill of capacity at BWH would likely increase annual commercial spending by \$4.2 million to \$15.9 million at current prices.

Most shifts in hospital outpatient care as a result of the transaction would likely increase commercial spending due to DFCI's high commercial outpatient prices, especially for hospital-administered oncologic drugs. In total, shifts in outpatient oncology services that the HPC could quantify would likely increase annual commercial spending by approximately \$39 million; \$26.5 million of this spending increase would be due to higher commercial prices for oncologic drugs at DFCI.

Medicare spending may also increase as a result of the transaction. At current rates, shifts of inpatient care to DFCI would reduce Medicare spending by approximately \$5.7 million to \$9.1 million. However, DFCI's inpatient reimbursement from Medicare is based on its costs per patient, meaning that, to the extent its costs per patient increase in the newly constructed hospital, its Medicare reimbursement rate would also increase, reducing any savings or potentially increasing spending. Shifts of outpatient Medicare volume to DFCI would increase annual Medicare spending, likely in excess of \$10 million annually.

Any increases in the parties' prices as a result of the proposed transaction would reduce savings or increase spending. Commitments to limit future inpatient and outpatient rate increases and address DFCI's already high outpatient prices may help to mitigate these concerns.

- B. **Quality and Care Delivery:** DFCI and BIDMC are internationally recognized for their oncology care and have historically generally performed comparably to statewide averages on available oncology care quality metrics. Research literature suggests hospitals with specialized oncology care offerings achieve superior outcomes for their patients, although

these studies did not directly compare DFCI to other Commonwealth hospitals with specialized oncology care programs. The parties have emphasized several aspects of their plans designed to improve care quality, including their stated intention to integrate and expand existing care delivery initiatives, as well as quality benefits DFCI expects to realize by building its new facility. These plans have the potential to improve clinical quality over time but are not sufficiently developed for the HPC to be able to assess the likelihood of any specific impacts. In the short-term, it will be critical for the parties and other oncology providers to develop robust plans for care coordination and management to avoid disruptions in continuity of care as long-standing provider relationships shift.

- C. **Access to and Equity of Care:** In assessing the potential impacts of the proposed new cancer hospital on access to oncology care in the future, the HPC examined oncology utilization trends, demographic trends, technological changes, and other factors that could impact future need for additional inpatient oncology capacity. While Massachusetts' aging population is likely to result in higher cancer rates in Massachusetts in the future, modeling based on demographic trends and current utilization rates is likely to overstate future need for inpatient oncology care. Ultimately, it is unclear to what extent the proposed transaction is either necessary or sufficient to ensure future access to oncology care. This assessment is based on a number of factors, including rapid advancements in cancer treatment and other factors that may impact future inpatient oncology utilization, the limits of statistical modeling, and the inability to fully assess other inpatient oncology capacity with existing data resources.

Regarding the parties' role in serving traditionally underserved and government-payer populations, DFCI and BIDMC have relatively large proportions of commercially insured and Medicaid-insured oncology patients, BIDMC's oncology patients reside in areas with relatively high indicia of social need, DFCI and BIDMC serve a greater proportion of BIPOC (Black, Indigenous, and people of color) and Hispanic oncology inpatients than the statewide average, and DFCI has the largest share of oncology discharges from rural areas compared to other major cancer providers in Boston. The parties are also currently engaged in programs designed to improve access and equitable care for their oncology patients and have developed plans to collaborate on expanding access and improving affordability for low-income patients following the transaction. However, their plans are preliminary and do not yet include details necessary to assess the likelihood of specific potential access improvements.

DFCI's new facility would significantly expand inpatient medical oncology services in downtown Boston. While concentration of care at urban specialty hospitals may create economies of scale and promote beneficial specialization, it also may challenge access to care, particularly for patients for whom travel presents a greater burden. If DFCI opens its new hospital as planned, large and well-resourced providers like MGB would likely be better positioned to respond competitively, with smaller and more financially vulnerable providers including community hospitals potentially facing both a loss of oncology patients and revenue and upward pressure on labor costs as DFCI staffs its new facility. If these pressures destabilize or diminish the ability of other oncology providers to invest in or maintain facilities

and staff, it is likely to impact health care equity and access as well as potentially increase health care spending.

Should the proposed affiliation proceed, commitments by the parties and public monitoring could help to address the cost and access concerns raised in this report. The parties should consider commitments regarding spending impacts, including DFCI's high prices for outpatient services including oncologic drugs and future changes in DFCI's commercial and Medicare reimbursement rates. In addition, the parties should consider commitments such as reporting on the development and implementation of plans to coordinate care among oncology providers and transition planning for current patients during and after the transition of DFCI's affiliation from BWH to BIDMC, and the implementation and results of the parties' proposed access and equity initiatives, including on the parties' mix of publicly insured patients. Given the implications of continued significant investment in specialty care capacity in Boston for the accessibility of these services at other providers and in other parts of the state, the parties should commit to expanding coordination with community providers.

We invite the parties to address these and other concerns documented throughout this report in their written response, including any commitments. Following the period for written response, we look forward to publishing our Final Report, including any referrals or recommendations to other state agencies.

# I. ANALYTIC APPROACH AND DATA SOURCES

## A. Analytic Approach

The Health Policy Commission (HPC) is tasked with examining impact in three interrelated areas in a cost and market impact review (CMIR):<sup>17</sup>

1. **Costs and Market Functioning.** The HPC may examine factors such as prices, total medical expenses, provider costs, and other measures of health care spending as well as market share, the provider's methods for attracting patient volume and health care professionals, and the provider's impact on competing options for care delivery.
2. **Quality and Care Delivery.** The HPC may examine factors related to the quality of services provided, including patient experience.
3. **Access to and Equity of Care.** The HPC may also examine factors relating to the availability and accessibility of services provided and health equity, such as unmet need and the provider's role in serving at-risk, underserved, and government-payer patient populations.

Additionally, the HPC may consider any other factors it deems to be in the public interest, including consumer concerns.<sup>18</sup>

Within this statutory and regulatory framework, the HPC determines those factors most relevant to a given transaction and then gathers detailed information relevant to those factors from the sources discussed below. The HPC examines recent data to establish the parties' ***baseline performance and current trends*** in each of these areas prior to the transaction. The HPC then combines the parties' baseline performance with known details of the transaction, as well as the parties' goals and plans, to project the ***impact of the transaction on baseline performance***. The analytic section of this report is divided into three parts, each addressing the parties' baseline performance and the likely impact of the transaction: Section III.A addresses costs and market functioning, Section III.B addresses quality and care delivery, and Section III.C addresses access to and equity of care.

## B. Data Sources

To conduct this review, we relied on the documents and data the parties produced to us in response to HPC information requests,<sup>19</sup> the parties' own description of the transaction as

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<sup>17</sup> See MASS. GEN. LAWS ch. 6D, § 13(d) and 958 CMR 7.06.

<sup>18</sup> *Id.*

<sup>19</sup> The parties provided information to the HPC over the course of more than twelve months, including responses to the HPC's initial information requests, to clarifying questions about initial submissions, and under

presented in their material change notices and application for Determination of Need (DoN) and supporting materials filed with the Massachusetts Department of Public Health (DPH), and publicly available information published by the parties. The HPC also utilized information from the Massachusetts Registration of Provider Organizations program (MA-RPO)<sup>20</sup> and obtained data and documents from a number of other sources. These include other state agencies such as the Massachusetts Attorney General's Office (AGO) Non-Profit Organizations/Public Charities Division, from which we received audited financial statements for non-profit institutions relevant to our review, and the Center for Health Information and Analysis (CHIA), from which we received provider- and payer-level data,<sup>21</sup> hospital discharge data,<sup>22</sup> and claims-level data from the All-Payer Claims Database (APCD);<sup>23</sup> federal agencies such as the Agency for Healthcare Research and Quality (AHRQ) and the Centers for Medicare and Medicaid Services (CMS); and other market participants. The HPC appreciates the cooperation of all entities that provided information in support of this review.

To assist in our review and analysis of information, the HPC engaged consultants with extensive experience evaluating provider organizations and their impact on health care costs and the health care market, including economists, actuaries, accountants, clinicians, and experts in health care quality and care delivery. Working with these experts, the HPC comprehensively analyzed the data and other materials detailed above.

Where our analyses rely on nonpublic information produced by the parties or other market participants, state law prohibits the HPC from disclosing such information without the consent of the producing entity, except in a preliminary or final CMIR report where “the commission believes that such disclosure should be made in the public interest after taking into account any privacy, trade secret or anti-competitive considerations.”<sup>24</sup> Consistent with this requirement, this Preliminary Report contains only limited disclosures of such confidential information where the HPC has determined that the public interest in disclosure outweighs privacy, trade secret, and anti-competitive considerations.

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their continuing obligation to produce information relevant to the HPC's information requests whenever it becomes available during the course of the HPC's review.

<sup>20</sup> MASS. GEN. LAWS ch. 6D, § 11 and ch. 12C, § 9 (requiring provider organizations to register annually with the HPC and CHIA and provide information on organizational structure and affiliations, and other requested information); see also 958 CMR §§ 6.00 (2014) and 957 CMR §§ 11.00 (2017); *Registration of Provider Organizations*, MASS. HEALTH POLICY COMM'N, <https://masshpc.gov/moat/rpo> (last visited February 27, 2025).

<sup>21</sup> These data include relative price (RP) data and total medical expense (TME) data. See *Relative Price and Provider Price Variation*, CTR. FOR HEALTH INFO. & ANALYSIS, <http://www.chiamass.gov/relative-price-and-provider-price-variation/> (last visited February 27, 2025); *Total Health Care Expenditures, Total Medical Expenses and Alternative Payment Methods*, CTR. FOR HEALTH INFO. & ANALYSIS, <https://www.chiamass.gov/thce-tme-apm> (last visited February 27, 2025). The most recent available year of data for relative price and TME data was calendar year 2022. In addition to the published data for these metrics, the HPC used the confidential raw data underlying these metrics provided by payers to CHIA.

<sup>22</sup> See *Case Mix Data*, CTR. FOR HEALTH INFO. & ANALYSIS, <http://www.chiamass.gov/case-mix-data/> (last visited February 27, 2025). Our analyses for this report primarily used CHIA hospital discharge data for 2023, with retrospective analyses using data from as early as 2016.

<sup>23</sup> The APCD includes medical, pharmacy, and dental claims, as well as information about member eligibility, benefit design, and providers for all payers covering Massachusetts residents. See *All-Payer Claims Database*, CTR. FOR HEALTH INFO. & ANALYSIS, <http://www.chiamass.gov/ma-apcd/> (last visited February 27, 2025).

<sup>24</sup> MASS. GEN. LAWS ch. 6D, § 13(c), amended by 2013 Mass. Acts 38, § 20; 958 CODE MASS. REGS. 7.09.

For each analysis, the HPC utilized the most recent and reliable data available. Because data—whether publicly reported or privately held—is usually generated on a variable schedule from entity to entity, the most recent and reliable data primarily reflect 2022 or 2023 data; historic data used in longitudinal analyses are from as early as 2010, although our analyses focused on inpatient oncology services focus on 2016 through 2023 because the HPC’s definition of oncology discharges is based in part on ICD-10 diagnosis codes.<sup>25</sup> We have noted the applicable year for the underlying data throughout this report and, wherever possible, we examined multiple years of data to analyze trends and to report on the consistency of findings over time. For data and materials produced by the parties and other market participants, the HPC tested the accuracy and consistency of the data collected to the extent possible but also relied in large part on the producing party for the quality of the information provided.

The availability of accurate data, time constraints, and a focus on those analyses that complement—rather than duplicate—the work of other agencies may affect the analyses included in this and other reviews of material changes. Future reviews may encompass new and evolving analyses, depending on the facts of a transaction, recent market developments, areas of public interest, and the availability of improved data resources.

Finally, most of our cost and market analyses focus on the anticipated impact in the commercially insured market. In the commercially insured market, prices for health care services—whether fee-for-service, global budgets, or other forms of alternative payments—are established through private negotiations between payers and providers. The terms of these payer-provider contracts vary widely, with regard to both price and other material terms that impact health care costs and market functioning.<sup>26</sup> However, because of the particular relevance of oncology care to older residents and the differences among the parties in Medicare payment rates, particularly for inpatient care, this report also assesses some cost and market impacts of the proposed transaction on Medicare spending.

## C. Methodologies

The analyses in this report build on well-established methodologies used in economic research, antitrust litigation, and prior HPC studies. Where possible the HPC made conservative assumptions in modeling potential impacts and presents quantitative findings only where they are well supported by available data and methodology. In most analyses the HPC modeled various sensitivities based on different underlying assumptions, resulting in ranges of potential impacts of

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<sup>25</sup> Some data sources use fiscal year rather than calendar year data, notably CHIA’s Hospital Discharge Database and Hospital Profiles. Therefore, hospital discharge and Hospital Profiles data presented here are fiscal year data.

<sup>26</sup> See, e.g., OFFICE OF ATT’Y GEN. MARTHA COAKLEY, EXAMINATION OF HEALTH CARE COST TRENDS AND COST DRIVERS PURSUANT TO G.L. c. 118G, § 6 ½(b): REPORT FOR ANNUAL PUBLIC HEARING at 40-43 (Mar. 16, 2010), *available at* <https://www.mass.gov/doc/2010-examination-of-health-care-cost-trends-and-cost-drivers-with-appendix/download> (last visited February 27, 2025); MASS. HEALTH POLICY COMM’N, 2015 COST TRENDS REPORT: PROVIDER PRICE VARIATION (Jan. 2016), *available at* <https://dev-hpc-training.pantheonsite.io/sites/default/files/2023-04/2015-ctr-ppv.pdf> (last visited February 27, 2025).

the proposed transaction. Where applicable, this report compares and contrasts the HPC's findings with analyses presented by the parties and in the Independent Cost Analysis (ICA) of DFCI's proposed new hospital.

Additional details of the HPC's methodologies are provided throughout this report and in the Data Appendix. Given the centrality of specialized oncology services in this review, this section also provides a brief primer on oncology and related services.

## Oncology and Related Services

Care for patients with cancer involves a combination of clinical specialties and techniques. These include services from screening and diagnosis; to treatment, management of sequelae and side effects, and palliative care; to survivorship support. Cancer care may complicate and be complicated by a patient's other medical and behavioral health needs. The following are some principal areas relevant to oncology care, although the specific care a given patient receives depends in large part on the type of cancer.

- Medical oncology: The use of chemotherapy, hormone therapy, immunotherapy, and other drugs to treat cancer, often administered by infusion or injection.
- Surgical oncology: The use of surgery and other procedures to treat cancer.
- Radiation oncology: The use of radiation therapy to treat cancer.
- Pathology: The assessment of the nature and cause of disease as expressed by changes in cellular or tissue structure and function caused by the disease process.
- Diagnostic radiology: The use of radiology, including X-ray, CT, PET and SPECT, ultrasound, and MRI, to diagnose, stage, treat, and monitor cancer.
- Palliative care: Care given to improve the quality of life and help reduce pain in people who have a serious or life-threatening disease. The goal of palliative care is to prevent or treat, as early as possible, the symptoms of the disease and the side effects caused by treatment of the disease. It also attends to the psychological, social, and spiritual problems caused by the disease or its treatment. It may also include family and caregiver support. Palliative care may be given with other treatments from the time of diagnosis until the end of life.
- Related supportive services: Other common services provided to patients with cancer include nutritional counseling, behavioral health counseling, and social work supports.

Given the broad scope of services involved in cancer care, the HPC focused many of its analyses on specific subsets of services based on their relevance to the parties and the reliability of data relevant to that service in hospital discharge and payer claims data.

To define the scope of inpatient oncology services, the HPC used CHIA hospital inpatient discharge database (HDD) for 2016 through 2023. The HPC used a set of diagnoses related to cancer using codes in the International Classification of Diseases, Tenth Revision (ICD-10), as defined by DFCI for analyses in its DoN application.<sup>27</sup> With the assistance of clinical expert consultants, the HPC then categorized inpatient MS-DRGs into three classifications:

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<sup>27</sup> DFCI DoN NARRATIVE, *supra* note 8, at 19. The HPC independently confirmed these ICD codes as a reasonable scope of definition for oncology-related diagnoses with the assistance of clinical experts.

1. Those which should always be considered oncology care regardless of the presence of an oncology ICD code (e.g., bone marrow transplants, malignancy-specific DRGs);
2. those which should be assumed to be cancer-related if the HDD record includes an oncology ICD code (e.g., many surgical procedures, septicemia and other major infections that may result from oncology-related immunosuppression); and
3. those which should never be considered oncology care regardless of the presence of an oncology ICD code (e.g., traumas, heart attack, labor and delivery).

The HPC considered a discharge to be an oncology discharge in-scope for this review if it fell into either of the first two categories. Although the inclusion of discharges in the second category likely results in some overcounting (i.e., patients with a cancer diagnosis who happen to be admitted for a reason wholly unrelated to their disease), its inclusion is essential to capture the full scope of oncology services provided by the parties, and this approach largely aligns with the definition of inpatient oncology care provided by DFCI to support its DoN application.<sup>28</sup> For some analyses, the HPC further distinguished oncology discharges as medical or surgical using CMS classifications<sup>29</sup> because DFCI generally provides medical oncology services only.<sup>30</sup> The definition of inpatient oncology care used in the Independent Cost Analysis of DFCI's proposed new hospital appears to differ from that used by the HPC: Although the ICA uses the same set of ICD-10 codes to identify oncology patients, it does not describe an exclusion of non-oncology inpatient care similar to the HPC's third category of MS-DRGs above.<sup>31</sup> The ICA also distinguishes medical and surgical care by ICD-10 procedure codes rather than MS-DRGs, and in many results does not distinguish between medical and surgical discharges. The ICA's more inclusive approach leads the ICA to include substantially higher numbers of discharges as relevant oncology care compared to the HPC's approach.<sup>32</sup>

<sup>28</sup> See DFCI DoN NARRATIVE, *supra* note 8, at 18-20. The HPC was not able to directly replicate DFCI's inpatient oncology methodology due to data limitations, but comparison of the HPC's results to detailed data provided confidentially by DFCI indicates that the methodologies produce substantially similar results. See also U.S. GOV'T ACCOUNTABILITY OFFICE, PAYMENT METHODS FOR CERTAIN CANCER HOSPITALS SHOULD BE REVISED TO PROMOTE EFFICIENCY at 8-9 (Feb. 2015), [hereinafter GAO Cancer Hospitals Report] available at <https://www.gao.gov/assets/gao-15-199.pdf> (showing that 49% of admissions at specialty cancer hospitals nationwide do not have cancer as the principal diagnosis for admission).

<sup>29</sup> CMS classifies MS-DRGs as medical or surgical based on whether the DRG includes the use of an operating room. See Ctr. for Medicare and Medicaid Servs., Design and Development of the Diagnosis Related Group at 5-8 (Aug. 2020) [https://www.cms.gov/icd10m/version372-fullcode-cms/fullcode\\_cms/Design\\_and\\_development\\_of\\_the\\_Diagnosis\\_Related\\_Group\\_\(DRGs\).pdf](https://www.cms.gov/icd10m/version372-fullcode-cms/fullcode_cms/Design_and_development_of_the_Diagnosis_Related_Group_(DRGs).pdf).

<sup>30</sup> DFCI's DoN application states that "[t]here are instances under the Applicant's current operations where patients receive surgeries at BWH and have their inpatient stays managed by the Applicant's medical oncologist with surgical consultation provided by BWH surgeons" but that DFCI chose to remove those patients from its bed need calculations due to confidentiality agreements with BWH. DFCI DoN NARRATIVE, *supra* note 8, at 72.

<sup>31</sup> See DFCI ICA, *supra* note 14, at Section VI.

<sup>32</sup> The ICA's count of 2022 oncology discharges for Massachusetts residents in Table 4, for example, is 27% higher than the HPC's count of oncology discharges using the methodology described above. This difference in scope leads to substantially higher projections of future inpatient oncology utilization than HPC assessments, as discussed in Section III.C.1 of this report, and a finding that there would be enough Massachusetts inpatient volume at BIDMC and BWH to fully fill DFCI's proposed inpatient capacity without the new hospital drawing patients from any other hospital. See DFCI ICA, *supra* note 14.

## II. OVERVIEW OF THE PARTIES AND THE TRANSACTION

On October 24, 2023, Dana-Farber Cancer Institute (DFCI), Beth Israel Deaconess Medical Center (BIDMC), and Harvard Medical Faculty Physicians at Beth Israel Deaconess Medical Center (HMFP) (collectively “the parties”) filed Notices of Material Change (MCNs) with the Health Policy Commission regarding a new clinical affiliation.<sup>33</sup> Under the proposed affiliation, the parties plan to provide coordinated and integrated cancer care for adults in the Longwood Medical and Academic Area in Boston and coordinate on the construction of a new freestanding dedicated cancer hospital. The new freestanding cancer hospital would be constructed by DFCI and would be adjacent to and connected with BIDMC. DFCI filed an application for a Determination of Need with the Department of Public Health for the new facility concurrently with the filing of its MCN.<sup>34</sup> The proposed affiliation represents a significant realignment among major Massachusetts health care providers, replacing a nearly 30-year clinical affiliation between DFCI and Brigham and Women’s Hospital (BWH) through which DFCI currently provides inpatient oncology services in beds it leases from BWH as well as to BWH patients in BWH beds.<sup>35</sup>

This section describes the parties, their current relationships, and the proposed transaction.

### A. Overview of the Parties

#### 1. Dana-Farber Cancer Institute

Founded in 1947, the Dana-Farber Cancer Institute (DFCI) is a non-profit acute care cancer hospital and research institute. Its main hospital site located in the Longwood Medical Area of Boston includes research and outpatient clinical buildings connected to both BWH and Boston Children’s Hospital (BCH), as well as inpatient beds leased from and located within BWH. DFCI also operates six regional hospital satellite locations for outpatient care as shown in the map below and provides care through additional clinical affiliations.<sup>36</sup> DFCI currently employs over 350 physicians.<sup>37</sup> Through the Dana-Farber/Harvard Cancer Center, DFCI also engages in collaborative research with 1,000 researchers across five academic medical institutions - BIDMC,

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<sup>33</sup> DFCI MCN, *supra* note 3; BIDMC MCN, *supra* note 3; HMFP MCN, *supra* note 3. Beth Israel Lahey Health, the corporate parent of BIDMC, is also a signatory to the collaboration agreement among the parties.

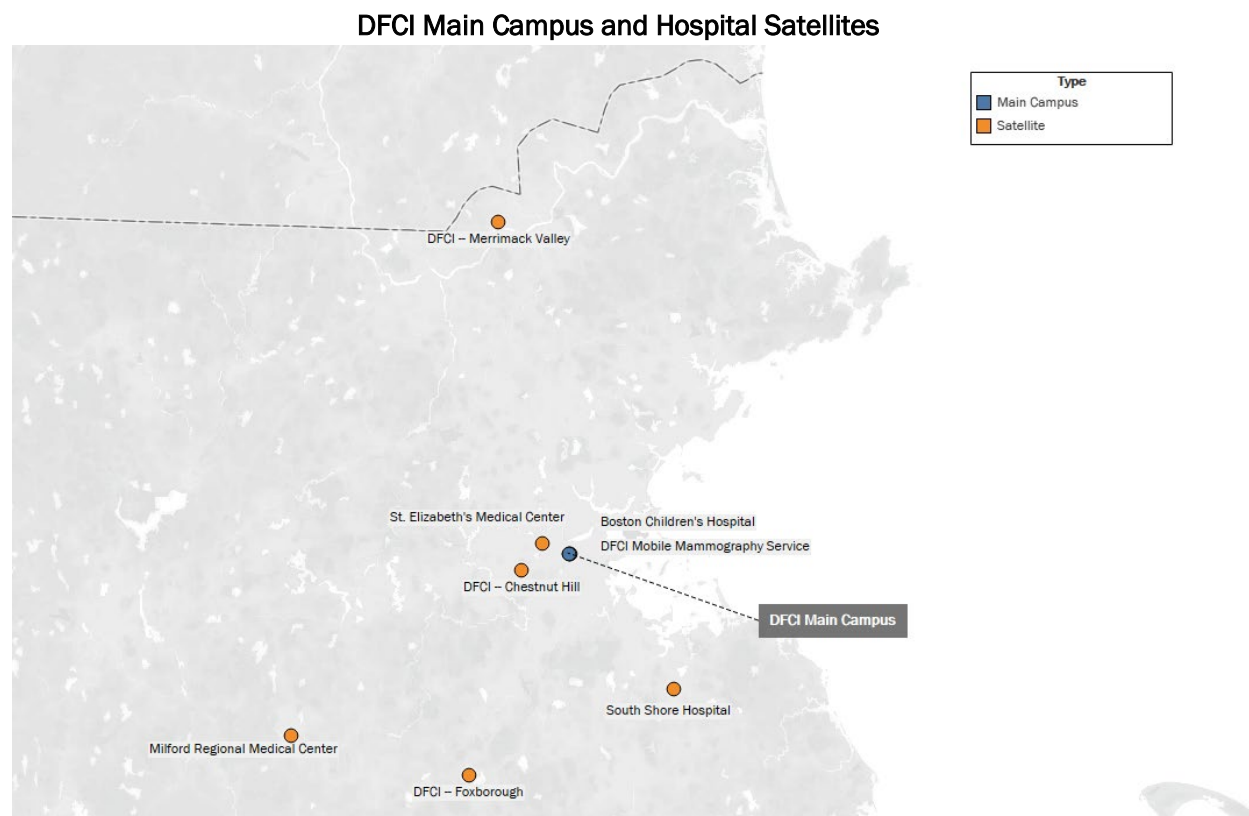
<sup>34</sup> See DFCI DoN NARRATIVE, *supra* note 8. See also MASS. DEPT. PUBLIC HEALTH, *Dana-Farber Cancer Institute, Inc. – Hospital/Clinic Substantial Capital Expenditure*, <https://www.mass.gov/info-details/dana-farber-cancer-institute-inc-hospitalclinic-substantial-capital-expenditure> (last visited February 27, 2025).

<sup>35</sup> *Id.* at 2.

<sup>36</sup> DFCI’s hospital satellites are Dana-Farber Cancer Institute at St. Elizabeth’s Medical Center in Brighton, Dana-Farber Brigham Cancer Center at Milford Regional Medical Center in Milford, Dana-Farber Brigham Cancer Center at South Shore Health in Weymouth, Dana-Farber Cancer Institute - Merrimack Valley in Methuen, Dana-Farber Brigham Cancer Center – Foxborough in Foxborough, and Dana-Farber/New Hampshire Oncology-Hematology in Londonderry, NH. MASS HEALTH POLICY COMM’N, MASS REGISTRATION OF PROVIDER ORGANIZATIONS 2023 REGISTRATION: DANA-FARBER CANCER INSTITUTE (Jan. 2025) [hereinafter DFCI MA-RPO FILING], available at <https://masshpc.gov/moat/rpo/data>.

<sup>37</sup> *Id.*

DFCI, BWH, Mass General Hospital (MGH), and Boston Children's Hospital (BCH) - along with Harvard Medical School and the Harvard T.H. Chan School of Public Health.<sup>38</sup>



DFCI is one of 57 National Cancer Institute (NCI) designated Comprehensive Cancer Care Centers<sup>39</sup> and one of 11 Prospective Payment System (PPS) exempt cancer hospitals in the United States, reflecting its highly specialized focus on oncology care.<sup>40</sup> DFCI's clinical model is

<sup>38</sup> *About DF/HCC*, DANA-FARBER/HARVARD CANCER CENTER, <https://www.dfhcc.harvard.edu/about-dfhcc> (last visited February 27, 2025).

<sup>39</sup> *NCI-Designated Cancer Centers*, NATIONAL CANCER INSTITUTE, <https://www.cancer.gov/research/infrastructure/cancer-centers> (last visited February 27, 2025). "NCI recognizes centers around the country that meet rigorous standards for transdisciplinary, state-of-the-art research focused on developing new and better approaches to preventing, diagnosing, and treating cancer... 57 are Comprehensive Cancer Centers, also recognized for their leadership and resources, in addition to demonstrating an added depth and breadth of research, as well as substantial transdisciplinary research that bridges these scientific areas."

<sup>40</sup> The Social Security Amendments of 1983 exempted classified cancer hospitals from the Medicare Inpatient Prospective Payment System (IPPS). These PPS-exempt cancer hospitals are paid by Medicare under a cost-based reimbursement model for inpatient care and are subject to a different set of hospital inpatient quality measure reporting requirements, reflecting their unique care models. See *PPS-Exempt Cancer Hospitals (PCH)*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://data.cms.gov/provider-data/topics/hospitals/pps-exempt-cancer-hospitals> (last visited February 27, 2025). See also *PPS-Exempt Cancer Hospitals (PCHs)*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://www.cms.gov/medicare/payment/prospective-payment-systems/acute-inpatient-pps/pps-exempt-cancer-hospitals-pchs> (last visited February 27, 2025).

unique among specialized cancer centers in that DFCI focuses on the provision of medical oncology services, relying on clinical partner provider organizations to provide surgical oncology and certain other non-oncology services. DFCI's patients are predominantly adults.

In FY2023 DFCI had \$3.36 billion in net assets and was the fourth largest Massachusetts-based provider system by net assets, behind Mass General Brigham, Boston Children's Hospital, and BILH, and the fifth largest by net patient service revenue (NPSR), behind UMass Memorial Health Care in addition to the other largest systems.<sup>41</sup> DFCI received over \$164 million in National Institutes of Health (NIH) funding in FY2024, the fourth-highest total amount to an independent hospital in the Commonwealth.<sup>42</sup>

#### a. Inpatient and Outpatient Services

Since 1997, DFCI's most significant clinical affiliate has been BWH, and DFCI's affiliation agreement with BWH lasts until 2028. Currently, DFCI's inpatient operations consist of 30 inpatient beds leased from BWH and located within BWH's Longwood hospital facility. In addition to these beds, DFCI physicians staff BWH's medical oncology service, serving as the attending physicians to all patients requiring inpatient oncology care, accounting for approximately 180 of BWH's beds per day.<sup>43</sup> DFCI also provides all outpatient medical oncology services for BWH patients in the Longwood area. BWH and its physicians provide surgical oncology care as well as certain other non-oncology services needed by BWH and DFCI inpatients, and both BWH and DFCI provide radiology, pathology, and radiation therapy services. BWH and DFCI also follow this model at several joint outpatient sites. This model is unique, with other major oncology providers in Massachusetts (including BIDMC and MGH) and other specialty cancer care hospitals nationwide

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<sup>41</sup> CTR. FOR HEALTH INFO. & ANALYSIS, MASSACHUSETTS ACUTE HOSPITAL AND HEALTH SYSTEM FINANCIAL PERFORMANCE HFY 2023 DATABOOK (Sept. 2024), [hereinafter CHIA HFY23 Financial Databook], *available at* <https://www.chiamass.gov/assets/Uploads/mass-hospital-financials/2023-annual-report/Acute-Hospital-Financial-Performance-2023-Databook.xlsx>.

<sup>42</sup> On February 7, 2025, the NIH announced that it would provide a flat rate of 15% for indirect costs under its research grants, a substantial reduction for most research universities and academic medical centers. Jonathan Wosen et al., *NIH plans to slash support for indirect research costs, sending shockwaves through science*, STAT, (Feb. 7, 2025), *available at* <https://www.statnews.com/2025/02/07/nih-slashes-indirect-costs-on-all-grants-to-15-percent-trump/>; NAT'L. INSTITUTES OF HEALTH, SUPPLEMENTAL GUIDANCE TO THE 2024 NIH GRANTS POLICY STATEMENT: INDIRECT COST RATES (Feb. 7, 2025), *available at* <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-25-068.html>. Boston Globe analysis of DFCI's FY2024 NIH grant funding suggests that reducing indirect costs to 15% would have reduced DFCI's annual federal research funding by \$33.7 million. Jonathan Saltzman, *Which New England institutions stand to lose the most under Trump's proposed NIH funding cuts?*, BOSTON GLOBE, (Feb. 12, 2025), *available at* [https://www.bostonglobe.com/2025/02/12/business/nih-funding-new-england-harvard-mgh-brigham-womens/?p1=BGSearch\\_Overlay\\_Results](https://www.bostonglobe.com/2025/02/12/business/nih-funding-new-england-harvard-mgh-brigham-womens/?p1=BGSearch_Overlay_Results). It is not clear how much additional cancer research funding would be lost through reductions of grants across all institutions in the Dana-Farber/Harvard Cancer Center.

<sup>43</sup> The precise number of beds used for oncology care at BWH on a given day varies according to information provided confidentially by DFCI and Mass General Brigham, but see DFCI STAFF REPORT, *supra* note 15, at 14, providing DFCI's estimate that its physicians staff 211 beds per day including DFCI's own 30 beds.

providing the full continuum of inpatient and outpatient oncology services including medical, surgical, radiation oncology, and ancillary care.<sup>44</sup>

DFCI provides extensive hospital outpatient services, with 97.7% of DFCI's patient service revenue coming from outpatient services in FY2023.<sup>45</sup> DFCI provides outpatient services at its main campus in Boston in coordination with BWH, as well as nine other hospital satellites.<sup>46</sup> DFCI operates several of these satellites in collaboration with BWH and other provider organizations: Milford (BWH and Milford Regional Medical Center), Weymouth (BWH and South Shore Hospital), Foxborough (BWH), and Chestnut Hill (BWH).<sup>47</sup> In 2014, DFCI acquired Commonwealth Hematology-Oncology a non-profit hematology and oncology physician organization, acquiring eight clinics and two radiation oncology treatment centers; DFCI subsequently closed most of these clinic locations or consolidated them into hospital-licensed sites.<sup>48</sup>

## **b. Other Clinical Affiliations**

In addition to services at its own licensed sites, DFCI staffs oncology services on the campuses of some affiliated healthcare providers including Lawrence General Hospital, Milford Regional Medical Center, South Shore Hospital, St. Elizabeth's Medical Center, Whittier Street Health Center, and Dimock Community Health Center.<sup>49</sup> DFCI also leads the Dana-Farber Cancer Care Collaborative, a group of hospitals with clinical affiliations that receive DFCI's endorsement, access to services and education, and enhanced access to DFCI clinicians and care.<sup>50</sup> Massachusetts hospitals in the Cancer Care Collaborative include UMass Memorial Medical Center, Berkshire Medical Center, and Cape Cod Hospital.<sup>51</sup> Outside of Massachusetts, DFCI supports cancer care programs at Northern Light Health in Maine, Stamford Hospital in

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<sup>44</sup> In 2017, 2,470 hospitals across the United States provided some form of oncology care to patients at an integrated hospital campus, while 11 PPS-exempt cancer hospitals deliver care in stand-alone cancer facilities. DFCI is the only PPS-exempt hospital to focus solely on medical oncology care. See Peiyin Hung, et al., *Trends in Cancer Treatment Service Availability Across Critical Access Hospitals and Prospective Payment System Hospitals*, MED CARE (2022), available at [https://journals.lww.com/lww-medicalcare/abstract/2022/03000/trends\\_in\\_cancer\\_treatment\\_service\\_availability.2.aspx](https://journals.lww.com/lww-medicalcare/abstract/2022/03000/trends_in_cancer_treatment_service_availability.2.aspx) and *PPS-Exempt Cancer Hospitals (PCHs)*, CTRS. FOR MEDICARE & MEDICAID SERVS., available at <https://www.cms.gov/medicare/payment/prospective-payment-systems/acute-inpatient-pps/pps-exempt-cancer-hospitals-pchs> (last visited February 27, 2025).

<sup>45</sup> CTR. FOR HEALTH INFO. & ANALYSIS, DANA-FARBER CANCER INSTITUTE 2023 HOSPITAL PROFILE, (Jan. 2025) [hereinafter CHIA DFCI 2023 HOSPITAL PROFILE], available at <https://www.chiamass.gov/assets/docs/r/hospital-profiles/2023/dana-far.pdf> (last visited February 27, 2025).

<sup>46</sup> DFCI MA-RPO FILING, *supra* note 36.

<sup>47</sup> DFCI MA-RPO FILING, *supra* note 36.

<sup>48</sup> DANA-FARBER CANCER INSTITUTE, NOTICE OF MATERIAL CHANGE TO THE HEALTH POLICY COMM'N (Mar. 3, 2014), AS REQUIRED UNDER MASS. GEN. LAWS ch. 6D § 13 (2012), available at [https://masshpc.gov/sites/default/files/2023-02/20140303\\_danafarber-commonwealth\\_mcn.pdf](https://masshpc.gov/sites/default/files/2023-02/20140303_danafarber-commonwealth_mcn.pdf); Jill Terrieri Ramos, *Dana-Farber closes offices in Quincy, Milton, Dorchester*, BOSTON GLOBE, (Sept. 23, 2016), available at <https://www.bostonglobe.com/metro/regionals/south/2016/09/23/dana-farber-closes-offices-quincy-milton-dorchester/EF5XFVuQ2EkIf7TOoUV2LL/story.html>.

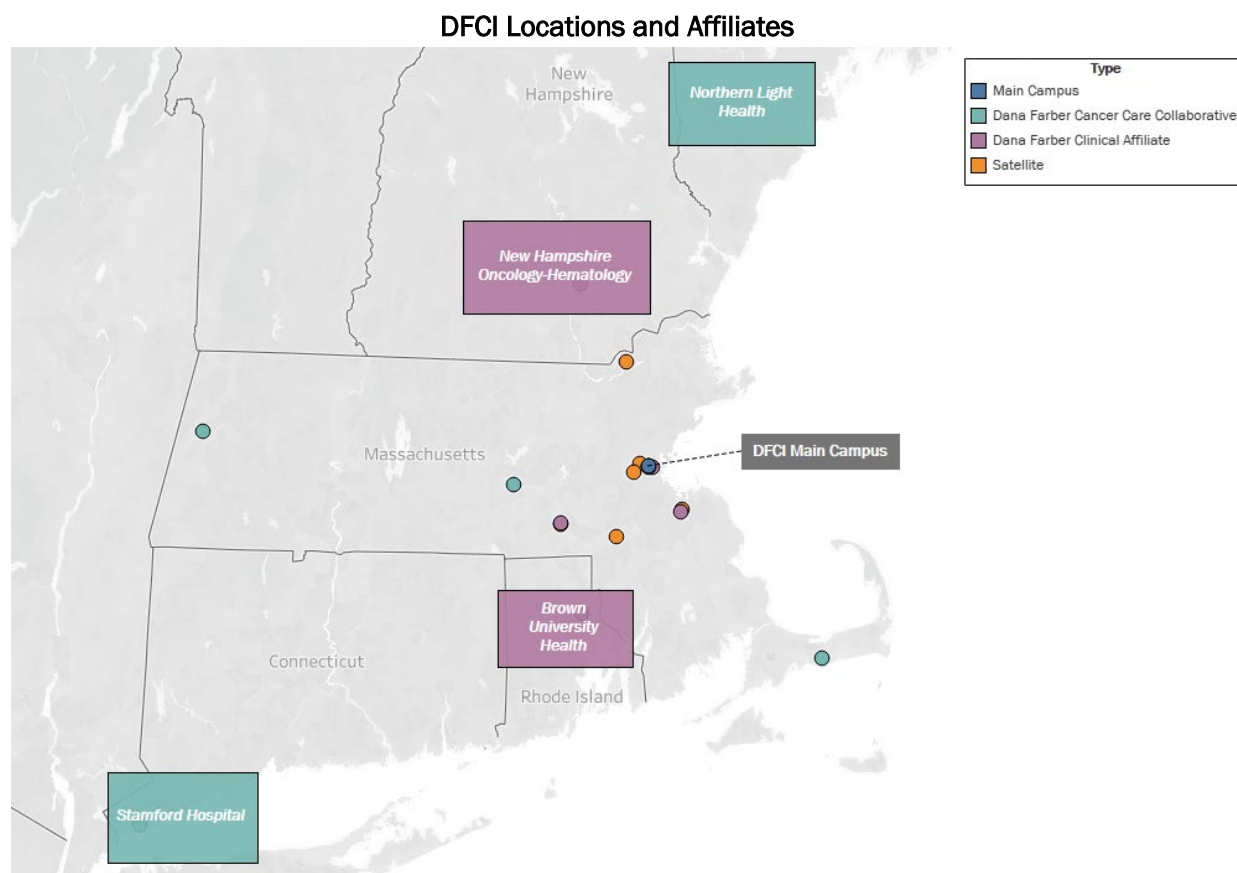
<sup>49</sup> DFCI MA-RPO FILING, *supra* note 36.

<sup>50</sup> *Collaborations*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/about/collaborations> (last visited February 27, 2025).

<sup>51</sup> *Id.*

Connecticut, Brown University Health (formerly Lifespan) in Rhode Island, and New Hampshire Oncology-Hematology.<sup>52</sup>

For pediatric care, DFCI has an affiliation with Boston Children's Hospital (BCH), the Dana-Farber/Boston Children's Cancer and Blood Disorders Center. Under this partnership, DFCI provides outpatient pediatric medical oncology and certain hematology services on the BCH campus, and DFCI physicians round on BCH inpatients.<sup>53</sup>



## 2. BIDMC and Beth Israel Lahey Health

BIDMC is an academic medical center (AMC) in the Longwood area of Boston and is the largest hospital of Beth Israel Lahey Health (BILH), a non-profit health care system formed in 2019 by the merger of Lahey Health System; CareGroup and its component parts, Beth Israel Deaconess Medical Center, New England Baptist Hospital, and Mount Auburn Hospital; and

<sup>52</sup> DFCI MA-RPO FILING, *supra* note 36.

<sup>53</sup> *Cancer and Blood Disorders Center*, BOSTON CHILDREN'S HOSPITAL, <https://www.childrenshospital.org/centers/cancer-and-blood-disorders-center> (last visited February 27, 2025); DFCI MA-RPO FILING, *supra* note 36.

Seacoast Regional Health Systems.<sup>54</sup> In 2021, BILH acquired the Joslin Diabetes Center and in 2022 it acquired Exeter Health Resources, a New Hampshire healthcare system.<sup>55</sup> BILH owns ten general acute care hospitals in Massachusetts.<sup>56</sup> In addition, BILH includes several contracting entities, including Beth Israel Lahey Health Performance Network, Beth Israel Deaconess Care Organization (BIDCO), and Lahey Clinical Performance Network.<sup>57</sup> BILH is the second-largest provider organization in the Commonwealth by NPSR, with \$6.5 billion in FY2022, second to MGB with \$12.79 billion.<sup>58</sup>

BIDMC is the Commonwealth's fifth largest general acute hospital with 799 staffed beds and reported an operating revenue of more than \$2.6 billion dollars in 2023.<sup>59</sup> BIDMC currently provides both inpatient and outpatient oncology care, including medical, surgical, and radiation oncology as well as diagnostic and ancillary services, and conducts cancer research through The Cancer Center at Beth Israel Deaconess Medical Center.<sup>60</sup> BIDMC estimates that at least 80 beds on average are used for medical oncology patients each day.<sup>61</sup> As with most specialty services at BIDMC, physicians affiliated with Harvard Medical Faculty Physicians at Beth Israel Deaconess Medical Center (HMFP), described in greater detail below, currently provide all oncology services at BIDMC.

In addition to BIDMC's Cancer Care Center, other hospitals in the BILH system provide inpatient oncology services at the locations listed below:<sup>62</sup>

- Anna Jaques Hospital - Anna Jaques Cancer Center

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<sup>54</sup> See MASS. HEALTH POLICY COMM'N, REVIEW OF THE PROPOSED MERGER OF LAHEY HEALTH SYSTEM; CAREGROUP AND ITS COMPONENT PARTS, BETH ISRAEL DEACONESS MEDICAL CENTER, NEW ENGLAND BAPTIST HOSPITAL, AND MOUNT AUBURN HOSPITAL; SEACOAST REGIONAL HEALTH SYSTEMS; AND EACH OF THEIR CORPORATE SUBSIDIARIES INTO BETH ISRAEL LAHEY HEALTH; AND THE ACQUISITION OF THE BETH ISRAEL DEACONESS CARE ORGANIZATION BY BETH ISRAEL LAHEY HEALTH; AND THE CONTRACTING AFFILIATION BETWEEN BETH ISRAEL LAHEY HEALTH AND MOUNT AUBURN CAMBRIDGE INDEPENDENT PRACTICE ASSOCIATION (HPC-CMIR-2017-2) FINAL REPORT (Sept. 27, 2018), *available at* <https://www.mass.gov/doc/final-cmir-report-beth-israel-lahey-health/download>.

<sup>55</sup> BETH ISRAEL LAHEY HEALTH, INC., NOTICE OF MATERIAL CHANGE TO THE HEALTH POLICY COMM'N (Jul. 2, 2021), AS REQUIRED UNDER MASS. GEN. LAWS ch. 6D § 13 (2012), *available at* [https://masshpc.gov/sites/default/files/2023-02/20210702\\_bilh\\_-\\_joslin\\_mcn.pdf](https://masshpc.gov/sites/default/files/2023-02/20210702_bilh_-_joslin_mcn.pdf); BETH ISRAEL LAHEY HEALTH, INC., NOTICE OF MATERIAL CHANGE TO THE HEALTH POLICY COMM'N (Jul. 28, 2022), AS REQUIRED UNDER MASS. GEN. LAWS ch. 6D § 13 (2012), *available at* [https://masshpc.gov/sites/default/files/2023-02/20220728\\_bilh\\_exeter\\_mcn.pdf](https://masshpc.gov/sites/default/files/2023-02/20220728_bilh_exeter_mcn.pdf).

<sup>56</sup> CTR. FOR HEALTH INFO. & ANALYSIS, MASSACHUSETTS HOSPITAL PROFILES DATA THROUGH HOSPITAL FISCAL YEAR 2023 DATABOOK at Appendix B (Jan. 2025) [hereinafter CHIA 2023 HOSPITAL PROFILES DATABOOK], *available at* <https://www.chiamass.gov/assets/docs/r/hospital-profiles/2023/FY23-Massachusetts-Hospital-Profiles-Technical-Appendix.pdf>.

<sup>57</sup> MASS HEALTH POLICY COMM'N, MASS REGISTRATION OF PROVIDER ORGANIZATIONS 2023 REGISTRATION: BETH ISRAEL LAHEY HEALTH, INC. (Jan. 2025) [hereinafter BILH MA-RPO FILING], *available at* <https://masshpc.gov/moat/rpo/data>.

<sup>58</sup> See CHIA HFY23 Financial Databook, *supra* note 41.

<sup>59</sup> CHIA 2023 HOSPITAL PROFILES DATABOOK, *supra* note 56.

<sup>60</sup> *About the Cancer Center*, BETH ISRAEL DEACONESS MEDICAL CENTER, <https://www.bidmc.org/centers-and-departments/cancer-center/about-the-cancer-center> (last visited February 27, 2025).

<sup>61</sup> Based on information provided confidentially to the HPC.

<sup>62</sup> *Cancer Care*, BETH ISRAEL LAHEY HEALTH, <https://bilh.org/care-options/specialty-care/cancer> (last visited February 27, 2025).

- BIDH-Needham - Lank Cancer Center located at BID Needham
- BIDH-Plymouth - Jordan Hospital Club Cancer Center
- Beverly Hospital - Hematology/Oncology Center
- Lahey Hospital & Medical Center- Lahey Health Cancer Institute
- Mount Auburn Hospital
- Winchester Hospital - Center for Cancer Care

### 3. Harvard Medical Faculty Physicians at Beth Israel Deaconess Medical Center (HMFP)

HMFP is a physician group that employs physicians who staff BIDMC and other BILH hospitals and facilities within the broader Boston metropolitan region. HMFP is corporately distinct from BILH but has an exclusive affiliation agreement with BIDMC for the purposes of providing adult tertiary and quaternary care, including cancer care.<sup>63</sup> HMFP employs over 2,200 providers, including over 1,500 physicians, who provide care at BILH sites.<sup>64</sup> HMFP physicians hold academic medical school appointments within Harvard Medical School.<sup>65</sup> HMFP physicians currently provide oncology services across the BILH system and all oncology services at BIDMC, with more than 60 oncologists providing both inpatient and outpatient cancer care.<sup>66</sup>

## B. The Proposed Transaction

Under the proposed clinical affiliation, BIDMC and HMFP would replace BWH as the preferred provider of surgical oncology care for DFCI patients in the Longwood Medical Area and DFCI would become the preferred provider of medical oncology care for BIDMC patients.<sup>67</sup> HMFP medical oncologists providing services primarily at BIDMC would become DFCI employees, and BIDMC would cease providing medical oncology care in the Longwood Medical Area with the expectation that BIDMC medical oncology patients would transition to DFCI.<sup>68</sup>

BIDMC and HMFP would become DFCI's preferred provider of surgical oncology services, and HMFP would provide clinical cancer pathology and certain other physician services to DFCI.<sup>69</sup> DFCI and BIDMC would each continue to provide diagnostic radiology and laboratory and pathology services. DFCI and BIDMC would form a joint venture to coordinate technical radiation therapy services, and DFCI, BIDMC, and HMFP would jointly form a physician organization for the purpose of providing professional radiation oncology services.<sup>70</sup>

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<sup>63</sup> HMFP MCN, *supra* note 3.

<sup>64</sup> BILH MA-RPO FILING, *supra* note 57.

<sup>65</sup> HMFP MCN, *supra* note 3.

<sup>66</sup> BILH MA-RPO FILING, *supra* note 57.

<sup>67</sup> DFCI MCN, *supra* note 3.

<sup>68</sup> Based on information provided confidentially to the HPC. BIDMC and HMFP have indicated that HMFP physicians will still provide some medical oncology care at other BILH sites.

<sup>69</sup> DFCI MCN, *supra* note 3.

<sup>70</sup> *Id.*

The parties would form a steering committee to oversee the collaboration, but each organization would remain corporately independent and would maintain ultimate oversight of their respective organizations, including all clinical operations.<sup>71</sup> The parties state that they have no plans to engage in joint payer contracting, and that the affiliation does not currently include new collaborations between DFCI and any other components of the BILH system.<sup>72</sup>

### Expected Changes in Service Provision<sup>73</sup>

Service Line	Pre-Transaction	Post-Transaction
<b>Medical Oncology and Oncologic Infusion Treatment</b>	BIDMC and HMFP provide inpatient and outpatient services.  DFCI provides inpatient and outpatient services, including for BWH patients.	DFCI would provide inpatient and outpatient services in its new facility and become the preferred provider for BIDMC patients.  BIDMC and HMFP would cease providing these services in the Longwood area, with HMFP medical oncologists practicing at BIDMC joining DFCI. BIDMC and HMFP would continue to provide services outside the Longwood area.  DFCI would no longer provide services at BWH.
<b>Surgical Oncology</b>	BIDMC and HMFP provide surgical oncology services to their patients.  BWH provides surgical oncology services to DFCI patients.	BIDMC and HMFP would become DFCI's preferred providers of services in the Longwood area.
<b>Cancer Pathology</b> <b>Diagnostic Radiology</b>	BIDMC, HMFP, and DFCI provide cancer pathology and diagnostic radiology services.	DFCI, BIDMC, and HMFP would coordinate in operating these services, with both DFCI and BIDMC providing some services in their respective facilities and HMFP providing professional services to both.
<b>Radiation Oncology</b>	DFCI and BIDMC each provide radiation oncology services, with HMFP providing professional services at BIDMC.  BWH also provides radiation oncology services to DFCI patients.	DFCI, BIDMC, and HMFP would form a joint venture that would become the sole provider of radiation oncology care for their patients in the Longwood area. They would also form a joint radiation oncology physician organization to coordinate the provision of professional radiation oncology care.
<b>Other Clinical Services</b>	BIDMC and HMFP provide other inpatient and outpatient services.  BWH provides certain other clinical services to DFCI inpatients.	DFCI, BIDMC, and HMFP would continue to provide other clinical services, with BIDMC and HMFP becoming DFCI's preferred providers of other clinical services for its inpatients.

<sup>71</sup> *Id.*

<sup>72</sup> Based on information provided confidentially to the HPC.

<sup>73</sup> DFCI MCN, *supra* note 3; DFCI DoN NARRATIVE, *supra* note 8; Laurie Glimcher and Kevin Tabb, *Boston needs its own cancer center. Dana-Farber, BIDMC will create it*, BOSTON GLOBE, (Oct. 15, 2023), available at <https://www.bostonglobe.com/2023/10/16/opinion/cancer-dana-farber-beth-israel-mass-general-brigham/>; Jessica Bartlett, *Dana-Farber, in break with Brigham and Women's, will build new cancer center with Beth Israel*, BOSTON GLOBE, (Sept. 14, 2023), available at <https://www.bostonglobe.com/2023/09/14/metro/dana-farber-brigham-beth-israel-cancer/>; and Dave Muoio, *Dana-Farber, Beth Israel Deaconess collaborating on standalone cancer center*, FIERCE HEALTHCARE, (Sept. 15, 2023), available at <https://www.fiercehealthcare.com/providers/dana-farber-beth-israel-deaconess-collaborating-stand-alone-cancer-center>. Additional information provided by the parties to the HPC.

As a core element of the proposed affiliation, BIDMC and DFCI would collaborate to enable the construction of a new DFCI cancer hospital. The new facility would be built at 1 Joslin Place, the current location of the Joslin Diabetes Center which was acquired by BILH in 2021.<sup>74</sup> BILH would continue to own the land and would construct the building's underground and ground floor levels, while DFCI would construct, own, and operate a 14-story inpatient cancer facility at a projected cost of \$1,675,700,000.<sup>75</sup> The new facility would include the following elements:<sup>76</sup>

- **300** adult inpatient beds (an **addition of 270** beds to DFCI's license, with DFCI discontinuing its current lease of **30** beds at BWH)
- **20** new observation beds
- **2** additional magnetic resonance imaging (MRI) machines (DFCI currently operates **2**)
- **2** additional computerized tomography (CT) machines (DFCI currently operates **3**)
- **1** additional positron emission tomography (PET-CT) machine (DFCI currently operates **2**)
- **3** additional linear accelerators (LINACs) (DFCI currently operates **3**)
- A tunnel under and a bridge over Brookline Avenue connecting the facility to DFCI's Dana Building and a bridge over Pilgrim Road connecting the facility to BIDMC's West Campus.

DFCI estimates that the new facility would require approximately 2,400 new full-time-equivalent workers across both clinical and non-clinical roles and has stated that although this workforce does not currently exist in the market, it expects to meet these staffing needs through new and existing workforce pipelines.<sup>77</sup>

The parties expect the proposed affiliation to result in significant shifts in where patients at DFCI, BIDMC, and BWH receive oncology care. With BIDMC planning to discontinue medical oncology at its main campus and HMFP medical oncologists joining DFCI, the parties expect most BIDMC medical oncology patients to transition to DFCI in its new facility.<sup>78</sup> Because DFCI has historically provided substantially all medical oncology services at BWH, the parties also expect

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<sup>74</sup> See *supra* note 55. The Joslin Diabetes Center expects to move to a new location, which BILH has not yet identified. Joslin Diabetes Ctr, *Important News from Joslin Diabetes Center*, <https://www.joslin.org/about/news-media/important-news-joslin-diabetes-center> (last visited February 27, 2025).

<sup>75</sup> Additional information about the proposed physical plant can be found in materials submitted to the Boston Planning & Development Agency, which approved DFCI's institutional master plan proposal on October 10, 2024. See City of Boston Planning Department, *Dana-Farber Cancer Institute*, <http://www.bostonplans.org/projects/institutional-master-plans/hospitals/dana-farber-cancer-institute> (last visited February 27, 2025).

<sup>76</sup> DANA-FARBER CANCER INSTITUTE, DETERMINATION OF NEED APPLICATION DFCI-23040915-HE ATTACHMENT 6: CHANGE IN SERVICE TABLE [hereinafter DFCI DoN CHANGE IN SERVICE FORM], *available at* <https://www.mass.gov/doc/change-in-service-pdf-dana-farber-cancer-institute-inc-expenditure/download>.

<sup>77</sup> DANA-FARBER CANCER INSTITUTE, RESPONSE TO APPLICANT QUESTIONS #2 at Question 21 [hereinafter DFCI Response to Applicant Questions #2], *available at* <https://www.mass.gov/doc/responses-to-don-questions-2-pdf-dana-farber-cancer-institute-inc-hospitalclinic/download>; DANA-FARBER CANCER INSTITUTE, RESPONSE TO APPLICANT QUESTIONS #4 at Question 7 [hereinafter DFCI Response to Applicant Questions #4], *available at* <https://www.mass.gov/doc/responses-to-don-questions-4-pdf-dana-farber-cancer-institute-inc-hospitalclinic/download>; DANA-FARBER CANCER INSTITUTE, RESPONSE TO APPLICANT QUESTIONS #6 at Question 1(a), *available at* <https://www.mass.gov/doc/dana-farber-cancer-institute-responses-to-don-questions-6-pdf/download>.

<sup>78</sup> DFCI DoN NARRATIVE, *supra* note 8, at 18 and 28.

most BWH medical oncology patients to transition to the new DFCI facility, following their medical oncologists.<sup>79</sup> The parties also expect a significant shift of surgical oncology care associated with BWH patients to BIDMC, sufficient to fill BIDMC's inpatient capacity that has historically been used for medical oncology services.<sup>80</sup> The parties expect to attract further patient volume from other providers, including BIDMC patients seeking oncology care from other provider organizations, particularly MGB.<sup>81</sup>

The parties state the clinical affiliation would increase access to high-quality tertiary and quaternary adult oncology services for the highest acuity patients with the most complex diagnoses, treatment of whom is the primary objective for the new DFCI facility.<sup>82</sup> In DFCI's DoN submission, DFCI states that "need cannot be met by other hospitals within the Commonwealth because of the highly specialized nature of inpatient oncology care required by [DFCI's] patient panel and the growing demand for such care,"<sup>83</sup> and that this level of care is most appropriately provided through "dedicated inpatient cancer beds in a specialty hospital setting."<sup>84</sup> DFCI additionally states these beds would increase access to innovative and complex cancer treatments that require hospitalization.<sup>85</sup> The project, according to DFCI, "will provide patients with improved health outcomes, quality of life and access to cancer care services."<sup>86</sup>

The parties have stated to the HPC that they do not anticipate the proposed affiliation will result in changes to DFCI's existing clinical affiliations outside of the Longwood medical area. Specifically, DFCI has stated it does not anticipate changes to its clinical affiliations with community hospitals or to the Dana-Farber Cancer Care Collaborative, and that it desires to maintain its relationships with MGB at other outpatient sites. The parties also expect no changes to the Dana-Farber/Harvard Cancer Center research collaborative. MGB has not indicated that it expects changes to its collaborations with DFCI outside of the BWH relationship; however, MGB has stated it intends to continue providing medical oncology care at BWH under its Mass General Brigham Cancer program, a recent unification of oncology care departments at BWH and MGH,<sup>87</sup> and it is unclear whether DFCI's alignment with BILH would impact its other collaborations with MGB in future.

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<sup>79</sup> *Id.* at 28.

<sup>80</sup> *Id.*

<sup>81</sup> MGB has expressed an expectation that notwithstanding the parties' plans it will retain a majority of oncology care at BWH given its implementation of a unified Mass General Brigham Cancer service, its stated intention to maintain a medical oncology care program at BWH, and its expansion of oncology services at MGH as part of a new clinical tower currently under construction. Mass General Brigham, Comment Re: Application #DFCI-2304915-HE (Feb. 13, 2025) [hereinafter MGB ICA Comment], available at <https://www.mass.gov/doc/comments-on-ica-mass-general-brigham-pdf-dana-farber-cancer-institute-inc-expenditure/download>; Jonathan Saltzman, *Amid divorce with Dana-Farber, Mass General Brigham touts its own cancer institute*, BOSTON GLOBE, (Oct. 28, 2024), available at <https://www.bostonglobe.com/2024/10/28/business/mass-general-brigham-cancer-dana-farber/>.

<sup>82</sup> DFCI MCN, *supra* note 3.

<sup>83</sup> DFCI DoN NARRATIVE, *supra* note 8, at 23.

<sup>84</sup> *Id.* at 29.

<sup>85</sup> *Id.* at 29.

<sup>86</sup> *Id.* at 30.

<sup>87</sup> See *supra* note 81.

The implementation of the collaboration between DFCI, BIDMC, and HMFP and the building of the new hospital will require several years, according to the parties.<sup>88</sup> DFCI has stated it “anticipates that the proposed hospital would open approximately four years from the receipt of required regulatory approvals and completion of demolition of the existing building at 1 Joslin Place.”<sup>89</sup>

### C. Regulatory Oversight

In addition to the HPC’s review of the proposed transaction, DFCI is required to obtain a Determination of Need (DoN) from the Massachusetts Department of Public Health (DPH) for the construction of its proposed new hospital. Under its DoN authority, DPH evaluates proposed projects on a set of factors including but not limited to demonstrated need by the applicant’s patient panel, a showing that the project will compete on price and other measures of health care spending, and demonstration that the project will contribute to the Commonwealth’s goals for cost containment, improved public health outcomes, and delivery system transformation.<sup>90</sup> DPH staff review proposed projects and provide staff recommendations to the Public Health Council, which then votes to approve proposed projects and may set conditions for approval.

On February 2, 2024, the DoN program notified DFCI that it was requiring an independent cost-analysis (ICA) of the proposed new DFCI hospital project, as authorized under its statute to demonstrate that a proposed project is “consistent with the commonwealth’s efforts to meet the health care cost-containment goals established by the [health policy] commission”.<sup>91</sup> A third-party vendor<sup>92</sup> was engaged to conduct the analyses, at DFCI’s expense. The ICA report was accepted by DPH on January 14, 2025.<sup>93</sup> The ICA provides assessments of current utilization of inpatient oncology care in the Commonwealth, a forecast of future inpatient utilization, scenarios of how discharges might shift as a result of the proposed affiliation, an examination of prices for inpatient and certain outpatient service lines, potential changes in inpatient prices as a result of the proposed transaction, and projections of changes in medical spending under various scenarios as a result of the proposed transaction. Although many of the ICA’s methodologies appear similar to those used by the HPC and many findings are directionally consistent with the findings in this report, various differences in assumptions and methodologies lead to differences in results. Additionally, the HPC includes analyses of certain elements of the proposed transaction, particularly regarding outpatient services, not addressed in the ICA. We have included comparisons to the ICA’s methodologies and findings, where applicable, throughout this report. MGB provided comments on the ICA, including criticisms of its methodologies and findings.<sup>94</sup>

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<sup>88</sup> *Dana-Farber Beth Israel Deaconess Cancer Collaboration*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/about/dana-farber-beth-israel-deaconess-cancer-collaboration> (last visited February 27, 2025).

<sup>89</sup> DFCI STAFF REPORT, *supra* note 16, at 27.

<sup>90</sup> See 105 C.M.R. 100.210.

<sup>91</sup> Mass. Gen. Laws c. 111, §25C(h).

<sup>92</sup> The ICA was conducted by a team lead by Bryan Perry, PhD., of FTI Consulting.

<sup>93</sup> *Supra* note 14.

<sup>94</sup> MGB ICA comment, *supra* note 81.

The DoN program published its staff report on DFCI's application on February 18, 2025.<sup>95</sup> The staff report recommends approval of the project by the Public Health Council with conditions. The proposed conditions include reporting for five years after the completion of the new DFCI hospital on efforts to improve access to care; inpatient revenue, expenses, discharges, acuity, and demographics; quality and patient experience measures; radiation therapy patient volume; and source of admissions.<sup>96</sup> The report also recommends a condition for monitoring the annual growth in DFCI's inpatient revenue per case mix adjusted discharge.<sup>97</sup> The Council is expected to vote on the application at its meeting on March 20, 2025, and may accept, reject, or modify the recommendations in the staff report. If approved, the DoN may not go into effect until 30 days following the issuance of the HPC's final CMIR report on the proposed transaction, and DPH may rescind or amend an approved DoN based upon information in the HPC's CMIR reports as it relates to compliance with the DoN factors.<sup>98</sup>

### **III. ANALYSIS OF THE PARTIES' PAST PERFORMANCE AND IMPACTS OF THE PROPOSED TRANSACTION**

The HPC's analysis of a proposed transaction includes assessments of potential impacts on costs and market functioning, care delivery and quality, and access to and equity of care. In the following sections we examine the parties' baseline performance in each of these areas and then assess the potential impacts of the proposed transaction based on this past performance and the parties' stated plans and commitments.

#### **A. Costs and Market Functioning**

The law governing CMIRs directs the HPC to examine different measures of the parties' respective cost and market position, including their size, prices, health status adjusted total

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<sup>95</sup> DFCI STAFF REPORT, *supra* note 16.

<sup>96</sup> *Id.* at 84 and Appendix I.

<sup>97</sup> *Id.* at 84-85. Under the recommended condition, if the DoN program identifies increases substantial enough to raise concerns regarding cost containment, DPH would be able to require DFCI to explain the reasons for this growth to the Public Health Council. If DFCI's year-over-year growth in inpatient revenue per case mix adjusted discharge exceeds the level of that year's statewide health care cost growth benchmark, DFCI would have to explain this growth to DPH. If the Council were to determine the increase was not attributable to innovative treatments or forces beyond DFCI's control, it could require DFCI to develop a plan to make additional investments in its own health equity programs not greater than the amount by which inpatient spending exceeded the cost growth benchmark percentage. The HPC notes this condition does not address other potential spending increases that impact total health care spending, including those that may result from shifts of patients from other providers to DFCI, or potential changes in outpatient unit prices for outpatient services. This may create an incentive to disproportionately allocate future price increases to DFCI's already high-priced outpatient services. We also note that the condition would require DFCI to use any excess revenue for its own equity programs rather than returning excess spending to health care payers and consumers.

<sup>98</sup> 105 CMR 100.360(D).

medical expenses, and market shares.<sup>99</sup> The HPC examined the parties' performance on these measures over time and compared to other providers to establish a profile of the parties' baseline performance leading up to the proposed transaction. The HPC then combined the parties' performance to date with details of the transaction and the parties' goals and plans to project the likely impacts of the transaction on health care spending and market functioning.<sup>100</sup> The HPC's findings are summarized below.

#### Cost and Market Profile:

- DFCI and BIDMC both serve patients primarily from across eastern Massachusetts, with DFCI having a larger geographic reach.
- MGB (in conjunction with DFCI) and BILH are the two largest providers of inpatient and outpatient oncology services in their service areas and in the Commonwealth generally.
- DFCI and BIDMC commercial prices for *inpatient* medical and surgical oncology services, respectively, are generally lower than prices for the same services at BWH, but higher than those of some other hospitals.
- DFCI commercial *outpatient* prices are generally higher than outpatient oncology prices of other Massachusetts hospitals, while BIDMC's are generally moderate.

#### Cost and Market Impact:

- The proposed transaction and the construction of the new DFCI facility would likely result in large shifts in oncology volume from BIDMC, BWH, and other oncology providers to DFCI. BIDMC would also likely gain surgical oncology volume.
- For commercial insurers, inpatient care shifting to DFCI would likely reduce annual commercial spending by \$18.5 million to \$23 million at current prices.
- Backfill of newly available inpatient capacity at BIDMC would also likely reduce annual commercial spending by \$3.5 to \$5.3 million, while backfill of capacity at BWH would likely increase commercial spending by \$4.2 to \$15.9 million.
- Most shifts in hospital outpatient care as a result of the transaction would likely increase commercial spending, especially shifts in outpatient medical oncology given DFCI's high prices for hospital-administered oncologic drugs. In total these shifts would be likely to increase annual commercial outpatient spending by an estimated \$39 million; \$26.5

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<sup>99</sup> See Section I. Because provider organizations primarily negotiate with commercial, not government, payers for prices, commercial market share is more relevant for assessing the competitive impact of a transaction. Our assessments of market shares for provider organizations or contracting networks are based on the share of services of hospitals or physicians for which the organization establishes commercial contracts, as well as any providers from which a provider organization receives patient service revenue.

<sup>100</sup> One of the HPC's central responsibilities is to monitor health care spending to ensure that the Commonwealth can successfully meet the health care cost growth benchmark set forth in Chapter 224 of the Acts of 2012, and one mechanism through which we meet this responsibility is to conduct cost and market impact reviews. Mass. Gen. Laws ch. 6D, § 9 (requiring the HPC to establish annually "a health care cost growth benchmark for the average growth in total health care expenditures in the commonwealth," pegged to the growth rate of the gross state product).

million of this spending increase would be due to higher commercial prices for oncologic drugs at DFCI.

- Medicare spending may also increase as a result of the transaction. At current rates, shifts of inpatient care to DFCI would reduce Medicare spending by approximately \$5.7 million to \$9.1 million. However, DFCI's inpatient reimbursement from Medicare is based on its costs per patient, meaning that to the extent its costs per patient increase in the newly constructed hospital, its Medicare reimbursement rate would also increase, reducing any savings or potentially increasing spending. Shifts of outpatient Medicare volume to DFCI are likely to further increase spending, likely in excess of \$10 million annually.
- These spending impacts reflect current pricing. Any increases in the parties' prices as a result of the proposed transaction would reduce savings or increase spending. Commitments to limit future rate increases and address DFCI's already high outpatient prices may help to mitigate these concerns.

The remainder of this section discusses these findings in greater depth.

## **1. DFCI and BIDMC both serve patients primarily from across eastern Massachusetts, with DFCI having a larger geographic reach.**

The HPC examined the parties' market shares both statewide and within their primary service areas (PSAs).<sup>101</sup> Statewide market shares illustrate the parties' overall importance in Massachusetts, while shares and market concentration in primary service areas illustrate the parties' importance in those areas where most of their patients reside.<sup>102</sup> In order to assess DFCI's PSA for inpatient care, the HPC included all medical oncology discharges from DFCI-licensed beds as well as BWH-licensed beds, since DFCI physicians provide medical oncology care

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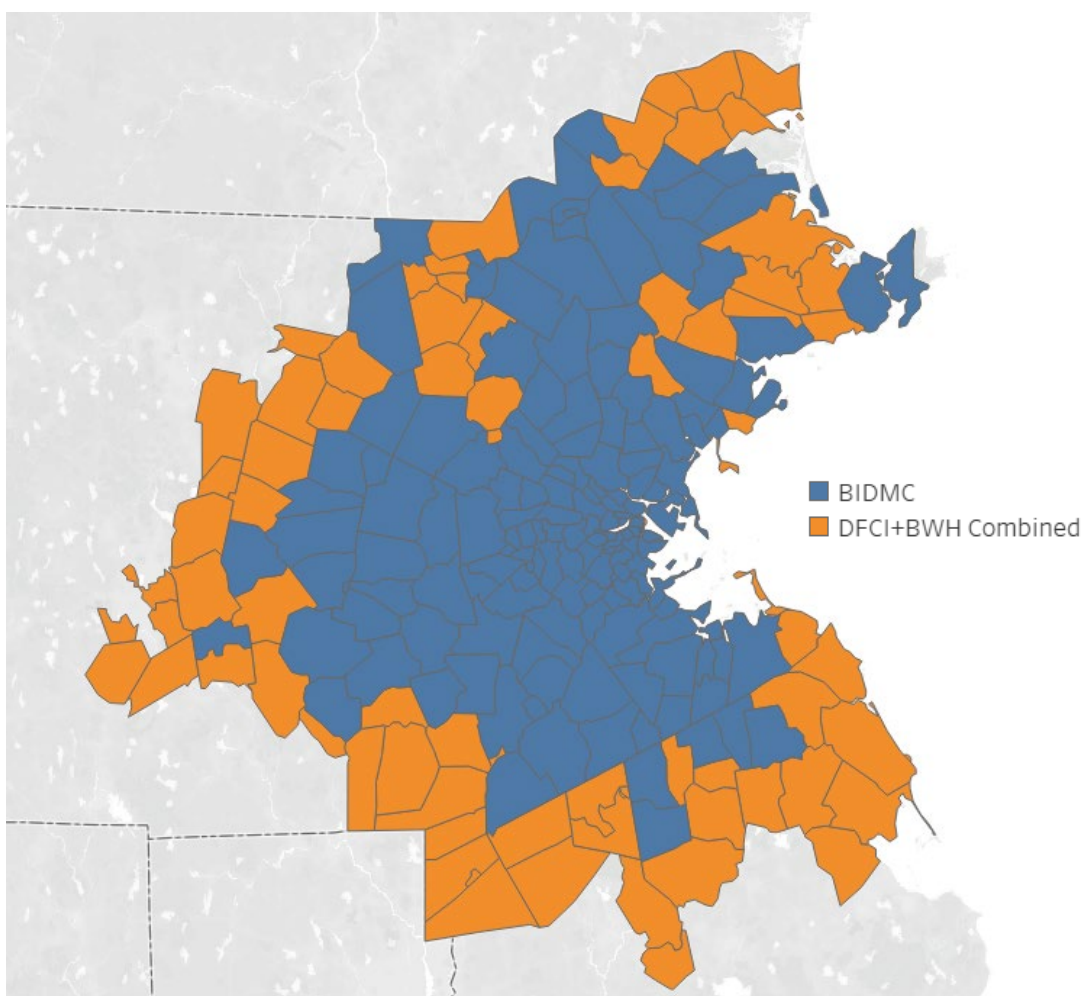
<sup>101</sup> The CMIR statute directs the HPC to "examine factors relating to the provider or provider organization's business and its relative market position," including "the provider or provider organization's size and market share within its *primary service areas*" and "the provider or provider organization's impact on competing options for the delivery of health care services within its *primary service areas*." Mass. Gen. Laws ch. 6D, § 13(d) (emphasis added). The HPC defines a hospital's inpatient and outpatient primary service areas or PSAs as the areas from which a hospital draws 75% of its inpatient and outpatient commercial patients, respectively. For details regarding the HPC's methodology for defining an inpatient PSA, see MASS. HEALTH POLICY COMM'N, TECHNICAL BULLETIN FOR 958 CMR 7.00: NOTICES OF MATERIAL CHANGE AND COST AND MARKET IMPACT REVIEWS at 5-6 (Aug. 6, 2014), available at

<https://masshpc.gov/sites/default/files/2023-04/958cmr7.00-technicalbulletin.pdf> (last visited February 27, 2025). As articulated by the Federal Trade Commission and Department of Justice, "[a]lthough a PSA does not necessarily constitute a relevant geographic market, it nonetheless serves as a useful screen for evaluating potential competitive effects." Statement of Antitrust Enforcement Policy Regarding Accountable Care Organizations (ACO), 76 Fed. Reg. 67026, 67028 at 3 (Oct. 28, 2011), available at <http://www.gpo.gov/fdsys/pkg/FR-2011-10-28/pdf/2011-27944.pdf> (last visited February 27, 2025).

<sup>102</sup> HPC analysis of 2022 CHIA hospital discharge data show that out-of-state patients made up 21% of discharges from DFCI's licensed beds and 23.6% of medical oncology discharges for DFCI and BWH combined. Out-of-state patients made up 4.4% of BIDMC medical oncology discharges in that year. While out-of-state patients are a substantial component of DFCI's patient base and the HPC assumes DFCI will continue to be an important resource for non-Massachusetts residents seeking world-class cancer care, our analyses focus on market share, spending, quality, and access implications for residents of the Commonwealth.

to BWH patients.<sup>103</sup> DFCI and BWH combined draw patients from across Massachusetts and from other states, but their PSA, the set of zip codes from which they draw 75% of their inpatient commercial oncology discharges for Massachusetts patients, covers most of eastern Massachusetts and extends into central Massachusetts as shown in Figure III.A.1. BIDMC's commercial inpatient oncology PSA is smaller but also covers a large portion of eastern Massachusetts and part of central Massachusetts.

**Figure III.A.1: 2022 Commercial Inpatient Oncology Primary Service Areas**



Source: HPC analysis of 2022 CHIA hospital discharge data

Notes: PSAs include ZIP codes from which the hospitals drew 75% of adult oncology discharges for Massachusetts residents. DFCI+BWH's combined PSA includes all zip codes in BIDMC's PSA except 01922 and 01969.

<sup>103</sup> The HPC found that DFCI alone had too few commercial discharges to form a reasonably contiguous inpatient PSA. The HPC also found little difference between the geography of a combined DFCI/BWH inpatient PSA using medical, surgical, or combined oncology discharges; Figure III.A.1 shows the PSA based on all oncology discharges for comparison to BIDMC's PSA.

## 2. MGB (in conjunction with DFCI) and BILH are the two largest providers of inpatient and outpatient oncology services in their service areas and in the Commonwealth generally.

Comparisons of providers' market shares show their relative importance to patients and the payers that cover those patients. The HPC examined the parties' market shares both statewide and within their PSAs. Statewide market shares illustrate the parties' overall importance in Massachusetts, while shares and market concentration in PSAs illustrate the parties' importance in those areas where most of their patients reside.

### a. Inpatient Market Shares

The HPC examined shares of inpatient oncology discharges statewide, in BIDMC's PSA, and in the combined PSA of DFCI and BWH.<sup>104</sup> Figure III.A.2 shows shares of adult commercial oncology discharges in each PSA, separated by medical and surgical oncology service lines.<sup>105</sup>

**Figure III.A.2: 2022 Commercial Shares of Inpatient Oncology Services**

Hospital/System	Shares of medical oncology discharges			Shares of surgical oncology discharges		
	Statewide	BIDMC PSA	DFCI/BWH PSA	Statewide	BIDMC PSA	DFCI/BWH PSA
<b>Dana-Farber Cancer Institute</b>	<b>3.8%</b>	<b>4.3%</b>	<b>3.9%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.5%</b>
<b>Mass General Brigham</b>	<b>39.6%</b>	<b>48.4%</b>	<b>45.8%</b>	<b>47.6%</b>	<b>55.8%</b>	<b>53.9%</b>
<i>Brigham and Women's Hospital</i>	19.4%	21.5%	21.0%	22.3%	23.1%	24.1%
<i>Massachusetts General Hospital</i>	14.1%	19.1%	17.6%	17.4%	22.7%	20.6%
<b>Beth Israel Lahey Health</b>	<b>17.3%</b>	<b>24.1%</b>	<b>21.4%</b>	<b>18.5%</b>	<b>25.8%</b>	<b>22.7%</b>
<i>Beth Israel Deaconess Medical Center</i>	8.8%	13.1%	11.0%	9.9%	14.1%	11.8%
UMass Memorial Health Care	8.1%	2.0%	5.1%	7.6%	1.4%	4.7%
Tufts Medicine	5.8%	7.4%	7.6%	5.4%	6.8%	7.0%
Boston Medical Center Health System	3.4%	5.2%	4.6%	4.2%	4.6%	4.5%
Other Provider Organizations	22.1%	8.7%	11.7%	16.3%	5.2%	6.7%

Source: HPC analysis of the 2022 CHIA hospital discharge database

Notes: BIDMC and DFCI/BWH PSAs are defined using all adult commercial oncology discharges. See the Data Appendix, Figure A1, for a more detailed table of commercial shares of inpatient oncology services. System shares reflect the shares of all hospitals that were part of these systems at the time this report was published.

<sup>104</sup> The HPC examined shares in PSAs specific to medical oncology and surgical oncology and found little difference in these shares as compared to those in the party PSAs for all oncology services.

<sup>105</sup> See the Data Appendix, Figure A2, for a table showing all-payer oncology discharge shares. At the hospital level, BIDMC, DFCI, and BWH all have higher shares of commercial discharges than they have of all-payer discharges. At the system level, MGB's share of commercial discharges is higher than its share of all discharges, while BILH's share of commercial discharges is lower than its share of all discharges.

While DFCI has a small share of medical oncology discharges given its small number of licensed beds, DFCI medical oncologists also manage medical oncology patients at the hospital with the largest share, BWH. At the system level, MGB provides the largest share of oncology discharges of all types, both statewide and in the parties' PSAs. BWH and MGH provide most of MGB's oncology discharges and have the highest shares of oncology discharges of individual hospitals in the Commonwealth, although other MGB hospitals also provide inpatient cancer care.<sup>106</sup> BILH provides the second largest share of oncology discharges after MGB. BIDMC is the largest inpatient oncology provider within BILH, although Lahey also provides a significant volume of oncology discharges.

#### **b. Outpatient Market Shares**

As discussed in Section II.A.1, DFCI provides a substantial majority of its care on an outpatient basis. To assess outpatient market shares, the HPC defined several outpatient service lines relevant to oncology care and examined statewide shares of commercial outpatient visits for oncology care within each service line.<sup>107</sup> DFCI and MGB provide the largest volume of outpatient oncology services in the Commonwealth. DFCI is the largest provider of outpatient oncologic drugs and infusion services, while MGB is the largest provider of radiation oncology and mammography services. BILH is the third-largest provider of each of these outpatient service lines.

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<sup>106</sup> MGB provides oncology care at its community hospitals, including Newton-Wellesley, Cooley Dickinson, Martha's Vineyard, and Nantucket Cottage hospitals, as well as through clinical affiliations with Emerson Hospital, South Shore Hospital, and with provider systems in Maine and New Hampshire. *Community Locations*, MASS GENERAL BRIGHAM, <https://www.massgeneral.org/cancer-center/about/community-locations> (last visited February 27, 2025).

<sup>107</sup> For outpatient market share analysis, we focus on service lines for which most services billed are expected to be oncology-related, including administration of infusion and oncologic drugs (together, medical oncology), radiation oncology (LINAC and radiation therapy preparation with CT simulators), and mammography. To further ensure that shares reflect only oncology-related services, the analysis is limited to visits that include at least one claim billed with a cancer diagnosis code. The HPC defined outpatient service clusters for outpatient services as described in Section B of the Data Appendix. While the HPC examined several other relevant outpatient service lines for price and spending analyses, including diagnostic radiology, laboratory/pathology, and outpatient surgery, claims in these service lines did not reliably include cancer-related diagnosis codes that distinguish oncology from non-oncology care for the purpose of market share analysis (e.g., not all diagnostic imaging related to oncology includes a known cancer diagnosis before imaging occurs).

**Figure III.A.3: 2022 Statewide Commercial Shares of Outpatient Visits**

Hospital/System	Infusion administration	Oncologic drugs	Radiation oncology	Mammography
<b>Dana-Farber Cancer Institute</b>	<b>38.7%</b>	<b>34.7%</b>	<b>15.1%</b>	<b>25.2%</b>
<b>Mass General Brigham</b>	<b>21.2%</b>	<b>20.3%</b>	<b>48.8%</b>	<b>42.8%</b>
<i>Massachusetts General Hospital</i>	15.4%	12.6%	35.8%	25.5%
<i>Brigham and Women's Hospital</i>	0.2%	1.5%	10.1%	2.8%
<b>Beth Israel Lahey Health</b>	<b>15.7%</b>	<b>16.8%</b>	<b>12.0%</b>	<b>20.0%</b>
<i>Beth Israel Deaconess Medical Center</i>	10.4%	8.7%	2.3%	4.5%
Baystate Health	6.4%	9.1%	4.4%	2.8%
UMass Memorial Health Care	4.7%	4.5%	1.6%	3.5%
Tufts Medicine	2.6%	2.8%	3.0%	2.3%
Boston Medical Center Health System	1.0%	1.4%	0.7%	0.6%
<b>Other provider organizations</b>	<b>9.7%</b>	<b>10.4%</b>	<b>14.4%</b>	<b>2.8%</b>

Source: HPC analysis of the 2022 CHIA all-payer claims database

Notes: Limited to services provided by hospitals and ambulatory surgical centers. Excludes out-of-state patients and patients under 18 years of age. All claims on the same day at the same provider for the same patient were counted as a single visit. See the Data Appendix, Figure A3, for a more detailed table of commercial shares of outpatient oncology services. System shares reflect the shares of all hospitals that were part of these systems at the time this report was published.

### **3. DFCI and BIDMC commercial prices for inpatient medical and surgical oncology services, respectively, are generally lower than prices for the same services at BWH but higher than those of some other hospitals.**

#### **a. Inpatient Commercial Prices**

The HPC used claims data to calculate the average commercial price of an inpatient oncology discharge at the parties' hospitals and at other major providers of inpatient oncology care in order to understand how the parties' current prices compare to those of other providers.<sup>108</sup> The HPC adjusted prices to normalize for patient acuity and the mix of commercial

<sup>108</sup> Because CHIA inpatient relative prices are based on the network-wide total of discharges across all general acute care hospitals in the Commonwealth, they may not accurately provide a comparison of prices between DFCI as a specialty oncology hospital and other hospitals that provide other types of inpatient care. The HPC used 2022 commercial facility claims data for BCBS, HPHC, THP, HNE, MGBHP, and Anthem from CHIA's 2022 All-Payer Claims database to calculate an average inpatient price per discharge for each hospital, separately for medical oncology and surgical oncology services as defined in Section I. Hospitals' average prices were then adjusted for patient acuity using the average MS-DRG case weight for discharges at each hospital. Because a providers' prices vary by payer, we first calculated price per case mix adjusted discharge for each payer/hospital combination. This approach appears similar to the methodology used in Section XI of the ICA. The HPC then further weighted each provider's average price per discharge by the average mix of commercial payers across all providers for oncology services. The HPC then divided each hospital's adjusted price by the average adjusted price among all hospitals in the sample with at least 11 medical or surgical oncology discharges (respectively, for each service line) to arrive at a relative inpatient

payers among each hospital's oncology discharges, and separately assessed average prices for medical and surgical discharges.

As shown in Figure III.A.4, DFCI's average commercial price for adult medical oncology discharges is 1% higher than the average provider's prices statewide, BIDMC's is 26% higher, and BWH's is 29% higher. DFCI's average commercial inpatient medical oncology price is lower than prices of most Massachusetts academic medical centers, but higher than the prices of many community hospitals that provide medical oncology services.

For surgical oncology discharges, BIDMC's average commercial price is 11% higher than the average provider's prices statewide, and BWH's is 31% higher. BIDMC's average surgical oncology price is moderate compared to other AMCs, but many community hospitals that provide inpatient surgical oncology do so at a lower average price than BIDMC. BWH's average price for surgical oncology is among the highest statewide.

**Figure III.A.4: 2022 Commercial Oncology Relative Prices per Case Mix Adjusted Discharge**

Hospital	Price Relative to Average Hospital	
	Medical Oncology	Surgical Oncology
Tufts Medical Center	1.34	1.04
UMass Memorial Medical Center	1.32	1.15
Lahey Hospital and Medical Center	1.30	1.29
Brigham and Women's Hospital	1.29	1.31
Beth Israel Deaconess Medical Center	1.26	1.11
Salem Hospital	1.23	0.78
Massachusetts General Hospital	1.15	1.31
St. Elizabeth's Medical Center	1.13	1.16
Baystate Medical Center	1.12	0.90
Dana-Farber Cancer Institute	1.01	1.35
South Shore Hospital	0.98	0.93
Newton-Wellesley Hospital	0.94	0.97
Cape Cod Hospital	0.88	0.91
Milford Regional Medical Center	0.87	0.90

Source: HPC analysis of the 2022 CHIA all-payer claims database

Notes: Although DFCI does not generally provide surgical oncology services, 14 of its discharges were classified as surgical in our analysis because the MS-DRG grouper used in the all-payer claims database assigned the discharges a surgical DRG.

medical or surgical oncology price. Section A of the Data Appendix provides additional detail regarding the HPC's inpatient price methodology.

## b. Inpatient Medicare Fee-For-Service Prices

In the commercially insured market, prices for health care services are established through private negotiations between payers and providers, resulting in substantial provider price variation. Medicare prices by contrast are administratively set by CMS. Most acute care hospitals are paid by Medicare based on its prospective payment system (PPS). Under the inpatient PPS, all hospitals receive the same base rates for inpatient care that are adjusted for service-specific characteristics, such as DRG weight, and hospital-specific characteristics, including the amount of care the hospital provides to low-income patients and the hospital's graduate medical education expenses. Under this system, there is generally less provider price variation and less opportunity for spending impacts as a result of proposed transactions. However, DFCI is a PPS-exempt cancer hospital, which means it is not paid under Medicare's inpatient PPS. Inpatient payments to hospitals of this type are tied to the hospital's reported costs rather than to characteristics of the hospital or the services provided. This section examines historical Medicare inpatient reimbursement rates for DFCI and for oncology care at other hospitals in the Commonwealth to inform analyses of impacts on Medicare spending as patients shift to DFCI; since DFCI's Medicare reimbursement is based on a hospital's reported costs, DFCI's rates may change in the future if its cost per patient changes as a result of the proposed transaction.<sup>109</sup>

The HPC estimated DFCI's average inpatient Medicare fee-for-service (FFS) price based on its Medicare revenue, number of discharges, and average Medicare case mix in 2022.<sup>110</sup> For other hospitals, the HPC identified Medicare FFS oncology discharges in the 2022 hospital discharge database and applied Medicare's inpatient PPS pricing methodology to each discharge to estimate what Medicare is likely to have paid for the discharge, adjusted by the average case mix of the discharges.<sup>111</sup> We then calculated each hospital's average Medicare price for inpatient oncology relative to the statewide average hospital's price. As shown in Figure III.A.5, DFCI's average Medicare price has historically been higher than the statewide average for inpatient oncology services, but lower than the prices of other Boston-area AMCs and teaching hospitals. This is likely due primarily to supplemental payments to these hospitals for disproportionate

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<sup>109</sup> DFCI states that it expects an estimated increase of \$360 million in annual operating expenses as a result of the proposed project. DFCI DoN NARRATIVE, *supra* note 8, at 51. While its increased operating costs are anticipated to be spread across a larger patient base, it is nonetheless possible that DFCI will see an increase in its costs per patient and, as a result, its cost-based reimbursement from Medicare.

<sup>110</sup> To estimate a price per case mix adjusted Medicare fee-for-service (FFS) discharge at DFCI, the HPC divided DFCI's reported Medicare FFS payments by its reported Medicare FFS discharges from its 2022 hospital cost report. We then divided by the average case mix index of Medicare FFS discharges reported by DFCI in CHIA's 2022 hospital discharge database.

<sup>111</sup> For PPS hospitals, the HPC calculated a Medicare facility payment based on each discharge's MS-DRG and hospital specific payments according to Medicare inpatient PPS payment rules, including the Medicare base payment (with DRG adjustment and wage and capital geographic adjustments) as well as teaching and DSH payments, special payment rates for sole community providers, and uncompensated care amount per Medicare claim. We then divided each hospital's average Medicare payment per oncology discharge by the average case mix index of its discharges to estimate a case mix adjusted price per discharge. See *FY2022 Impact File (final rule)*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://www.cms.gov/medicare/medicare-fee-service-payment/longtermcarehospitalpps/ltchpps-historical-impact-files/fy-2022-impact-file-final-rule> (last visited February 27, 2025) and *FY2022 IPPS Final Rule Home Page*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://www.cms.gov/medicare/payment/prospective-payment-systems/acute-inpatient-pps/fy-2022-ippss-final-rule-home-page> (last visited February 27, 2025).

share, teaching programs, and uncompensated care.<sup>112</sup>

**Figure III.A.5: 2022 Medicare FFS Medical Oncology Prices per Case Mix Adjusted Discharge**

Hospital	Price relative to average hospital
Boston Medical Center	1.48
UMass Memorial Medical Center	1.40
Tufts Medical Center	1.29
Beth Israel Deaconess Medical Center	1.25
Brigham and Women's Hospital	1.24
Massachusetts General Hospital	1.20
Dana-Farber Cancer Institute	1.10
Lahey Hospital and Medical Center	1.06
Mount Auburn Hospital	1.04
Salem Hospital	0.96
Newton-Wellesley Hospital	0.95
Lowell General Hospital	0.91
Milford Regional Medical Center	0.91
Northeast Hospital	0.89
South Shore Hospital	0.88
Winchester Hospital	0.87

Source: HPC analysis of 2022 CHIA hospital cost report data, the 2022 CHIA hospital discharge database, and the 2022 CMS Medicare impact file downloaded from <https://www.cms.gov/medicare/payment/prospective-payment-systems/acute-inpatient-pps/fy-2022-ipp-final-rule-home-page>

#### **4. DFCI commercial outpatient prices are generally higher than outpatient oncology prices of other Massachusetts hospitals, while BIDMC's are generally moderate.**

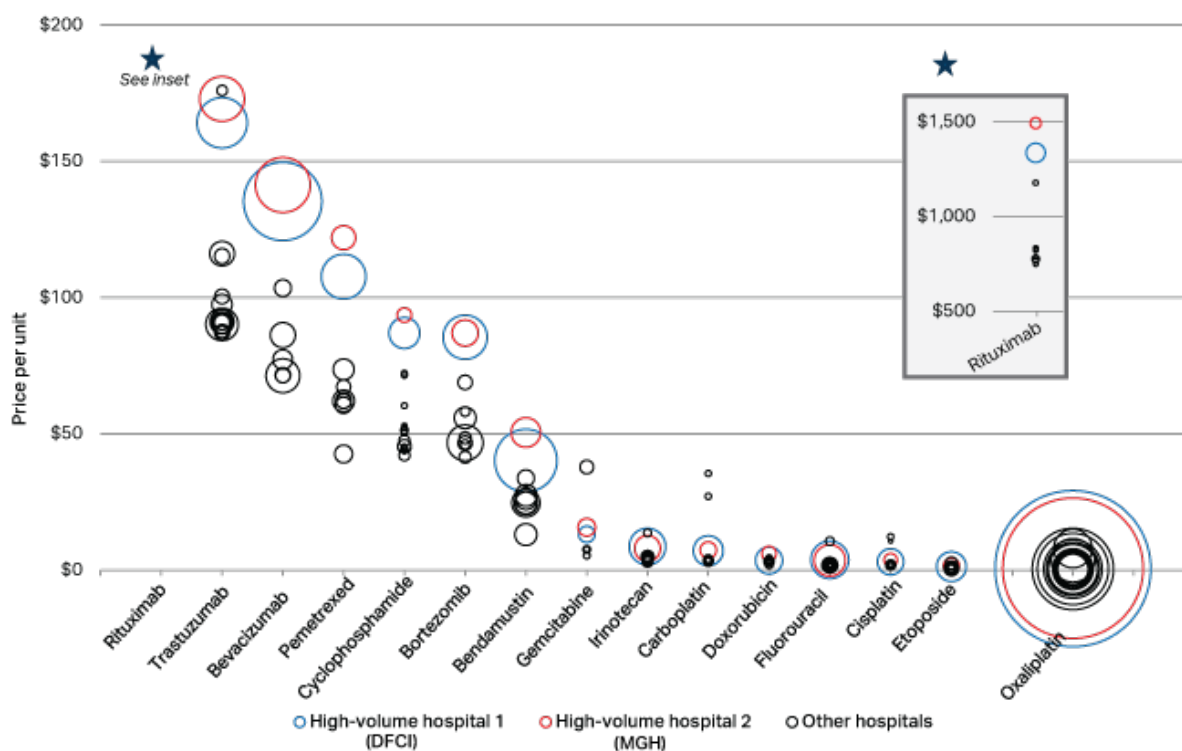
The HPC examined commercial prices in service lines commonly provided as part of outpatient oncology care, including medical oncology, radiation oncology, diagnostic radiology (separately by imaging modality), laboratory and pathology services, and evaluation and management visits with medical oncologists.

<sup>112</sup> See MASS. HEALTH POLICY COMM'N, 2024 ANNUAL HEALTH CARE COST TRENDS REPORT AND POLICY RECOMMENDATIONS CHARTPACK at 41 (Oct. 2024) [hereinafter 2024 HPC COST TRENDS REPORT] (showing near-uniform Medicare base rate payments across Massachusetts hospitals but substantially higher total payments per case mix adjusted discharge for many hospitals, including BIDMC and BWH), available at <https://masshpc.gov/sites/default/files/2024%20CTR%20Chartpack.pdf>. MGB's analysis of differences in Medicare prices in its comment on the DFCI ICA differs from that of the HPC in that it appears not to account for supplemental payments, resulting in lower average Medicare prices for other hospitals relative to DFCI. MGB ICA Comment, *supra* note 81, at 5-6.

## a. Oncologic Drugs

In its examinations of prices for oncologic and other clinician-administered drugs, the HPC has consistently found substantial variation in commercial prices between providers. The HPC's 2018 Cost Trends Report contained an analysis of the 2016 commercial prices for 15 high-volume chemotherapy drugs, as shown in Figure III.A.6 below.<sup>113</sup> The analysis found that for all but one of the drugs examined, the price at the highest-priced hospital was more than twice the price at the lowest-priced hospital. It also found that the two hospitals that provided the highest volume of the drugs examined had the highest prices for chemotherapy drugs. These two hospitals with the highest volume and the highest chemotherapy drug prices were DFCI and MGH.

**Figure III.A.6: Variation by hospital in chemotherapy drug unit prices and volume, 2016 (as previously published)**



Notes: Data include 2016 Blue Cross Blue Shield of Massachusetts and Tufts Health Plan claims. Sample includes all injectable chemotherapy drugs for which there were more than 10 claims in at least 10 hospitals in 2016. Each bubble represents one hospital in Massachusetts. The area of each bubble is scaled by the total number of units administered by each hospital. Prices represent volume-weighted averages of claims. Claims from Harvard Pilgrim Health Care were excluded due to coding anomalies. See Technical Appendix for additional data.

Sources: HPC analysis of Massachusetts All-Payer Claims Database, 2016

<sup>113</sup> See MASS. HEALTH POLICY COMM'N, 2018 ANNUAL HEALTH CARE COST TRENDS REPORT AND POLICY RECOMMENDATIONS at 17-18 (Feb. 2019), available at <https://dev-hpc-training.pantheonsite.io/sites/default/files/2023-04/2018%20Cost%20Trends%20Report.pdf> (last visited February 27, 2025).

More recently, the HPC examined 2022 commercial prices for the drug Keytruda, an immunotherapy drug used to treat 17 types of cancer.<sup>114</sup> DFCI had the highest price statewide, and its price for a standard dose was double the lowest provider's price. BIDMC was one of the lower-priced providers, with prices only 5% above those of the lowest-priced provider. BWH does not provide medical oncology services and was not included in the analysis, but two MGB hospitals, MGH and Newton-Wellesley Hospital, had the second highest and third highest prices for Keytruda, respectively.

An updated analysis of prices for oncologic drugs yielded similar results. The HPC calculated the average commercial prices per unit of high-revenue chemotherapy drugs at DFCI, BIDMC, and MGH in the 2022 CHIA All-Payer Claims Database.<sup>115</sup> DFCI's prices were on average 106% higher than BIDMC's prices and 9% higher than MGH's prices, adjusting for the mix of drugs provided at BIDMC and MGH.<sup>116</sup>

## **b. Other Outpatient Facility Service Lines**

For the other outpatient facility service lines commonly provided as part of oncology care, the HPC compared each facility's commercial price with the statewide average price for each service line.<sup>117</sup> We found that for most service lines, DFCI is higher-priced than the average

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<sup>114</sup> See 2024 HPC COST TRENDS REPORT *supra* note 112, at 49.

<sup>115</sup> The HPC compared prices of high-revenue outpatient drug codes billed with a cancer diagnosis code in the primary position that either a) have a Berenson-Eggers Type of Service (BETOS) subcategory of "chemotherapy agent," b) have a Level 1 category of antineoplastic and immunomodulating agents under the Anatomical Therapeutic Chemical (ATC) Classification system as defined by the World Health Organization, and/or c) are in the HCPCS Level II chemotherapy drug code range (J0000-J9999). We grouped claims containing these codes into encounters for the same patient, date of service, and procedure code, and dropped encounters with a nonzero allowed amount per unit that was less than 20% of or greater than 10 times the median allowed amount for the payer/provider/procedure code. For BIDMC and MGH separately, we identified the highest-revenue codes making up at least 80% of the hospital's chemotherapy drug revenue that had at least 10 encounters for one payer in the 2022 CHIA All-Payer Claims Database. We kept payers with at least 10 encounters per provider/procedure code. We then applied DFCI's prices to BIDMC's and MGH's procedure code and payer mix to estimate what DFCI would have been paid for BIDMC's and MGH's mix of services, respectively, and compared DFCI's estimated revenue with BIDMC's and MGH's actual revenue captured in the APCD to estimate the difference between the hospitals' prices.

<sup>116</sup> We note that BIDMC and MGH both qualify for and participate in the 340B drug pricing program administered by the federal Health Resources & Services Administration, which allow them to obtain outpatient drugs, including oncology drugs, at a significant discount from manufacturers. See 340B Drug Pricing Program, HEALTH RESOURCES & SERVS. ADMIN., <https://www.hrsa.gov/opa> (last visited February 27, 2025). DFCI does not currently qualify for participation in 340B; it is not clear whether the proposed transaction would change its ability to qualify for participation in the program, however, an increasing proportion of Medicaid patient days would bring the hospital closer to reaching the threshold at which it becomes eligible.

<sup>117</sup> The HPC calculated each provider's average price per encounter observed in CHIA's 2022 All-Payer Claims Database for high-volume codes within each service line and compared the observed average price to the what the provider's average price per encounter would have been if its claims had been priced at the statewide average rates for each payer and procedure code. Payers with fewer than 10 encounters for a given procedure code were dropped from the calculation. The HPC then rescaled the ratio of observed to

provider. DFCI unit prices for lab services provided to cancer patients are more than two and a half times higher than the prices for the average provider. Its prices for infusion administration and radiation oncology are 40% and 60% higher than the average provider's prices, respectively. Its prices for imaging services range from 6% to 38% above average.

BIDMC outpatient oncology prices are moderate compared with those of other providers, ranging from 27% lower than average to 31% higher than average. BWH is one of the higher-priced providers for these service lines, with prices ranging from 3% lower than average to 61% higher than average. BWH average prices are lower than DFCI prices for all but two service lines.

**Figure III.A.7: Commercial Outpatient Price Relativities by Service Line**



Source: HPC analysis of the 2022 CHIA All-Payer Claims Database

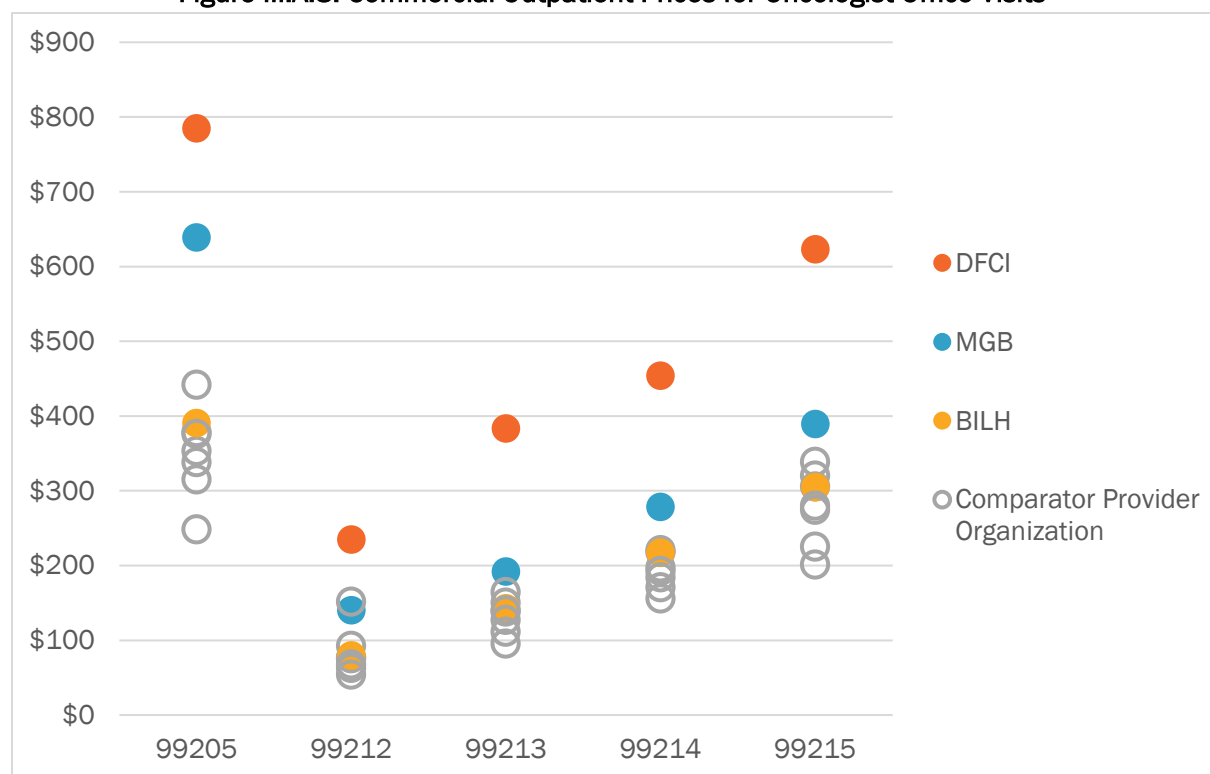
Notes: Comparator providers include Baystate Medical Center, UMass Memorial Medical Center, Cape Cod Hospital, Newton-Wellesley Hospital, Tufts Medical Center, Lahey Hospital and Medical Center, and Shields. Relative prices are adjusted for the mix of services and commercial payers within each service line.

### c. Oncologist Office Visits

“expected” prices by the average ratio across all hospitals in the state. See Section C of the Data Appendix for a list of procedure codes included in each service line.

The HPC also examined provider organizations' commercial prices for office visits with oncologists.<sup>118</sup> DFCI has the highest prices for oncologist office visits statewide, and MGB has the second-highest prices for most codes. Depending on the code billed, DFCI prices are between 23% and 100% higher than MGB prices. DFCI prices are between two and three times higher than BILH prices for oncologist office visits. We note, however, that shorter, less-expensive visit codes made up a higher proportion of DFCI's office visits than for BIDMC and BWH.

**Figure III.A.8: Commercial Outpatient Prices for Oncologist Office Visits**



Source: HPC analysis of the 2022 CHIA All-Payer Claims Database

Notes: Prices are weighted by the statewide average payer mix for each code. Comparator provider systems include UMass Memorial Healthcare, Atrius Health, Tufts Medicine, Steward Healthcare, Southcoast Health, Baystate Health, and Berkshire Health System.

The HPC's assessment of outpatient prices varies somewhat from that in the ICA. The ICA only estimated outpatient prices for CT and PET imaging and radiation oncology services, finding

<sup>118</sup>The HPC compared BCBS, HPHC, THP, HNE, MGBHP, and Anthem prices for the five evaluation and management CPT codes with the highest commercial volume at DFCI: 99205, 99212, 99213, 99214, and 99215. DFCI bills these codes on facility claims only, while most providers bill them on professional claims or a combination of professional and facility claims. We included both professional and facility allowed amounts for the same patient on the same day for the same code, where applicable. For providers other than DFCI, we matched the physician NPI billed on the physician claim to the physician's specialty indicated on the entity's RPO roster to identify which visits are with oncologists. If a visit included claims from multiple provider networks, the provider network was assigned based on the professional claim with the highest allowed amount. We were unable to identify the individual physician associated with the facility office visit claims billed by DFCI, so we treated all DFCI office visits as in-scope for this analysis. The vast majority of physicians employed by DFCI are oncologists.

DFCI had lower commercial prices for LINAC treatment than BIDMC and BWH and higher prices for CT, PET, and CT simulator services.<sup>119</sup> The ICA did not assess other outpatient prices, including prices for infusion administration, oncologic drugs, mammography, or laboratory services.

**5. At current prices, commercial inpatient spending may decline as care shifts to DFCI and BIDMC, although backfill at BWH would increase spending.**

DFCI has proposed a new facility that would include 300 inpatient medical oncology beds, which DFCI expects would have average occupancy of 95%.<sup>120</sup> BIDMC would stop providing medical oncology services and HMFP medical oncologists would become DFCI medical oncologists under the transaction, and the parties anticipate that most of BIDMC's medical oncology discharges would likely transition to the new DFCI facility. The parties also expect that most BWH medical oncology discharges would transition to DFCI's new facility, following their DFCI medical oncologist, although given MGB's stated intention to continue medical oncology at BWH it is not clear to what extent BWH would lose discharges as a result of the proposed transaction. Research literature cited by DFCI and in the ICA support the proposition that patient relationships with their medical oncologist frequently determine how and where patients receive oncology care. However, by the time the new DFCI facility opens, many new oncology patients will have been diagnosed while other current patients will no longer need inpatient care. Current patient relationships with medical oncologists will therefore not necessarily fully determine where future patients receive inpatient care.

The HPC modeled potential shifts in inpatient care under several scenarios to assess where patients of the proposed DFCI facility would be likely to come from if DFCI achieves its expected utilization. In one scenario, the "party scenario" mirroring DFCI's expectations in its DoN application, we first assumed that all current medical oncology discharges from DFCI, BIDMC, and BWH would shift to the new DFCI facility, and then predicted the origin of the remaining discharges using an econometric model based on the characteristics of oncology patients that have historically used each hospital.<sup>121</sup> In the second "model-driven scenario," we assumed all current DFCI and BIDMC discharges would shift to the new facility, then used the econometric patient choice model to predict the origin of all other discharges. We then combined these projected shifts with oncology-specific hospital prices and adjusted for the case mix of shifting discharges to estimate the spending impacts of predicted inpatient shifts.<sup>122</sup>

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<sup>119</sup> See DFCI ICA, *supra* note 14, at Table 29 and Table 38.

<sup>120</sup> DFCI DoN CHANGE IN SERVICE FORM, *supra* note 76, at 2.

<sup>121</sup> The HPC used a multinomial logit hospital choice model to predict where the patients filling DFCI's new facility are likely to come from, separately predicting patients shifts for commercially insured and Medicare-insured patients. The HPC's models exclude patients under 18 years old and assume DFCI would have similar payer mix and have a similar proportion of discharges of out-of-state patients in future. See the Data Appendix at Section A for additional details on the HPC's model.

<sup>122</sup> After predicting the origin of discharges filling the new facility, the HPC estimated a spending impact of each scenario based on the difference in average prices per medical oncology discharge at DFCI and other hospitals. Using 2022 APCD claims data, we calculated an average facility price per case mix adjusted discharge for each potential origin hospital, and a corresponding DFCI facility price adjusted by each origin hospital's payer mix, assuming that the shifting discharges would have a payer mix similar to the origin

We found that most discharges shifting to DFCI would come from hospitals with higher historic commercial prices than DFCI for medical oncology services, and therefore both models predict a decrease in annual commercial spending based on current prices.<sup>123</sup> Savings would be greater if more discharges originate from BWH, as in Scenario 1. The HPC estimates that the expected shift of approximately 2,339 to 2,477 commercial discharges each year would decrease commercial spending on inpatient care by \$18.5 million to \$23 million annually, adjusting for patient acuity.<sup>124</sup>

**Figure III.A.9: Commercial Spending Impacts of Inpatient Shifts to DFCI**

	Commercial discharges to DFCI	Spending impact
<b>Scenario 1</b> ("party scenario")	2,339	(\$23 million)
<b>Scenario 2</b> ("model-driven scenario")	2,477	(\$18.5 million)

As medical oncology discharges shift to DFCI, BIDMC and BWH would have newly available inpatient capacity. At least some of BIDMC's capacity is likely to be backfilled with surgical oncology services needed by DFCI patients. We modeled two backfill scenarios for BIDMC's newly available capacity using econometric models, one in which the capacity would be filled with surgical oncology discharges, and another in which it would be filled with general acute care discharges other than medical oncology. Because both models indicate BIDMC capacity would likely be backfilled by patients from higher-priced hospitals on average, we estimate that backfill at BIDMC would further reduce annual commercial spending by \$3.5 million if the backfill were exclusively surgical oncology discharges, or up to \$5.3 million if the backfill were non-oncology

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hospital. We combined differences in these price data with the predicted number and case mix index of shifting discharges from each hospital to calculate changes in spending. To estimate the professional portion of the inpatient spending impact, we first calculated the ratio of professional to facility spending at each hospital for its medical oncology discharges, adjusted by each original hospital's payer mix and mix of discharges in each CMS Major Diagnostic Category (MDC). We then estimated professional revenue associated with the shifting discharges at the origin hospital and at DFCI based on each hospital's estimated facility revenue for the shifting discharges and subtracted the estimated professional revenue at the original hospital from estimated professional revenue at DFCI.

<sup>123</sup> The HPC focused its analysis of spending impacts on differences in prices among current providers of oncology services to assess the potential spending impacts of patients changing their care patterns as a result of the proposed transaction. To the extent patients filling DFCI's facility would represent "net new" care as a result of increased inpatient oncology utilization that would not otherwise have been served by existing providers, those additional discharges would increase spending. The HPC estimates that fully filling DFCI's new inpatient capacity with new volume that would not otherwise have been provided would result in an increase in annual commercial and Medicare spending of between \$188 million and \$194 million based on the patient choice models described in this section. This finding is consistent in scope with the ICA's estimates of the cost of "supply-induced demand," although increased spending could be considered justified to the extent need for inpatient oncology care increases. See DFCI ICA, *supra* note 14, at 37-38 and tables 20-21 (estimating an increase in inpatient spending for commercial, Medicare, and Medicaid of approximately \$239 million to \$250 million at current prices if 100% of newly available capacity were filled by net new patients).

<sup>124</sup> The number of commercial discharges expected to fill DFCI's new capacity varies between scenarios due to differences in the predicted length of stay of patients coming from other hospitals.

general acute care discharges.<sup>125</sup> If BIDMC were backfilled solely by surgical oncology inpatients from BWH, this shift would reduce annual commercial spending by up to \$7.4 million.<sup>126</sup>

Similarly, we modeled two scenarios for backfill at BWH depending on whether newly available beds would be filled with general acute care discharges or other medical oncology discharges.<sup>127</sup> We found that both of these scenarios would increase annual commercial spending, by \$4.2 million if the backfill were exclusively medical oncology discharges and by \$15.9 million if the backfill were other discharges, as BWH is more expensive than most other hospitals.

**Figure III.A.10: Commercial Spending Impacts of Inpatient Backfills (“Model-Driven” Scenario)**

	Oncology	GAC
BIDMC	(\$3.5 M)	(\$5.3 M)
BWH	\$4.2 M	\$15.9 M

## **6. Most shifts in hospital outpatient care as a result of the transaction would increase commercial spending, especially shifts in outpatient medical oncology given DFCI’s high prices for hospital-administered oncologic drugs.**

The proposed transaction would likely cause some shifts in hospital outpatient care. As discussed in Section II.B, BIDMC plans to stop providing hospital-based medical oncology, with HMFP medical oncologists transitioning to DFCI employment. The parties also plan to transition their radiation oncology services to a joint venture (JV) and joint physician organization. Some ancillary service volume such as labs and diagnostic radiology may also shift from BWH, and potentially from other providers, to DFCI and BIDMC. This section provides estimates of the commercial spending impacts of these shifts that the HPC was able to quantify based on available data.

To estimate spending impacts, the HPC calculated an average commercial price per encounter by hospital for each service line using each hospital’s own payer and service mix.<sup>128</sup> We then calculated a corresponding DFCI or BIDMC price weighted by each other hospital’s payer

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<sup>125</sup> The lower backfill savings on oncology discharges is the result of the higher acuity of oncology patients as compared to general acute care patients, which reduces price differences between BIDMC and other hospitals from which it might take volume.

<sup>126</sup> The HPC considers this scenario less likely than the model-driven scenarios. To the extent these patients shift to BIDMC, BWH would likely seek to backfill this capacity also, adding to estimated spending increases due to backfill at BWH.

<sup>127</sup> Both scenarios start from the number of newly available BWH beds predicted by the model-driven scenario of discharges shifting to DFCI. Because BWH has not yet identified how it would use the hospital space currently leased by DFCI that includes DFCI’s 30 licensed beds, and because BWH would need to apply to DPH for permission to add those beds to its license under a separate process, we have not included that potential additional BWH capacity in our modeling.

<sup>128</sup> For outpatient oncologic drugs, we calculated an average price per unit rather than an average price per visit.

and service mix, which adjusted prices for the mix of services within each outpatient cluster that might shift from each other provider to DFCI or BIDMC.

As discussed in Section III.A.4, DFCI commercial outpatient prices are higher than those of BIDMC and higher than the average outpatient facility for most service lines.<sup>129</sup> DFCI prices are especially high for oncologic drugs, with average prices more than twice those of BIDMC. If BIDMC's current oncologic drug volume were delivered by DFCI as a result of the transaction, DFCI's higher drug prices alone would increase annual commercial spending by \$26.5 million.<sup>130, 131</sup> This spending impact would be realized immediately and automatically if BIDMC and HMFP stop providing medical oncology services and all BIDMC medical oncology volume transitions to DFCI at its current rates under its current contracts.

Adding separately reimbursed costs of infusion administration currently provided by BIDMC would increase spending by a further \$1.5 million.<sup>132</sup> To the extent DFCI gains any additional outpatient medical oncology volume post-transaction, these shifts would also increase spending, as DFCI's commercial rates for these services are the highest in the Commonwealth.<sup>133</sup>

BIDMC and DFCI plan to transition their radiation oncology services to a JV after the transaction. While prices for the JV would be determined by future negotiations, the parties' current prices for radiation oncology service may be indicative of the future JV prices. DFCI's current commercial radiation oncology prices are 39% higher than BIDMC's prices.<sup>134</sup> If services provided by the JV were priced similarly to DFCI's current radiation oncology prices, the transition of services from BIDMC to the JV would increase annual commercial spending by \$4.6 million.

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<sup>129</sup> DFCI has stated that these prices are justified by the costs of providing robust patient supports and wrap-around services that promote positive patient experiences and outcomes and ultimately reduce the overall costs of care over the course of treatment. Data published by CMS support DFCI's claim that its costs of providing outpatient services are higher (as for other cancer hospitals) than for non-cancer hospitals. The HPC's analysis of CMS outpatient cost and payment data finds that DFCI's FY23 costs were 69% higher than their payments under the Medicare Outpatient Prospective Payment System (OPPS), while the average costs for non-cancer hospitals were only 14% higher than their Medicare OPPS payments. See CTRS. FOR MEDICARE & MEDICAID SERVS., 2025 NFRM OPPS CANCER ADJUSTMENT ANALYSIS FILE, *available at* <https://www.cms.gov/files/zip/2025-nfrm-opps-cancer-adjustment-analysis-file.zip> (last visited February 27, 2025).

<sup>130</sup> When estimating spending impacts the HPC calculated an average commercial price per oncologic drug unit for each hospital, using each hospital's mix of services and commercial payers across observed claims in the oncologic drugs service line. See *supra* note 115 for a full description of the HPC's methodology for evaluating prices for oncologic drugs. We applied the percent difference between BIDMC and DFCI's prices to BIDMC's oncologic drug revenue, estimated based on confidential production data provided by BIDMC, to calculate a spending impact.

<sup>131</sup> To date, the parties have made no commitments that future DFCI contracts would contain lower outpatient rates, or lower rates of growth, either generally or for patients formerly receiving their care at BIDMC.

<sup>132</sup> See Section C of the Data Appendix for a full description of how the HPC evaluated outpatient prices and estimated spending impacts for infusion administration, radiation oncology, diagnostic radiology, labs and pathology, and surgery.

<sup>133</sup> MGH's commercial prices for oncology drugs are the second highest, approximately 8.3% lower than those of DFCI.

<sup>134</sup> The HPC compared the average commercial price per radiation oncology visit at each hospital, using each hospital's mix of services and commercial payers across observed claims in the service line.

After the transaction, BIDMC and DFCI plan to provide diagnostic radiology, laboratory, and pathology for cancer patients as a coordinated service, with each hospital billing for outpatient services that take place at their respective facilities. The parties anticipate that some of these ancillary services may shift from BWH and other providers to both DFCI and BIDMC.<sup>135</sup> Depending on the ancillary service line, DFCI outpatient hospital prices are between 8% and 93% higher than BIDMC prices, and between 3% lower and 65% higher than BWH prices.<sup>136</sup> We estimate that if some of the most common outpatient oncology-related radiology and laboratory and pathology services were to shift from BWH to DFCI and BIDMC, commercial spending would increase by approximately \$500k.<sup>137</sup>

Spending for outpatient medical oncologist consultations would also likely change as HMFP oncologists currently practicing at BIDMC transition to employment by DFCI. To estimate the impact of this transition, we compared commercial prices for evaluation and management (E&M) office visits for BILH and DFCI oncologists, adjusting DFCI's prices to reflect BILH's payer and service mix.<sup>138</sup> The average price of office visits at DFCI was more than double the average price of office visits with BILH oncologists. HMFP oncologists moving to DFCI prices would increase annual commercial spending by approximately \$3.6 million.<sup>139</sup>

Spending on outpatient surgical oncology would change if DFCI patients begin using BIDMC rather than BWH for outpatient surgical services. BIDMC commercial prices for oncology-related endoscopy and excision procedures are 18% and 22% lower, respectively, than BWH commercial prices. If 75% of current BWH outpatient volume for endoscopy and excision services were to move to BIDMC, this would reduce annual commercial spending by \$2.4 million, and shifts of other outpatient surgical oncology care would likely further reduce spending.<sup>140</sup>

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<sup>135</sup> See e.g., DFCI STAFF REPORT, *supra* note 15, at 36-37 (projecting that the addition of two CT units and one PET-CT unit will allow DFCI to provide 10,313 outpatient CT scans and 2,455 outpatient PET-CT scans in 2032, based on the volume of scans DFCI currently refers to other providers).

<sup>136</sup> See Data Appendix, Figure A4, for a full list of price relativities.

<sup>137</sup> The HPC based its estimates on an assumption that 75% of BWH commercial outpatient volume of diagnostic radiology visits and laboratory/pathology services would shift to DFCI and BIDMC, with the shift split evenly between the parties. The HPC conservatively included only CPTs within each service line for which there was significant volume at each party in 2022 and included only encounters that included a cancer diagnosis code, which may undercount situations in which a patient has not yet been diagnosed with cancer. The substantially higher volume figures provided by the parties as referenced in the DoN Staff Report, *supra* note 135, suggest that the HPC's estimate of spending impact is particularly conservative for this service line.

<sup>138</sup> We compared prices for evaluation and management CPT codes commonly provided billed by DFCI (99203, 99204, 99205, 99212, 99213, 99214, 99215, 99442, 99443, and G0463).

<sup>139</sup> To estimate a commercial spending impact for oncologist E&M services, the HPC compared the average price for a BILH oncologist visit observed in the APCD to what the average price would have been if BILH received DFCI's rate for each payer for the procedure codes it provided. We applied the resulting difference in these average prices to an estimate of BILH's total revenue for oncologist E&M visits to estimate a spending impact. The HPC estimates that claims for 42% of statewide commercial members are captured in our APCD analyses. We therefore impute total revenue based on an assumption that BILH's observed oncologist E&M visit revenue represents 42% its total oncologist E&M visit commercial revenue.

<sup>140</sup> The HPC found that outpatient surgical procedure claims did not reliably include oncology diagnosis codes, preventing the HPC from easily differentiating outpatient surgeries related to oncology from non-

In total, the HPC estimates commercial outpatient spending would likely increase by more than \$39 million per year for shifts in services the HPC could quantify, as shown in Figure III.A.10. Shifts of outpatient care to DFCI from providers other than those quantified here would likely further increase spending due to DFCI's high relative prices for outpatient services.

**Figure III.A.11: Summary of Estimated Commercial Outpatient Spending Impacts**

Description of Shift	Spending Impact Estimate
100% of BIDMC infusion to DFCI	\$1.5 million
100% of BIDMC oncologic drugs to DFCI	\$26.5 million
BIDMC oncologist E&M visits to DFCI	\$3.6 million
100% of BIDMC radiation oncology to JV; JV receives DFCI rates	\$4.6 million
75% of BWH radiation oncology to JV; JV receives DFCI rates	\$4.7 million
75% of BWH oncology-related radiology to BIDMC/DFCI (50% to DFCI; 50% to BIDMC)	\$0.1 million
75% of BWH oncology-related lab and pathology to BIDMC/DFCI (50% to DFCI; 50% to BIDMC)	\$0.4 million
75% of BWH outpatient endoscopy and excision surgery to BIDMC	(\$2.4 million)
<b>Total</b>	<b>\$39.0 million</b>

The proposed transaction may impact care patterns beyond the Longwood area. While DFCI has stated it does not expect changes to its other oncology clinical affiliations and collaborations, it is unclear what impact the proposed transaction may have on these collaborations in the long term. Additionally, although the parties have not identified specific plans for collaboration outside of Longwood, it is possible DFCI will develop collaborations with other BILH provider sites over time, particularly as it shifts to a unified EHR system with BILH. The HPC does not have sufficient information to quantify the impacts of these potential shifts. Additional care provided at DFCI-licensed sites would likely increase spending due to DFCI's higher commercial outpatient prices. To the extent the proposed affiliation results in patients shifting to BILH for non-oncology care, such shifts may reduce spending due to BILH providers' moderate hospital prices and TME compared to other major hospital-based systems.

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oncology surgeries. The HPC quantified spending impacts based on revenues and relative prices for outpatient endoscopy and excision services for which there were at least 50 claims in 2022 across BIDMC, BWH, and MGH, including claims without an oncology diagnosis code, due to the relevance of these two services to oncology care.

**7. At current Medicare rates, inpatient care shifting to DFCI would reduce annual Medicare spending by \$5.7 to \$9.1 million, but DFCI's inpatient Medicare rates may increase in the newly constructed cancer hospital, reducing any savings or potentially increasing spending. Shifts of outpatient Medicare volume to DFCI may also substantially increase annual Medicare spending.**

The HPC used econometric models specific to Medicare discharges to estimate how Medicare patients may shift to DFCI from other hospitals. The HPC then combined these projections with current Medicare prices calculated as described in Section III.A.3.b and adjusted for the acuity of patients likely to shift to DFCI from other hospitals. We found that, at current Medicare rates, inpatient shifts to DFCI from other hospitals would save between \$5.7 and \$9.1 million annually. It is unclear to what extent these savings would be realized, however, given the possibility that DFCI's cost-based Medicare reimbursement for inpatient care may increase as a result of providing care in a freestanding hospital setting, as discussed in Section III.A.8, below.

Outpatient care shifting to DFCI may also increase Medicare spending. Dedicated cancer hospitals like DFCI are paid by Medicare for outpatient services under a payment system designed to ensure a fixed ratio of reimbursement to costs.<sup>141</sup> CMS estimates that due to its higher cost of care, in 2025 DFCI will receive supplemental outpatient reimbursement that will result in payments 46.6% higher than a hospital paid under the standard Medicare reimbursement system would receive for the same services.<sup>142</sup> If DFCI were to obtain a similarly supplemental payment rate for outpatient care moving from BIDMC as a result of the proposed transaction, annual Medicare spending on oncology infusion and drugs alone would increase by \$17.3 million.<sup>143</sup>

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<sup>141</sup> See U.S. CENTERS FOR MEDICARE AND MEDICAID SERVICES, HOSPITAL OUTPATIENT PROSPECTIVE PAYMENT-NOTICE OF FINAL RULEMAKING § II.F at FR 93977-93979, available at <https://www.govinfo.gov/content/pkg/FR-2024-11-27/pdf/2024-25521.pdf> (last visited February 27, 2025). For calendar year 2025, CMS will adjust the outpatient payments of PPS-Exempt Cancer Hospitals such that the hospitals are reimbursed for 87% of the cost of providing outpatient services to Medicare fee-for-service patients.

<sup>142</sup> See *Id.*, Table 12 at 93980.

<sup>143</sup> The HPC provides this example because data were not available to fully adjust outpatient Medicare estimates for differences in Medicare outpatient services at BIDMC as compared to DFCI. As a lower-bound alternative estimate, if DFCI were to receive the lowest estimated adjustment percentage among PCHs (16.0% for James Cancer Hospital & Solove Research Institute; See *Id.*) for care currently provided by BIDMC as opposed to its own adjustment, Medicare spending on oncology infusion and drugs would increase by \$5.9 million. The assumption that DFCI would receive higher outpatient rates is also supported by a Government Accountability Office study that found Medicare payment adjustments resulted in outpatient payments to DFCI in FY2012 being 42.2% higher on average than payments Medicare would have made to PPS hospitals for comparable services. See GAO Cancer Hospitals Report, *supra* note 28, at 23-24. Cf. DFCI ICA, *supra* note 14, at Table 29 and Table 38 (finding DFCI Medicare prices were lower than BIDMC and BWH for PET and LINAC services but higher for CT and CT simulator services). The HPC has not identified a comparable, more recent analysis.

**8. Any increases in the parties' prices as a result of the proposed transaction would reduce savings or increase spending. Commitments to limit future inpatient and outpatient rate increases and address DFCI's already high outpatient prices may help to mitigate these concerns.**

As discussed in prior sections, the proposed transaction would likely substantially increase DFCI's share of inpatient medical oncology services as it fills its new inpatient bed capacity and BIDMC no longer provides inpatient medical oncology services and directs care to DFCI. DFCI would also likely gain a substantial volume of outpatient oncology services as BIDMC and HMFP medical oncology shifts to DFCI and the parties collaborate on other outpatient services.

As discussed in prior work by the HPC and others, increases in commercial market share, particularly in a highly concentrated market, are generally associated with greater leverage for a provider organization to negotiate higher prices with commercial payers.<sup>144</sup> In this transaction, this concern is somewhat mitigated for inpatient spending by the fact that DFCI would have to compete on price with other providers to fill its new beds, potentially constraining its ability to raise prices. Competition with DFCI could theoretically also constrain price growth for DFCI's competitors. However, DFCI commercial prices could grow substantially, increasing spending, while remaining lower than its largest competitors, the MGB AMCs. Additionally, as discussed above, although increased market share will not impact DFCI Medicare reimbursement, DFCI's special Medicare payment status may result in its Medicare rates increasing to the extent its cost structure per unit of care increases as a result of operating a stand-alone facility.

To the extent that oncology patients of hospitals with smaller oncology programs choose to receive care from DFCI in the future, these hospitals may face challenges continuing to compete with DFCI. The HPC estimates that hospitals other than BIDMC, BWH, and MGH would lose a combined \$60 million to \$64 million in commercial revenue per year as oncology discharges shift to DFCI and discharges backfill at BIDMC and BWH under the "model-driven" scenarios described in Section III.A.5, and an additional \$31 million in Medicare revenue as oncology discharges shift to DFCI as described in Section III.A.7.

This financial challenge may be exacerbated as DFCI recruits oncology-specialized clinicians and other employees for its new facility, potentially increasing labor costs for other providers.<sup>145</sup> While MGB may have the resources to invest in further building a competing oncology service and backfilling lost volume, if other provider organizations choose to reduce or

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<sup>144</sup> See, e.g., U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, MERGER GUIDELINES at 5 (Dec. 18, 2023), *available at* <https://www.justice.gov/d9/2023-12/2023%20Merger%20Guidelines.pdf> (describing the use of market share and market concentration as key screening tools for market changes that may enhance market power); see also MA HEALTH POLICY COMM'N, 2015 COST TRENDS REPORT PROVIDER PRICE VARIATION at 12 (JAN. 2016), *available at* <https://www.mass.gov/doc/2015-cost-trends-report-provider-price-variation/download>.

<sup>145</sup> DFCI has stated it does not plan to recruit new staff away from community hospitals and has highlighted its intention to use workforce development initiatives to build a diverse workforce. DFCI STAFF REPORT, *supra* note 15, at 44-45. Given that it is unclear to what extent these programs will result in new workers who would not otherwise have joined the health care labor force or to what extent they will satisfy DFCI's expectations for 2,400 additional FTEs to staff the new facility, the HPC considers it likely that DFCI will compete to hire the same workers who might otherwise choose to work at other provider organizations.

discontinue oncology services, market concentration would further increase, potentially enhancing the ability of DFCI and other remaining providers to negotiate higher commercial rate increases.

The spending impacts detailed in the prior sections are based on current price differences between the parties and other oncology providers. To the extent DFCI's commercial prices increase as a result of the proposed transaction, potential savings would be reduced or become spending increases. The magnitude of this possible shift is illustrated in the ICA, which includes scenarios that show how increases in DFCI's commercial and Medicare prices would eliminate any savings on inpatient care.<sup>146</sup>

Although the parties have stated they expect the transaction to result in care shifting from higher- to lower-cost providers, they have not provided commitments regarding DFCI's future price increases, nor have they addressed the potential impact of BIDMC outpatient volume, including outpatient oncologic drug administration, shifting to DFCI's higher commercial prices. The parties' response to these findings, including any commitments, may help to alleviate concerns that changes in DFCI's market position and higher prices for the same outpatient services would result in substantially increased spending.

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In summary, DFCI and BIDMC both serve patients primarily from across eastern Massachusetts, with DFCI having a larger geographic reach. MGB (in conjunction with DFCI) and BILH are currently the two largest providers of oncology services in their service areas and in the Commonwealth generally. DFCI and BIDMC commercial prices for *inpatient* medical and surgical oncology services, respectively, are generally lower than prices for the same services at BWH, but higher than those of some other hospitals. DFCI commercial *outpatient* prices are generally higher than outpatient oncology prices of other Massachusetts hospitals, while BIDMC's are generally moderate.

The proposed transaction and the construction of the new DFCI facility would likely result in large shifts in oncology volume from BIDMC, BWH, and other oncology providers to DFCI. BIDMC would also likely gain surgical oncology volume. At current prices, shifts in inpatient oncology care from BIDMC, BWH, and other oncology providers to DFCI may reduce annual commercial spending by \$18.5 to \$23 million. Backfill of newly available inpatient capacity at BIDMC would also reduce annual commercial spending by \$3.5 to \$5.3 million, while backfill of capacity at BWH would likely increase commercial spending by \$4.2 to \$15.9 million.

Most shifts in hospital outpatient care as a result of the transaction would likely increase commercial spending, especially shifts in outpatient medical oncology given DFCI's high prices for hospital-administered oncologic drugs. In total these shifts would increase annual commercial outpatient spending by an estimated \$39 million, including \$26.5 million for oncologic drugs. At current Medicare rates, inpatient care shifting to DFCI would reduce annual Medicare spending by

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<sup>146</sup> See DFCI ICA, *supra* note 14, at 41-44 (predicting inpatient savings of \$28.4 million at current prices, savings of \$8.6 million if DFCI received BIDMC commercial and Medicare prices, and increased spending of \$10.9 million if DFCI received Commercial prices more similar to those of BWH and Medicare prices more similar to those of other freestanding cancer centers).

\$5.7 to \$9.1 million, but DFCI's inpatient Medicare rates may increase in the newly constructed hospital, reducing any savings or potentially increasing spending. Shifts of outpatient Medicare volume to DFCI may also substantially increase annual Medicare spending.

Any increases in the parties' prices as a result of the proposed transaction would reduce savings or increase spending, and patient shifts may negatively impact other oncology providers, potentially further increasing market concentration. Commitments to limit future inpatient and outpatient rate increases and address DFCI's already high outpatient prices may help to mitigate these concerns.

## **B. Quality and Care Delivery**

To assess the quality of care delivered by the parties historically, and the proposed transaction's potential impact on care delivery in the Commonwealth, the HPC reviewed the parties' historical performance on widely accepted clinical performance measures, quality performance data submitted by the parties, and documentation provided by the parties on their quality and care delivery priorities and initiatives. The HPC also reviewed the parties' plans and goals for the proposed transaction in both public and confidentially provided documents. The HPC's findings are summarized below.

- DFCI and BIDMC are internationally recognized for their high-quality cancer care.
- The parties have generally historically performed comparably to statewide average performance on available oncology quality metrics.
- Research suggests that hospitals with specialized oncology care offerings achieve superior outcomes for their patients, although these findings do not necessarily indicate the transaction would result in higher quality care than that currently provided by the parties.
- The parties have identified several early-stage plans that have the potential to improve care quality, but these plans are not yet sufficiently developed to assess the likelihood of any specific impacts.
- Changes in care team affiliations would require substantial coordination amongst providers to avoid disruptions to patient care.
- The proposed clinical affiliation may result in more patients using BILH providers for non-oncology care, on which BILH providers generally perform comparably to statewide average across most metrics.

## 1. DFCI and BIDMC are internationally recognized for their high-quality cancer care.

DFCI is considered one of the premier cancer care providers in the United States and is ranked the 4<sup>th</sup> best hospital for cancer by US News.<sup>147</sup> DFCI's care model focuses on a high degree of specialization to cancer subtypes, oriented around "19 disease-oriented clinical divisions and programs, each of which focuses on a specific type or sub-type of malignancy."<sup>148</sup> The policies, procedures, and programs at DFCI are recognized by national oncology and non-oncology certification boards, including Magnet, FACT, the Joint Commission, and the Commission on Cancer.<sup>149</sup> DFCI has an array of quality improvement and research programs designed to support and advance care delivery, including an acute care clinic to provide high-acuity outpatient oncology care and reduce unplanned hospital readmissions,<sup>150</sup> a robust survivorship care planning infrastructure to support long-term survival for its patients, a comprehensive patient feedback mechanism through direct patient reporting and input from the patient and family advisory council, and a patient navigator program to help underserved patients navigate their cancer care journeys.<sup>151, 152</sup>

BIDMC is also highly recognized for its oncology care and is ranked 18<sup>th</sup> in cancer care delivery by US News.<sup>153</sup> The policies, procedures, and programs at BIDMC are recognized by national oncology and non-oncology certification boards, including Magnet, FACT, the Joint

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<sup>147</sup> *Best Hospitals for Cancer*, US NEWS, available at <https://health.usnews.com/best-hospitals/rankings/cancer> (last visited February 27, 2025) ("U.S. News includes Brigham and Women's Hospital in evaluating the performance of Dana-Farber Cancer Institute in Cancer, Colon Cancer Surgery and Lung Cancer Surgery and includes Boston Children's Hospital in evaluating the performance of Dana-Farber Cancer Institute in Pediatric Cancer").

<sup>148</sup> See *Medical Oncology Patient Care*, DANA-FARBER CANCER INSTITUTE, available at <https://www.dana-farber.org/research/departments-centers/medical-oncology/clinical-activities> (last visited February 27, 2025).

<sup>149</sup> *Find a Magnet Organization*, AMERICAN NURSES CREDENTIALING CENTER, available at <https://www.nursingworld.org/organizational-programs/magnet/find-a-magnet-organization/> (last visited February 27, 2025); *FOUNDATION FOR ACCREDITATION OF CELLULAR THERAPY (FACT)*, available at <https://accredited.factglobal.org/state/massachusetts/> (last visited February 27, 2025); *Find Accredited Organizations*, THE JOINT COMMISSIONS, available at [https://www.jointcommission.org/who-we-are/who-we-work-with/find-accredited-organizations/#numberOfResults=25&f:State=\[Massachusetts\]](https://www.jointcommission.org/who-we-are/who-we-work-with/find-accredited-organizations/#numberOfResults=25&f:State=[Massachusetts]) (last visited February 27, 2025); *Find a CoC-Accredited Program*, AMERICAN COLLEGE OF SURGEONS, available at <https://www.facs.org/quality-programs/cancer-programs/commission-on-cancer/> (last visited February 27, 2025).

<sup>150</sup> See Anamika Chaudhuri, et al., *Impact of an oncology acute care clinic (ACC) in a comprehensive cancer care setting to reduce emergency visits and subsequent hospitalizations: A pilot study*, JOURNAL OF CLINICAL ONCOLOGY (2019), available at [https://ascopubs.org/doi/10.1200/JCO.2019.37.27\\_suppl.110](https://ascopubs.org/doi/10.1200/JCO.2019.37.27_suppl.110).

<sup>151</sup> *About the Adult Survivorship Program*, DANA-FARBER CANCER INSTITUTE, available at <https://www.dana-farber.org/cancer-care/treatment/adult-survivorship-program> (last visited February 27, 2025); *Adult Patient and Family Advisory Council (APFAC)*, DANA-FARBER CANCER INSTITUTE, available at <https://www.dana-farber.org/patient-family/safety-advocacy/patient-family-advisory-councils/adult-patients> (last visited February 27, 2025); *Patient Navigator Program*, DANA-FARBER CANCER INSTITUTE, available at <https://www.dana-farber.org/patient-family/support-services/patient-navigator> (last visited February 27, 2025). More specific details on each of these programs were provided by DFCI to the HPC.

<sup>152</sup> See Michael J. Hassett et al., *Efficacy of eSyM: Acute care utilization among patients with cancer who do versus do not report ePROs*, JOURNAL OF CLINICAL ONCOLOGY (2024), available at [https://ascopubs.org/doi/pdf/10.1200/JCO.2024.42.16\\_suppl.11001](https://ascopubs.org/doi/pdf/10.1200/JCO.2024.42.16_suppl.11001).

<sup>153</sup> See *Best Hospitals for Cancer*, *supra* note 147.

Commission, and the Commission on Cancer. Like DFCI, BIDMC has programs for survivorship care planning, collection of patient feedback from patient reporting and its patient and family advisory council, and patient support from assigned patient navigators. BIDMC is also engaged in several quality improvement programs intended to enhance its adherence to guideline-concordant oncology care.<sup>154</sup> Both BIDMC and DFCI (along with Boston Children's Hospital, BWH, and MGH) are members of the Dana-Farber/Harvard Cancer Center, a Massachusetts-based NCI designated cancer center with over \$13 million of annual NIH funding that integrates clinical and non-clinic research with direct patient care, allowing best practices and medications under investigation to be applied to patient care.<sup>155</sup>

## **2. The parties have generally historically performed comparably to statewide average performance on available oncology quality metrics.**

Although few publicly available quality metrics specifically assess the quality of medical oncology care, the HPC reviewed those measures that were available publicly as well as information provided by the parties. Several oncology metrics developed by CMS are reported only for PPS-exempt cancer hospitals through the PPS-Exempt Cancer Hospital Quality Reporting (PCHQR) program, further challenging our ability to compare cancer care across hospitals.<sup>156</sup> To expand this data, the HPC used PCHQR measure specifications to calculate results on a few oncology specific quality metrics for comparator IPPS hospitals. The HPC also examined the few available measures related to surgical oncology quality.

### **a. Inpatient Medical Oncology Services**

The HPC calculated two metrics of inpatient medical oncology care developed by CMS; per CMS measure specifications, neither metric includes an adjustment for patient acuity. On a measure of 30-day unplanned readmissions for cancer patients, BIDMC and DFCI performed statistically worse than statewide levels; given DFCI physicians' role in managing oncology patient care at BWH, it is unclear whether BWH's statistically better performance relative to the state average reflects meaningful differences between BWH and DFCI on post-discharge care management or if this difference is the result of chance or differences in patient population.<sup>157</sup>

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<sup>154</sup> *Becoming a Patient/Family Advisor*, BEATH ISRAEL LAHEY HEALTH: BEATH ISRAEL DEACONESS MEDICAL CENTER, available at <https://www.bidmc.org/centers-and-departments/social-work/patient-and-family-engagement-at-bidmc> (last visited February 27, 2025); *Patient Navigator Services*, BEATH ISRAEL LAHEY HEALTH: BEATH ISRAEL DEACONESS MEDICAL CENTER, available at <https://www.bidmc.org/centers-and-departments/cancer-center/cancer-support-services/patient-navigator-services> (last visited February 27, 2025). More specific details on each of these programs were provided by BIDMC to the HPC.

<sup>155</sup> See *Grants to NCI-Designated Cancer Centers*, NATIONAL CANCER INSTITUTE, available at <https://www.cancer.gov/about-nci/budget/fact-book/extramural-programs/cancer-centers> (last visited February 27, 2025) for a breakdown of NIH funding for each NCI designated cancer center.

<sup>156</sup> PPS-exempt cancer hospitals are required to report data through the PCHQR system. Much of that data is published by CMS. See *PPS-Exempt Cancer Hospital Quality Reporting (PCHQR) Program*, CTRS. FOR MEDICARE & MEDICAID SERVS., available at <https://www.cms.gov/medicare/quality/initiatives/hospital-quality-initiative/pps-exempt-cancer-hospital-quality-reporting-pchqr-program> (last visited February 27, 2025).

<sup>157</sup> *Cancer Readmissions Measure (PCH-36)*, CTRS. FOR MEDICARE & MEDICAID SERVS. (August 18, 2021), available at <https://qualitynet.cms.gov/pch/measures/readmissions>. Performance levels for each hospital were analyzed relative to statewide levels using a two-sided z-test for statistical significance. The HPC also

On a measure of the need for emergency department visits not resulting in an inpatient stay for cancer patients discharged to home health, DFCI performed statistically worse than the state average, while BIDMC and BWH performed in-line with the state average. DFCI's performance below the state average on these measures may be due in part to the inclusion of both medical and surgical oncology patients in the statewide average denominators for these measures, as research literature indicates that medical oncology patients tend to have higher readmission and ED revisit rates relative to surgical oncology patients.<sup>158, 159</sup>

The HPC also examined one-year survival rates for oncology patients with allogeneic stem cell transplants.<sup>160</sup> On this metric, DFCI, in partnership with BWH and Boston Children's Hospital for adult and pediatric transplants, respectively, outperformed survival rate expectations for its patient panel. BIDMC and other Massachusetts hospitals providing these transplants performed similarly to expected survival rates for their patient panels.

## **b. Outpatient Medical Oncology Services**

The HPC identified two outpatient metrics specific to medical oncology in publicly reported CMS data: Rate of Admissions Visits for Patients Receiving Outpatient Chemotherapy and Rate of ED Visits for Patients Receiving Outpatient Chemotherapy.<sup>161</sup> BIDMC, DFCI, and BWH performed comparably to the statewide average on each of the two metrics.

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analyzed performance levels for several additional AMCs in the Commonwealth for comparative purposes. MGH performed statistically better than the statewide average for this metric. Salem Hospital and Lahey performances were in line with the statewide average.

<sup>158</sup> *Home Health Claims-Based Utilization Measures*, CTRS. FOR MEDICARE & MEDICAID SERVS. (August 21, 2012), available at <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/ClaimsBasedUtilizationMeasuresSpecifications.pdf>.

Performance levels for each hospital were analyzed relative to statewide levels using a two-sided z-test for statistical significance. The HPC also analyzed performance levels for several additional AMCs in the Commonwealth for comparative purposes. Salem Hospital and South Shore Hospital performed statistically better than the statewide average. Lahey's performance was in line with the statewide average.

<sup>159</sup> See Joanna-Grace M Manzano et al., *Readmission Patterns After GI Cancer Hospitalizations: The Medical Versus Surgical Patient*, J ONCOL PRACT (2018), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC6550055/>. While the two measures examined are not adjusted for patient risk, the HPC did not find a higher complexity patient panel at DFCI relative to oncology patients treated at BWH or MGB based on MS-DRG case weight in the 2022 CHIA hospital discharge database.

<sup>160</sup> *U.S. Transplant Centers*, NATIONAL MARROW DONOR PROGRAM, available at <https://www.nmdp.org/what-we-do/partnerships/global-transplant-network/transplant-center-directory> (last visited February 27, 2025). The Dana-Farber Brigham Cancer Center is the only transplant center in the Commonwealth to outperform expected survival rates for the one-year survival rate for allogeneic stem cell transplant metric.

<sup>161</sup> The HPC used *Hospital Compare Datasets*, CTRS. FOR MEDICARE & MEDICAID SERVS., available at <https://data.cms.gov/provider-data/> (last visited February 27, 2025) to compare quality for BIDMC and BWH. The HPC also used the *Hospital Compare Datasets* to analyze performance levels for several other AMCs in the Commonwealth for comparative purposes, including Salem Hospital, MGH, Lahey, and South Shore Hospital. The HPC used *Complications and Unplanned Hospital Visits - PPS-Exempt Cancer Hospital - Hospital*, CTRS. FOR MEDICARE & MEDICAID SERVS. (October 10, 2024), available at <https://data.cms.gov/provider-data/dataset/z8ax-x9j1> to analyze performance levels for DFCI.

Performance levels for each hospital were analyzed relative to statewide levels using a confidence interval test for statistical significance. Salem Hospital, MGH, and Lahey performance levels on both metrics were found to be in line with statewide averages; data was not available for South Shore Hospital.

### c. Radiation Oncology Services

The HPC was not able to identify any publicly reported quality metrics directly related to radiation oncology care, and the relevance of current measures would be limited given the current stage of the parties' planning for their proposed radiation oncology joint venture. However, CMS is considering implementation of a Radiation Oncology innovation model. The compulsory model, indefinitely deferred in 2022, would require radiation oncology providers to report a variety of radiation oncology specific quality metrics to CMS, and such measures could provide the Commonwealth with opportunities for future evaluation of radiation oncology quality if adopted.<sup>162</sup>

### d. Surgical Oncology Services

Few publicly available quality metrics specifically assess the quality of surgical oncology care. The HPC examined four measures of surgical oncology procedure volume by the Leapfrog Group in which a hospital meeting certain volume standards is associated with higher quality outcomes.<sup>163</sup> On the subset of Leapfrog Group metrics that relate to surgical oncology procedure volume, BIDMC met thresholds on 3 of 4 metrics and BWH met thresholds on 4 of 4 metrics.<sup>164</sup> The HPC also calculated two AHRQ mortality measures relevant to the evaluation of surgical oncology care outcomes: Esophageal Resection Mortality Rate and Pancreatic Resection Mortality Rate.<sup>165</sup> BIDMC and BWH both performed comparably to the statewide average performance on these surgical mortality measures.

## 3. Research suggests that hospitals with specialized oncology care offerings achieve superior outcomes for their patients, although these findings do not necessarily indicate the transaction would result in higher quality care than that currently provided by the parties.

DFCI has stated that it expects clinical quality benefits for patients as the result of the proposed transaction, citing several studies that found hospitals with specialized cancer care programs have superior patient outcomes. Two cited studies found superior care outcome and

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<sup>162</sup> See *Radiation Oncology Model*, CTRS. FOR MEDICARE & MEDICAID SERVS., available at <https://www.cms.gov/priorities/innovation/innovation-models/radiation-oncology-model> (last visited February 27, 2025).

<sup>163</sup> Performance on Leapfrog Group measures is reported in four tiers: Fully Meets the Standard, Substantial Progress, Some Progress, and Willing to Report.

<sup>164</sup> The oncology-focused Leapfrog Group measures the HPC analyzed were: Esophageal Resection for Cancer, Lung Resection for Cancer, Pancreatic Resection for Cancer, and Rectal Cancer Surgery. BIDMC did not have sufficient procedure volume in the most recent survey period to achieve the "considerable achievement" rating on the Esophageal Resection for Cancer metric. *Leapfrog Ratings*, THE LEAPFROG GROUP, available at <https://ratings.leapfroggroup.org/> (last visited February 27, 2025).

<sup>165</sup> *Quality Indicators Software Instructions and Data Dictionary*, SAS® QI v2023, AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, available at [https://qualityindicators.ahrq.gov/Downloads/Software/SAS/V2023/Software\\_Inst\\_SASQI\\_v2023\\_August\\_2023.pdf](https://qualityindicators.ahrq.gov/Downloads/Software/SAS/V2023/Software_Inst_SASQI_v2023_August_2023.pdf) (last visited February 27, 2025).

survival benefits at PPS-exempt cancer hospitals relative to AMCs and other hospital types.<sup>166</sup> Another national study, commissioned by PPS-exempt hospitals, found 3-year survival rates statistically significantly higher for breast, colon, pancreatic, and lung cancer Medicare patients receiving chemotherapy at PPS-exempt hospitals as compared to other hospital cohorts.<sup>167</sup> Other literature suggests that superior performance on patient outcomes may be the result of a set of factors and policies including the use of guideline concordant care, NCI designation, and high volumes of procedures rather than specific hospital payment structures.<sup>168</sup> While cancer hospitals like DFCI may be more likely to have these attributes than average hospitals, literature findings alone cannot indicate that other hospitals with high-volume, specialized oncology programs in the Commonwealth, such as several Boston-area AMCs, have poorer patient outcomes than DFCI for the oncology care they provide, or that expanded capacity at DFCI would improve patient outcomes solely due to DFCI's status as a PPS-exempt cancer hospital.

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<sup>166</sup> A study published in 2015 compared long term cancer survival rates for patients treated at different hospital facility types and found superior long term survival rates for patients treated at PPS-exempt Cancer Hospitals (53%) relative to those treated at NCI Designated Cancer Centers (49%), AMCs (46%), and other hospitals (44%). See David G Pfister, et al., *Risk adjusting survival outcomes of hospitals that treat cancer patients without information on cancer stage*, JAMA ONCOL (2015), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC5038982/>. A study published in 2019 analyzed the relationship between hospital attributes and quality outcomes for PPS-exempt Cancer Hospitals, NCI Designated Cancer Centers, and other hospitals. Researchers found common attributes at PPS-exempt Cancer Hospitals and NCI Designated Cancer Centers, such as services delivered and patient comorbidity levels. They also observed similar quality outcomes (15/18 postoperative measures) for patients treated at both hospital types. However, patients treated at NCI-CCs were more likely to have postoperative sepsis, acute renal failure, and urinary tract infection. Ryan P Merkow, et al., *Comparison of Hospitals Affiliated With PPS-Exempt Cancer Centers, Other Hospitals Affiliated With NCI-Designated Cancer Centers, and Other Hospitals That Provide Cancer Care*, JAMA INTERN MED (June 2019), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC6580440/>. These studies examined variations in performance at the cohort level, although they did not provide information about the performance of specific cancer hospitals or distinguish AMCs with higher-volume, specialized cancer programs from those with lower-volume programs. Additionally, DFCI's unique model of medical oncology care makes several surgical oncology quality indicators used in these studies less relevant to assessment of its quality compared to other hospitals in the Commonwealth.

<sup>167</sup> Christine Ferro, et al., Milliman, *Survival of Medicare fee-for-service chemotherapy patients by site of care* (Feb. 7, 2018), available at <https://www.milliman.com/en/insight/survival-of-medicare-fee-for-service-chemotherapy-patients-by-site-of-care>. The study found no significant difference in survival for patients with ovarian or prostate cancers at PPS-exempt cancer hospitals as compared to other NCI-designated cancer centers or teaching hospitals. The study's findings are based on national data that do not allow for the comparison of performance at specific institutions.

<sup>168</sup> See Wolfson, J.A., et al., *Impact of Care at Comprehensive Cancer Centers on Outcome: Results from a Population-Based Study*, CANCER (2015), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC4892698/>; Chueng, M.C., et al., *Impact of Teaching Facility Status and High-Volume Centers on Outcomes for Lung Cancer Resection: An Examination of 13,469 Surgical Patients*, ANN SURG ONCOL (2009), available at <https://pubmed.ncbi.nlm.nih.gov/18600379/>; Karalis, J.D., et al., *Hospital Designations and Their Impact on Guideline-Concordant Care and Survival in Pancreatic Cancer. Do They Matter?*, ANN SURG ONCOL. (2023), available at <https://pubmed.ncbi.nlm.nih.gov/36964844/>.

**4. The parties have identified several early-stage plans that have the potential to improve care quality, but these plans are not yet sufficiently developed to assess the likelihood of any specific impacts.**

BILH and Dana-Farber have stated an intention to expand several existing programs, including the DFCI acute care clinic, coordination with satellite locations and community health centers, patient navigator assignments, and access to clinical trials described in Section III.B.1.<sup>169,170</sup> While these expansions and collaborations may tend to promote clinical quality, and could promote access as discussed in Section III.C.3, the parties' plans are not sufficiently developed to allow the HPC to assess to what extent they might result in specific improvements. The parties have stated that they have not developed concrete plans for collaborative new quality improvement initiatives at this point but intend to do so closer to the date of the affiliation rollout. DFCI also identified several potential benefits of the proposed new cancer facility, including greater control over infection control protocols specific to cancer patients, nursing staff being certified in oncology care, diversion of admissions to newly created observation beds, improved wait times, and improved patient experience in space designed specifically for oncology care.<sup>171</sup> As outlined by the parties, these features appear generally likely to promote high-quality care. Finally, the parties' affiliation agreements include performance commitments on several specific quality metrics, but the parties have not yet developed benchmark data that would allow the HPC to assess the feasibility or impacts of meeting these targets.<sup>172</sup> Annual reporting on the quality and patient experience measures recommended in the DoN Staff Report would allow assessment of the extent to which DFCI's quality improves in the years following the opening of the new hospital.<sup>173</sup>

**5. Changes in care team affiliations would require substantial coordination amongst providers to avoid disruptions to patient care.**

The expected shifts in medical oncology care from hospitals other than BIDMC, BWH, and DFCI to the new DFCI facility would require patients to transition elements of their care to new medical oncologists immediately following the proposed transaction.<sup>174</sup> As the leaders of oncology

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<sup>169</sup> The parties disclosed their expansion plans in private conversations and material sent to the HPC. In their Determination of Need application, Dana-Farber also referenced a few of these plans, stating "The Proposed Project will have a direct impact upon public health outcomes by expanding the availability and access to...highly specialized and focused care, as well as improving access to clinical trials." See DFCI DoN NARRATIVE, *supra* note 88, at 46.

<sup>170</sup> See DFCI Response to Applicant Questions #2 *supra* note 77, at 17.

<sup>171</sup> See DFCI STAFF REPORT at 46-48, 100, *supra* note 15 and DFCI DoN NARRATIVE, *supra* note 8, at 46. Dana-Farber notes a discrepancy between its overall inpatient care patient experience rating (94<sup>th</sup> percentile) and its hospital environment (38<sup>th</sup> percentile) and quietness of environment (13<sup>th</sup> percentile) patient experience ratings as evidence of current issues with their limited inpatient bed capacity. DANA-FARBER CANCER INSTITUTE, RESPONSE TO APPLICANT QUESTIONS #1 at 5, available at <https://www.mass.gov/doc/responses-to-don-questions-pdf-dana-farber-cancer-institute-inc-hospitalclinic/download>.

<sup>172</sup> The metrics include 30-day readmission rates for surgical oncology, 5-year survival for medical oncology, patient experience, and physician satisfaction.

<sup>173</sup> DFCI STAFF REPORT, *supra* note 15, at Appendix I.

<sup>174</sup> See Section III.A.5, *supra*.

care teams, medical oncologists at DFCI would need to dedicate substantial time to coordinate with these patients' current specialists and primary care providers.<sup>175, 176</sup> Considerable time would also be spent building relationships with new patients and developing or refining care plans. Similar effort would be needed to the extent some BIDMC oncology patients seek care elsewhere or DFCI or BWH patients choose to remain with MGB for their oncology care, situations in which patients would be seen by a new medical oncologist.<sup>177</sup> Coordination among oncologists and other providers at DFCI, BIDMC, and MGB may be particularly challenging during the early years after the affiliation as new relationships and protocols develop between providers. To facilitate care coordination for impacted patients and avoid disruptions to care continuity, the parties and other oncology providers with whom they collaborate will need to develop robust plans for care coordination and management. The parties have stated their intention to pursue such plans but have not yet developed specific details of these plans. Future reporting from the parties, including on the development of transition plans for impacted patients and progress updates on initiatives intended to promote coordination amongst BIDMC and DFCI providers (such as the integration of DFCI into the BILH EMR system), would enable the Commonwealth to evaluate progress towards implementing these plans.

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<sup>175</sup> A patient's primary medical oncologist is responsible for developing and coordinating a treatment plan alongside a patient's primary care provider, other specialists (surgeons, radiation oncologists, etc.), and hospital support staff. Medical oncologists subspecialized as hospitalists are typically responsible for managing all elements of inpatient care for cancer patients, including managing "the day-to-day care of inpatients while closely coordinating with the primary oncologist." *What is an Oncology Hospitalist?*, Dana-Farber Cancer Institute (January 13, 2017), available at <https://blog.dana-farber.org/insight/2017/01/what-is-an-oncology-hospitalist/#:~:text=Oncology%20hospitalists%20are%20a%20relatively,coordinating%20with%20the%20primary%20oncologist>. Coordination by medical oncologists is critical for patients transitioning between different stages of their cancer journey, since the whole care team of specialist and primary care "[p]roviders and patients must share an understanding of the disease, the therapy, and its consequences, and they all must know who must do what and when. The exchange of information and responsibility is particularly important during transitions in care when new providers or care organizations become involved and new care decisions become necessary. Therefore, the interfaces of care and coordination among providers and institutions are critical to a successful process of cancer care." Stephen Hunt Taplin, et al., *Toward Improving the Quality of Cancer Care: Addressing the Interfaces of Primary and Oncology-Related Subspecialty Care*, J NATL CANCER INST MONOGR. (2010), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC3482951/>.

<sup>176</sup> Patients who would need to find a new medical oncologist because of the proposed transaction may encounter substantial wait times for their first appointment and additional wait times for related elements of their cancer care as their new medical oncologist familiarizes themselves with the patient's conditions and coordinates with other providers and support staff. See Maurie Markman, *How do I change my oncologist? What to consider before changing doctors*, City of Hope (December 8, 2020), available at <https://www.cancercenter.com/community/blog/2020/12/how-do-i-change-my-oncologist>; *Choosing a Cancer Doctor*, American Cancer Society, available at <https://www.cancer.org/cancer/managing-cancer/finding-care/where-to-find-cancer-care/choosing-a-cancer-doctor.html> (last visited February 27, 2025).

<sup>177</sup> Shifts in surgical oncology care may involve fewer coordination challenges because care delivered by surgical oncologists is less frequent and often performed by different surgeons. Therefore, potential shifts of surgical oncology care from BWH to BIDMC may not be substantively different for patients than receiving an additional round of surgical oncology care at the same facility, as both cases would likely involve receiving care from a new provider. The impact of shifts in medical oncology care would also be limited for many patients who could continue to see their existing providers at a new facility due to anticipated transitions of provider employment between hospitals.

**6. The proposed clinical affiliation may result in more patients using BILH providers for non-oncology care, on which BILH providers generally perform comparably to statewide average across most metrics.**

Under the proposed clinical affiliation, a DFCI medical oncologist would operate as the care team lead for DFCI patients, coordinating care for services delivered at DFCI as well as surgical and non-oncology specialty services that would be delivered at BIDMC, similar to DFCI's current clinical arrangement with BWH. The parties also expect DFCI to join BILH's electronic medical record system. Given this expected preferred provider relationship, the EMR integration, and BILH's stated goal of managing patient care across its entire system,<sup>178</sup> the proposed affiliation may result in more patients associated with DFCI receiving non-oncology care from other BILH hospitals and providers.

To assess the potential impact of non-oncology care delivery shifts for DFCI patients towards BIDMC and BILH community hospitals, the HPC reviewed a broad set of outpatient and inpatient quality metrics. Our assessment included a review of 18 CMS Hospital Compare metrics and 41 AHRQ mortality and patient safety metrics assessing patient experience, timely and effective care, mortality and patient safety, and unplanned hospital visits.<sup>179</sup> We also reviewed 14 HEDIS measures and 9 patient experience measures for BILH primary care physicians. All metrics were analyzed in relation to statewide performance levels.<sup>180</sup> BILH hospitals and providers generally perform at or above statewide average performance, with some variation by hospital and metric. Full details of the HPC's analysis of these non-oncology metrics for BILH providers is available in Section D of the Data Appendix.

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In summary, DFCI and BIDMC are internationally recognized for their oncology care and have historically generally performed comparably to statewide averages on available oncology care quality metrics. Research suggests that hospitals with specialized oncology care offerings achieve superior outcomes for their patients, although these findings do not necessarily indicate

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<sup>178</sup> One of BILH's stated goals at its creation was full economic and clinical integration across the system, including clinical collaboration across its members on specific service lines such as cancer. MASS. HEALTH POLICY COMM'N, REVIEW OF THE PROPOSED MERGER OF LAHEY HEALTH SYSTEM; CAREGROUP AND ITS COMPONENT PARTS, BETH ISRAEL DEACONESS MEDICAL CENTER, NEW ENGLAND BAPTIST HOSPITAL, AND MOUNT AUBURN HOSPITAL; SEACOAST REGIONAL HEALTH SYSTEMS; AND EACH OF THEIR CORPORATE SUBSIDIARIES INTO BETH ISRAEL LAHEY HEALTH; AND THE ACQUISITION OF THE BETH ISRAEL DEACONESS CARE ORGANIZATION BY BETH ISRAEL LAHEY HEALTH; AND THE CONTRACTING AFFILIATION BETWEEN BETH ISRAEL LAHEY HEALTH AND MOUNT AUBURN CAMBRIDGE INDEPENDENT PRACTICE ASSOCIATION (HPC-CMIR-2017-2) at 13 (Sept. 2018), available at <https://www.mass.gov/doc/final-cmir-report-beth-israel-lahey-health/download>.

<sup>179</sup> The metrics included two Patient Experience metrics, two structural metrics, six Timely and Effective Care metrics, and eight Unplanned Hospital Admission Metrics, twenty-eight AHRQ mortality metrics, and thirteen AHRQ safety metrics. See *Hospital Compare Datasets*, *supra* note 161 and *Quality Indicators Software Instructions and Data Dictionary*, SAS® QI v2023, *supra* note 165.

<sup>180</sup> Confidence intervals were calculated for each metric at the hospital and statewide levels. If both the upper and lower bounds for a hospital calculated metric were above the upper and lower bounds for a statewide calculated metric, the hospital was considered to have performed statistically better than the statewide average. The opposite was found to be the case when hospital upper and lower bounds were both below statewide upper and lower bounds for a metric.

the transaction would result in higher quality care than that currently provided by the parties. The parties have emphasized several aspects of their plans designed to improve care quality, including their stated intention to integrate and expand existing care delivery initiatives, as well as quality benefits DFCI expects to realize by building its new facility. These plans have the potential to improve clinical quality but are not sufficiently developed for the HPC to be able to assess the likelihood of their specific impacts.

The proposed transaction also carries the risk of disruptions to care continuity for patients, especially those who may shift to a new medical oncologist. The parties would need to develop robust plans to avoid care disruptions for impacted patients and should be called upon to report on their progress in developing and implementing these plans if the transaction proceeds.

Finally, the proposed clinical affiliation may result in more patients using BIDMC or other BILH providers for their non-oncology care; the HPC did not identify quality concerns related to these potential shifts, as BILH providers generally perform comparably to statewide average performance on general quality metrics.

## **C. Access to and Equity of Care**

To assess factors related to access to and equity of care, we examined recent and projected trends in inpatient oncology utilization and the extent to which the parties' proposals are necessary to ensure accessibility of inpatient oncology care, reviewed the parties' roles in serving specific patient populations, and assessed party programs designed to improve access and equitable care for oncology patients and the potential impacts of the proposed transaction on these efforts.<sup>181</sup> The HPC's findings are summarized below:

### **Inpatient Oncology Utilization Trends and Access**

- DFCI asserts that the proposed new cancer hospital is necessary to meet projected changes in oncology utilization. However, given the many factors that may impact future inpatient oncology utilization, the limits of statistical modeling, and the inability to fully assess other inpatient oncology capacity, it is unclear to what extent the proposed transaction is necessary or sufficient to ensure future access to oncology care.

### **Payer Mix and Patient Demographics**

- DFCI and BIDMC serve a larger proportion of commercially insured and Medicaid-insured oncology patients than the statewide average, and DFCI's Medicare payer mix would likely increase somewhat as a result of the transaction.
- Based on certain indicia of social need, BIDMC's oncology patients reside in areas with greater social determinant of health burdens than DFCI's patients.

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<sup>181</sup> Among the factors that HPC assesses in its review of material change notices are the role of the parties in "serving at-risk, underserved, and government payer patient populations" and the "availability and accessibility of services." MASS. GEN. LAWS ch. 6D, § 13(d) (vi, ix-xii).

- DFCI and BIDMC serve a greater proportion of BIPOC and Hispanic oncology patients than the statewide average, with BIDMC serving a particularly high proportion of Black individuals who would likely shift to the new facility.
- DFCI has the largest proportion of oncology discharges from rural areas among major cancer providers in Boston and would likely serve a greater share of patients from nearby urban areas in the new facility.

#### **Current and Proposed Access and Equity Efforts**

- The parties currently engage in programs designed to improve access and equitable care for oncology patients and state that they intend to collaborate on expanding these efforts, although their plans are not yet sufficiently developed for the HPC to evaluate the likelihood of any specific impacts.

The remainder of this section discusses these findings in greater depth.

### **1. It is unclear to what extent the proposed transaction is necessary or sufficient to ensure future access to oncology care given the limits of statistical modeling, the many factors that may impact future inpatient oncology utilization, and the inability to fully assess other inpatient oncology capacity.**

The number of oncology discharges for residents of the Commonwealth has increased in recent years, driven by discharges for older adults. From 2016 to 2023, the total number of adult medical and surgical oncology discharges increased by 1.3%, with discharges for adults over 64 years of age increasing by 14.6% and discharges for adults ages 20-64 decreasing by 18%.<sup>182</sup> Total bed days for adult medical and surgical oncology patients grew at a much faster rate during this period, increasing by 20.2%. The parties cite utilization trends and assert that the proposed transaction would “increase access to high-quality tertiary and quaternary adult oncology services for the highest acuity patients with the most complex diagnoses, which is the primary objective for the [new DFCI] Cancer Center.”<sup>183</sup> DFCI states additional inpatient oncology capacity is needed due to factors including Massachusetts’s aging population, an increase in young adult cancers, the development of innovative cancer treatments such as CAR-T therapy that currently require inpatient stays, increasing utilization of certain therapies and imaging,<sup>184</sup> present capacity constraints in inpatient and post-acute care settings, and increases in patient acuity.<sup>185</sup>

The HPC reviewed projections of future bed utilization by the parties and in the ICA and tested them against its own model based on demographic projections, assessed factors likely to influence current and future inpatient oncology utilization, and considered the availability of data

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<sup>182</sup> HPC analysis of CHIA Massachusetts Hospital Discharge Database.

<sup>183</sup> DFCI MCN, *supra* note 3, at section 15.

<sup>184</sup> DFCI cited an increase in inpatient and outpatient utilization between 2020 and 2022, although utilization of oncology care was artificially depressed by the 2020 COVID-19 pandemic and the HPC observed minimal changes to inpatient utilization from 2021 to 2022 in available data. See DFCI DoN NARRATIVE, *supra* note 8, at Tables 2 and 3.

<sup>185</sup> DFCI DoN NARRATIVE, *supra* note 8, at 15-18.

on current inpatient oncology capacity. Based on these analyses, it is unclear to what extent the proposed transaction is necessary or sufficient to ensure future access to inpatient oncology services, as described in more detail below.

#### a. Models for Future Inpatient Utilization

DFCI and the ICA both provide estimations of future inpatient oncology bed need based primarily on projected demographic and utilization trends. DFCI estimates that inpatient medical oncology utilization for the patients of DFCI, BIDMC, and BWH would increase by approximately 48.7 beds over ten years, an increase of 17.9%, and that it would need an additional 62.4 beds to ensure capacity to admit most patients during periods of high utilization.<sup>186</sup> DFCI's projection is based on "national organic growth projections" for inpatient medical oncology care; the inputs and methodologies underlying these projections were not provided, but they do not appear to be based on Massachusetts-specific data.<sup>187</sup> The ICA forecasts future statewide inpatient oncology utilization by combining current utilization by payer category, age range, sex, and geographic location with projected changes in population and demographics.<sup>188</sup> The ICA model additionally incorporates trends in utilization per capita by age and sex from 2019 to 2022.<sup>189</sup> Based on these inputs, the ICA projects a 26.8% increase in the number of discharges for Massachusetts residents for oncology care from 2025 to 2040.<sup>190</sup>

Although the HPC identified numerous factors discussed below that raise questions about the credibility of models based on current utilization trends and demographics, the HPC also created a model of future inpatient utilization based on the Commonwealth's projected demographic trends (i.e., Massachusetts' aging population) to test the models provided by the parties and the ICA.<sup>191</sup> Assuming per-capita utilization specific to age and gender cohorts would remain unchanged, the HPC's demographics-based model predicts an increase in total inpatient oncology utilization for the whole Commonwealth equivalent to approximately 113 beds (10%) from 2023 to 2030, and 172 beds (16%) by 2040.<sup>192</sup>

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<sup>186</sup> DFCI DoN NARRATIVE, *supra* note 8, at Table 11 and pages 20-21 (DFCI estimates an average daily medical oncology inpatient census for BIDMC, DFCI, and BWH of 272.9 in 2022, which would grow to 321.6 in 2032, and a total bed need of 384 beds).

<sup>187</sup> *Id.*

<sup>188</sup> DFCI ICA, *supra* note 14, at 29-30.

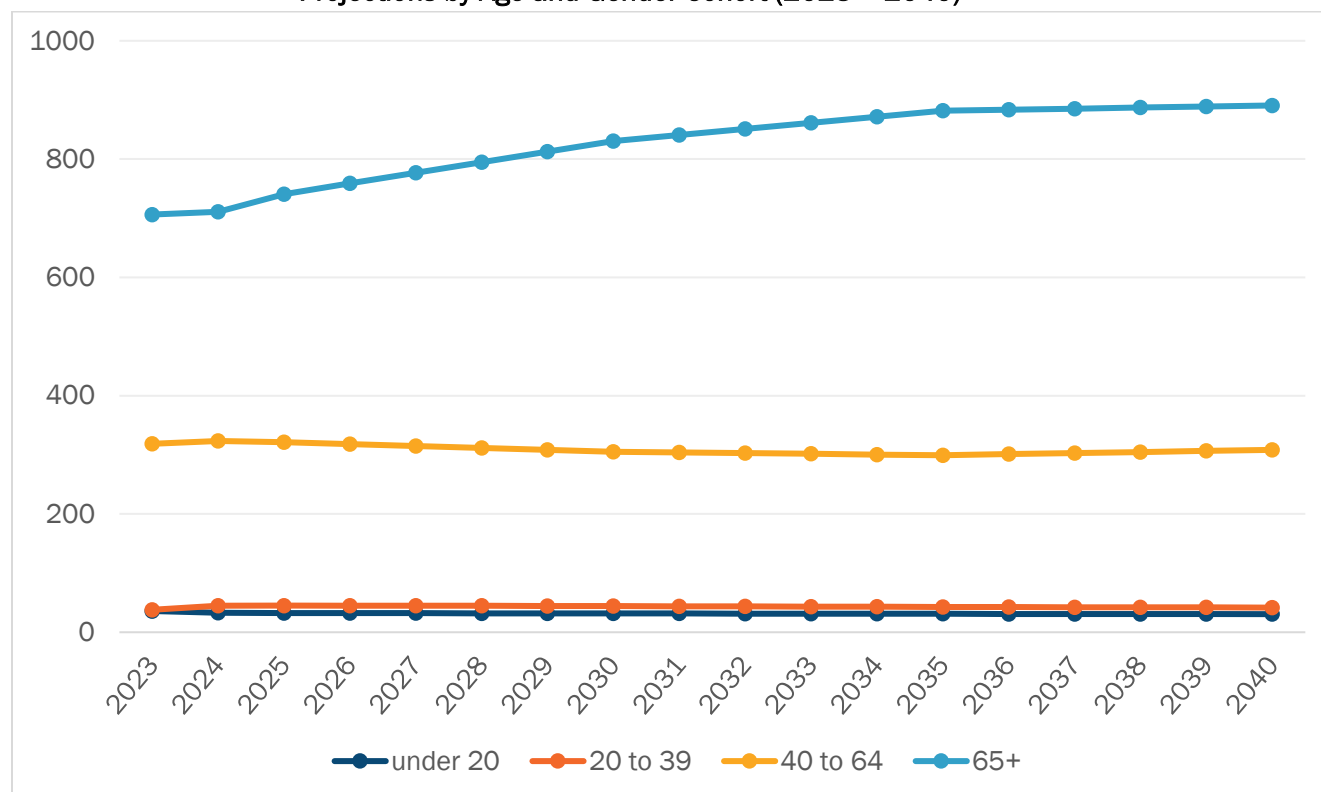
<sup>189</sup> *Id.* at 30-31. Although the ICA describes this step as an estimation of trends in cancer incidence, this step incorporates all factors impacting per capita inpatient utilization over this time period.

<sup>190</sup> *Id.* at 31-32. The ICA projection appears to measure numbers of discharges rather than bed days, potentially omitting differences in length of stay by patient cohort as a contributing factor to utilization, and does not differentiate medical and surgical oncology care, making the results more difficult to apply to DFCI's proposal to add capacity focused solely on medical oncology.

<sup>191</sup> The HPC estimated future oncology utilization using actual oncology bed days per capita by 5-year age and gender cohorts multiplied by population projections from the UMass Donahue Institute.

<sup>192</sup> In the HPC's projection, patients under 20 account for 32 beds of projected utilization in 2030 and 31 beds in 2040. Although the HPC included residents younger than 20 for the sake of comprehensiveness, these patients would not be part of the adult oncology population DFCI plans to serve in its proposed facility.

**Figure III.C.1: Estimated Inpatient Oncology Bed Utilization Using 2019 Utilization and Population Projections by Age and Gender Cohort (2023 – 2040)**



Source: HPC analysis of CDC WONDER incidence and population data, UMass Donahue Institute population projections, and CHIA Massachusetts Hospital Discharge Database.

Note: 2023 figures are actuals. All other figures are projections.

In developing its model, the HPC identified significant variation in outcomes depending on small changes to underlying assumptions. Recent increases in the average length of stay for oncology patients which, as discussed in the next section, were driven in large part by discharge challenges, resulted in substantial variances in the HPC's utilization projections depending on the base year used for modeling.<sup>193</sup> Assuming future trends in inpatient utilization per capita will be similar to those in recent years, as the ICA does, further inflates projections, but this methodology is unreliable given the rapid pace of oncology treatment innovations and hospital capacity challenges unique to recent years that were more driven by a deficit in post-acute care capacity than hospital capacity.<sup>194</sup> The wide variation in the results of these models in response to small

<sup>193</sup> See *supra* note 191. The HPC's model described in this section used utilization per capita by care cohort in 2019 as the most reliable pre-COVID year of utilization data. Using 2023 utilization per capita would increase projected utilization by 72 more beds in 2040 than the 2019 model.

<sup>194</sup> To test the scope of a model incorporating trends in demographics and utilization per capita, the HPC linearly extrapolated the bed days per capita trend from 2016-2019 and from 2019-2023 by age and gender cohort to predict future utilization per capita. We multiplied predicted utilization per capita by population projections from the UMass Donahue Institute. We divided total predicted bed-days by 365 to get bed-years. For those age and gender cohorts for which trends would have resulted in negative utilization per capita, we replaced the projection with average utilization per capita from 2016-2019. This model

adjustments in the underlying assumptions illustrates the limited reliability of such models for predicting future utilization.

## b. Factors Influencing Current and Future Oncology Utilization

While demographic-based models agree that inpatient oncology utilization in the Commonwealth is likely to increase over time, statistical modeling alone cannot account for all of the factors that will influence future utilization. As discussed in prior HPC work, utilization projections based on demographic change often fail to accurately predict and frequently overstate future utilization, requiring a deeper assessment of potential future changes in care patterns.<sup>195</sup> The HPC assessed the following other factors identified by DFCI and the ICA as potential drivers of current and future inpatient oncology care: incidence trends, novel advanced therapies, and post-acute care challenges.

### i. Incidence Trends

DFCI cites both changes in cancer incidence nationally among younger populations as well as cancer prevalence rates, driven by improved survival rates and an aging population, as a driver of increased utilization of oncology services in the future.<sup>196</sup> However, the relationship between overall cancer incidence or prevalence and inpatient utilization is not necessarily linear, as suggested by the fact that the number of new invasive cancers diagnosed each year in the Commonwealth increased by 4.1% from 2016 to 2019, while the number of oncology discharges increased only 3.5% during this period.<sup>197</sup> Additionally, the Massachusetts Cancer Registry (MCR), a division of the Massachusetts Department of Public Health that collects information on all newly diagnosed cases of cancer in the state, recently found that, while there was an increase in the

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included residents younger than 20. Incorporating 2016 – 2019 utilization trends, the model forecast a need for 280 additional oncology beds (25.5%) by 2030 and 518 additional beds (47.1%) by 2040. Incorporating 2019 – 2023 utilization, the model estimated a need for 365 additional beds (33.2%) by 2030 and 778 additional beds (70.8%) in 2040.

<sup>195</sup> MASS. HEALTH POLICY COMM'N, MASS GENERAL BRIGHAM INCORPORATED DETERMINATION OF NEED APPLICATIONS – MASSACHUSETTS GENERAL HOSPITAL # MGB-20121612-HE, BRIGHAM AND WOMEN'S FAULKNER HOSPITAL # MGB-20121716-HE, AND MULTISITE # MULTISITE-21012113-AS INDEPENDENT COST-ANALYSIS COMMENT at Appendix IV.A (Illustrating that a demographic-based model of inpatient bed need in 2010 would have predicted a 19% increase in utilization through 2020, while actual bed days grew by 0.7% from 2010 to 2019), available at <https://www.mass.gov/doc/hpc-public-comment-mgb-determination-of-need-applications/download>; see also Melinda Butin et al., *Scenarios, not shortage forecasts, are key to better workforce policy*, 2 HEALTH AFFAIRS SCHOLAR 11, 2, available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC11599709/pdf/qxae149.pdf> (“For example, population aging in the United States was assumed to have predictable effects on demand for health care. Given that adults aged 65–84 years are far more likely to require inpatient hospital stays compared with children aged 1–17 years, a forecaster in 2000 might have reasonably anticipated a growing need for hospital beds due to population aging. Despite a nearly 55% increase in the US population aged 65 and above, the number of hospital stays in 2019 was only 0.3% higher than in 2000”).

<sup>196</sup> DFCI DoN NARRATIVE, *supra* note 8, at 15-18.

<sup>197</sup> MASSACHUSETTS CANCER REGISTRY, CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS 2016-2020, at 44-45 (Jun. 2024), available at <https://www.mass.gov/doc/cancer-incidence-and-mortality-in-massachusetts-2016-2020-statewide-report/download> at 44-45 and HPC analysis of 2016 – 2019 CHIA Massachusetts Hospital Discharge Database using inpatient oncology care as defined in Section I, excluding patients under 18 years of age and out-of-state patients.

total number of cancers in Massachusetts from 2000 – 2019, this trend was “mostly due to an aging and growing Massachusetts population” and age-adjusted cancer incidence rates in Massachusetts actually declined slightly from 2000 – 2020,<sup>198</sup> suggesting that Massachusetts incidence trends may differ somewhat from national trends.

## ii. Novel Advanced Therapies

DFCI also identified changes in cancer care techniques and technology, especially intensive complex treatments such as CAR-T and bi-specific antibody therapies that often require inpatient care, as likely drivers of future inpatient utilization.<sup>199</sup> While these novel treatments have required longer lengths of stay for some patients, advancements in care protocols, technology, and pharmaceuticals have also resulted in more oncology care being provided on an outpatient basis over the past two decades than previously possible. DFCI itself has often been at the forefront of these efforts and has provided details on significant successes in reducing inpatient days, or even eliminating admissions entirely, for certain types of advanced CAR-T and transplant therapies.<sup>200</sup> Data provided by DFCI indicate that the average length of stay for patients is 6 to 11 days lower at DFCI for these advanced treatments than at BIDMC, suggesting that substantial opportunity exists for reducing inpatient utilization further.<sup>201</sup> DFCI has also succeeded in diverting patients from admission using lower-level interventions in its acute care clinic. The introduction of innovative oncology drugs<sup>202</sup> and advancements such as less invasive treatment options and genetic therapies<sup>203</sup> also show promise for treating and managing cancer and side effects in outpatient settings.<sup>204</sup> While continued care innovation and novel therapies may result in increased inpatient utilization, they may also reduce the need for inpatient utilization

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<sup>198</sup> *Id.* at 18. DFCI has provided numerous citations predicting increasing incidence trends in younger adults nationwide, but these trends have not yet been reflected in incidence or inpatient discharge trends by age category in Massachusetts data reviewed by the HPC. While DFCI cites some Advisory Board Company projections of future cancer inpatient utilization in Massachusetts and New England, including “forecasted disease prevalence impacts”, no underlying data or methodologies are provided, and most of these projections are aggregated to the New England population as a whole. See DFCI STAFF REPORT, *supra* note 15 at 22-23.

<sup>199</sup> DFCI DoN NARRATIVE, *supra* note 8, at 29.

<sup>200</sup> DFCI states it was able to eliminate inpatient utilization equivalent to five inpatient beds in FY24 through innovations in outpatient CAR-T and transplant therapies, and that this was double the outpatient administration from the prior year. DANA-FARBER CANCER INSTITUTE, RESPONSE TO APPLICANT QUESTIONS #5 at 2, available at <https://www.mass.gov/doc/responses-to-don-questions-5-pdf-dana-farber-cancer-institute-inc-hospitalclinic/download>.

<sup>201</sup> See DFCI STAFF REPORT, *supra* note 15, at Table 13 (showing DFCI average length of stay in FY22 was 11 days shorter for CAR-T Cell patients, 6.5 days shorter for autologous stem cell transplant patients, and 11.7 days shorter for allogenic stem cell transplant patients compared to BIDMC).

<sup>202</sup> See Karen Brooks, *Why New Cancer Treatment Discoveries are Proliferating*, PENN MEDICINE MAGAZINE, (Apr. 2023), available at <https://www.pennmedicine.org/news/publications-and-special-projects/penn-medicine-magazine/spring-2023/why-new-cancer-treatment-discoveries-are-proliferating>.

<sup>203</sup> See *Gene Therapy: Pioneering Cancer Care*, THE UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER, <https://www.mdanderson.org/cmp/gene-therapy.html> (last visited February 27, 2025).

<sup>204</sup> Kimberly Steele, *Healthcare industry embraces shift to outpatient care sites*, JLL, (Apr. 2024), available at <https://www.us.jll.com/en/newsroom/healthcare-industry-embraces-shift-to-outpatient-care-sites> (stating that “Technological advancements like early detection and less invasive care options are also shifting oncology services out of the hospital and into outpatient settings”).

as therapies become safer and more routine and providers develop new care management strategies.

### iii. Post-Acute Care Discharge Challenges

DHCI noted recent difficulties in discharging patients to post-acute care settings, and generally identified challenges in finding inpatient beds for its patients given the current high occupancy rates across Massachusetts hospitals, claiming that these challenges would be alleviated by additional capacity in its new facility.<sup>205</sup> As described in prior HPC work, the statewide average length of stay for certain general acute care scheduled hospital stays and admissions from the emergency department increased by nearly a full day from 2017 - 2023. This increase was almost entirely among discharges to skilled nursing facilities (SNFs) and home health care, where average length of stay increased by 1.6 days and 0.9 days, respectively.<sup>206</sup>

The HPC found similar trends for oncology inpatient stays, as shown in Figure III.C.2 below. For oncology discharges to home health settings, which accounted for 35.7% of Massachusetts hospital oncology bed days and 33.2% of oncology discharges in 2023, the average length of stay increased by 1.1 day per discharge. For oncology discharges to institutional post-acute care settings,<sup>207</sup> which comprised 25.3% of oncology bed days and 14.9% of oncology discharges in 2023, the average length of stay increased by 2.6 days per discharge. Increased lengths of stay for these patients could reflect workforce shortages and other factors, resulting in decreased throughput and increased inpatient utilization not directly related to the need for acute hospital care. These findings suggest challenges with post-acute discharges may be responsible for a substantial part of increased inpatient oncology utilization in recent years, and projections of future bed need based on these recent trends will be artificially inflated by these length of stay trends not directly related to the need for acute care. These findings also suggest that investments in addressing post-acute care capacity challenges may be a more efficient option for reducing hospital bed days and improving future accessibility of inpatient care rather than building additional inpatient capacity.

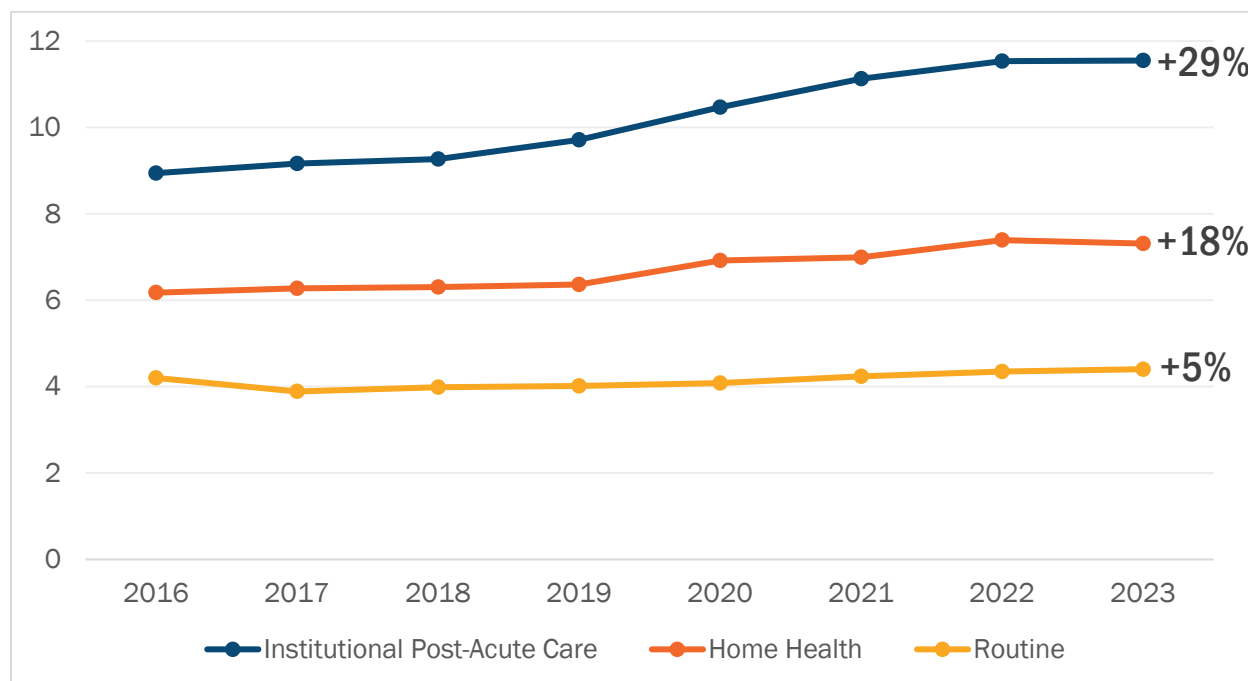
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<sup>205</sup> DHCI DoN NARRATIVE, *supra* note 8, at 17-18; DHCI STAFF REPORT, *supra* note 15, at 25-26 (“[DHCI] states that... other hospitals in the Alliance of Dedicated Cancer Care Centers discharge patients more efficiently than [DHCI]”).

<sup>206</sup> Analysis limited to admissions from the emergency department and scheduled admissions discharged routinely, to home health, or to a SNF. Includes COVID-related discharges. Excludes pediatric, maternity, behavioral health, and rehabilitation admissions and admissions with length of stay greater than 180 days. 2024 HPC COST TRENDS REPORT *supra* note 112, at 80-87.

<sup>207</sup> Institutional post-acute care settings were defined as long-term care hospitals, rehabilitation facilities or hospitals, rehabilitation hospitals, skilled nursing facilities, and intermediate care facilities.

**Figure III.C.2: Average Lengths of Stay for Oncology Discharges by Discharge Destination (2016 – 2023, With Percent Change Since 2016)**



Source: HPC analysis of CHIA Massachusetts Hospital Discharge Database.

### c. Information on Inpatient Oncology Capacity

To fully assess whether the facility proposed by DFCI is necessary to ensure future access to inpatient oncology services, an assessment of current inpatient oncology hospital capacity would be necessary. Unfortunately, data are not currently available regarding the number of beds in the Commonwealth suitable to care for oncology patients. Oncology beds are not distinguished from other medical/surgical beds in hospital reports to CHIA, and some oncology care can be provided in general acute care wards with appropriate staffing. In addition to the inability to assess existing capacity, other Massachusetts providers are currently constructing oncology beds to meet projected utilization growth, including MGH's current construction of a clinical tower housing 210 beds dedicated for oncology care (an increase of 91 oncology-specific beds) and 21 net new oncology infusion bays.<sup>208</sup> The inability to fully assess current inpatient oncology capacity

<sup>208</sup> In 2022, MGB received regulatory approval for a significant expansion, renovation, and improvement of Massachusetts General Hospital, including the construction of a clinical care facility housing the Mass General Cancer Center and the Corrigan Minehan Heart Center. The clinical tower currently being built by MGH includes 210 beds designated specifically for cancer care, an increase of 91 dedicated cancer beds. It is possible this overrepresents the increase in MGH's inpatient oncology capacity, since the project will increase MGH's beds by a net total of 94 beds inclusive of both oncology and cardiac care beds; some of the 91 new cancer beds likely replace medical surgical beds not formerly designated solely for cancer care. See Mass General Brigham, Application for Determination of Need for Substantial Capital Expenditure and Substantial Change in Service at MGH # MGB-20121612-HE, Narrative at 10-11 and 21, (Jan. 21, 2021), available at <https://www.mass.gov/doc/mass-general-brigham-incorporated-mgh-application-form-and-attachments/download>.

and the current expansions underway undermine the certainty that the expansion proposed by DFCI is necessary to ensure future access to inpatient oncology care.

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Given the limits of statistical modeling, the many factors that may impact future inpatient oncology utilization, and the inability to fully assess other inpatient oncology capacity, it is unclear whether the parties' specific proposal is necessary or sufficient to ensure future access to inpatient oncology care.

## **2. Payer Mix and Patient Demographics**

In addition to the overall availability of services relevant to a given transaction, the HPC is directed to examine the role of the parties in “serving at-risk, underserved, and government payer patient populations” and the potential impacts of proposed transactions on access to services for these populations,<sup>209</sup> with a goal of reducing health care disparities and improving health equity. To this end, the HPC reviewed a range of literature documenting disparities in access to oncology care, morbidity, and mortality based on patient payer, race and ethnicity, geography, income, and other social determinants of health, as summarized below. This information provides context for understanding the payer mix and demographics of the patients served by the parties.

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<sup>209</sup> MASS. GEN. LAWS ch. 6D, § 13(d)(ix).

## **Key Disparities in Cancer Incidence, Care, and Outcomes Based on Research Literature**

### **Payer Mix**

- Providers serving high proportions of oncology patients insured by Medicaid function as important points of access for patients who often face barriers to obtaining care<sup>210</sup> or disproportionately high morbidity and mortality rates.<sup>211</sup>
- A provider's payer mix may impact its financial and quality performance due to lower payments by government payers relative to commercial payers<sup>212</sup> and socioeconomic factors that disproportionately impact the complexity and health outcomes of government payer patients. This can incentivize providers to try to attract commercial patients rather than focusing on Medicaid patients.<sup>213</sup>

### **Social Determinants of Health**

- Individuals with greater burden from social determinants of health, including lower socioeconomic status, have higher mortality<sup>214</sup> and rates of late-stage diagnoses<sup>215</sup> than their counterparts.
- Per the American Cancer Society's 2023 report cancer disparities, racial, ethnic, and geographic cancer disparities align with "disparities in exposure to risk factors and access to cancer prevention, early detection, and treatment, which are largely rooted in fundamental inequities in social determinants of health in social determinants of health."<sup>216</sup>

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<sup>210</sup> Victoria Marks et al., *Acceptance of Simulated Adult Patients With Medicaid Insurance Seeking Care in a Cancer Hospital for a New Cancer Diagnosis*, 5 JAMA NETWORK, (2022) [hereinafter Marks et al.], available at <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794319>.

<sup>211</sup> Runhua Shi et al., *Effects of payer status on breast cancer survival: a retrospective study*, 15 BMC CANCER, (2015), available at [https://pmc.ncbi.nlm.nih.gov/articles/PMC4383189/pdf/12885\\_2015\\_Article\\_1228.pdf](https://pmc.ncbi.nlm.nih.gov/articles/PMC4383189/pdf/12885_2015_Article_1228.pdf).

<sup>212</sup> Aaron Mitchell et al., *Commercial Versus Medicaid Insurance and Use of High-Priced Anticancer Treatments*, 29 THE ONCOLOGIST 527, (2024), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC11144993/pdf/oyae035.pdf>.

<sup>213</sup> Marks et al., *supra* note 210.

<sup>214</sup> Jeremy O'Connor et al., *Factors Associated With Cancer Disparities Among Low-, Medium-, and High-Income US Counties*, 1 JAMA NETWORK, (2018), available at <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2705856>.

<sup>215</sup> Limin Clegg et al., *Impact of socioeconomic status on cancer incidence and stage at diagnosis: selected findings from the surveillance, epidemiology, and end results: National Longitudinal Mortality Study*, 20 CANCER CAUSES & CONTROL 417, (2009), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC2711979/pdf/nihms-104105.pdf>.

<sup>216</sup> AMERICAN CANCER SOCIETY, AMERICAN CANCER SOCIETY'S REPORT ON THE STATUS OF CANCER DISPARITIES IN THE UNITED STATES (Nov. 2023) [hereinafter ACS 2023 REPORT], available at <https://acsjournals.onlinelibrary.wiley.com/doi/epdf/10.3322/caac.21812>.

## Race/Ethnicity

- In Boston, Black individuals have higher cancer incidence, mortality, and premature mortality rates across all invasive cancers compared to other races and ethnicities.<sup>217</sup>
- Nationally, Hispanic individuals are twice as likely to be diagnosed with and die from stomach cancer than non-Hispanic individuals.<sup>218</sup>
- Asian/Pacific Islander individuals have almost twice the incidence of liver & IBD cancer compared to non-Hispanic white individuals.<sup>219</sup>
- Across Massachusetts, white non-Hispanic individuals have higher age-adjusted incidence rates from all invasive cancers than other racial/ethnic groups. Despite their higher incidence rates, white non-Hispanic individuals saw statistically significant decreases in mortality from all cancers from 2016 – 2020, unlike Black and Hispanic individuals.<sup>220</sup>
- The overall cancer screening rate is lower for BIPOC individuals,<sup>221</sup> and BIPOC individuals tend to receive later-stage diagnoses than white individuals.<sup>222</sup>
- Beyond disparities in incidence, mortality, screening, and timely care, some races/ethnicities may face a greater degree of difficulty accessing care or discrimination and bias within the healthcare system.<sup>223</sup>

## Geography

- Individuals living in rural areas may face higher incidence of certain cancers, including tobacco- and HPV-associated, lung and bronchus, cervical, and colorectal cancers,<sup>224</sup> as well as higher mortality rates.<sup>225</sup>

See Data Appendix, Figure A5, Infographic on Disparities in Cancer Incidence, Care, and Outcomes.

<sup>217</sup> BOSTON PUBLIC HEALTH COMMISSION, HEALTH OF BOSTON 2023: THE CANCER REPORT (May 2023), available at [https://www.boston.gov/sites/default/files/file/2023/05/HOB\\_Cancer\\_2023\\_FINAL\\_May11.pdf](https://www.boston.gov/sites/default/files/file/2023/05/HOB_Cancer_2023_FINAL_May11.pdf).

<sup>218</sup> *Cancer and Hispanic Americans*, U.S. DEPARTMENT OF HEALTH HUMAN SERVICES OFFICE OF MINORITY HEALTH, <https://minorityhealth.hhs.gov/cancer-and-hispanic-americans> (last visited February 27, 2025).

<sup>219</sup> *Cancer and Asian Americans*, U.S. DEPARTMENT OF HEALTH HUMAN SERVICES OFFICE OF MINORITY HEALTH, <https://minorityhealth.hhs.gov/cancer-and-hispanic-americans> (last visited February 27, 2025).

<sup>220</sup> MASSACHUSETTS CANCER REGISTRY, CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS 2016-2020 (Jun. 2024), available at <https://www.mass.gov/doc/cancer-incidence-and-mortality-in-massachusetts-2016-2020-statewide-report/download>.

<sup>221</sup> Darran Liu et al., *Interventions to Reduce Healthcare Disparities in Cancer Screening Among Minority Adults: A Systematic Review*, 8 JOURNAL OF RACIAL AND ETHNIC HEALTH DISPARITIES 107, (2021), available at <https://link.springer.com/article/10.1007/s40615-020-00763-1>.

<sup>222</sup> Michelle Tong et al., *Racial Disparities in Cancer Outcomes, Screening, and Treatment*, KFF, <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-cancer-outcomes-screening-and-treatment/> (last visited February 27, 2025).

<sup>223</sup> *Id.*

<sup>224</sup> Whitney Zahnd et al., *Rural-Urban Differences in Cancer Incidence and Trends in the United States*, 27 CANCER EPIDEMIOLOGY BIOMARKERS PREV. 1265, (2018), available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC5787045/pdf/nihms895528.pdf>.

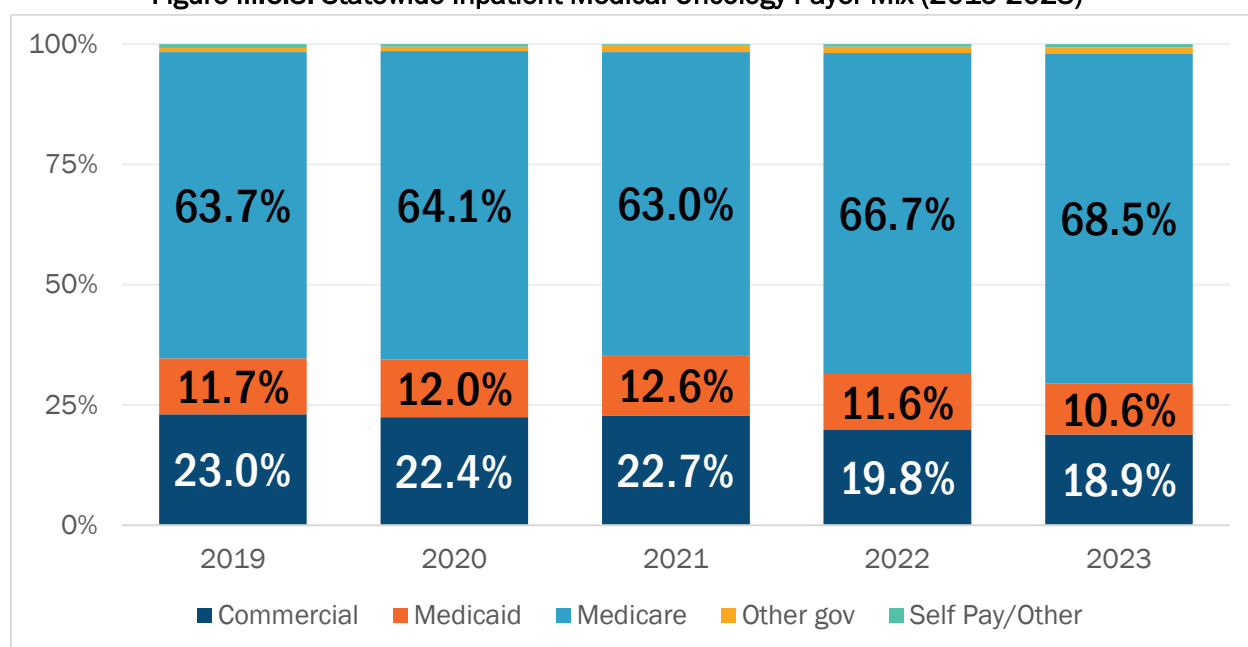
<sup>225</sup> ACS 2023 REPORT, *supra* note 216.

- a. DFCI and BIDMC serve a larger proportion of commercially insured and Medicaid-insured oncology patients than the statewide average, and DFCI's Medicare payer mix would likely increase somewhat as a result of the transaction.

The HPC examined the historical payer mix of the parties' hospitals compared to statewide as well as to competitor hospitals.<sup>226</sup> We also examined changes in payer mix over time. The analyses in this section focus on inpatient medical oncology care.

As shown in Figure III.C.3 below, from 2019 – 2023, Medicare patients accounted for an increasing majority of inpatient medical oncology discharges statewide. Over the same period, the proportion of commercially insured and Medicaid-insured discharges decreased.<sup>227</sup> These trends are similar to trends in payer mix for all discharges statewide.<sup>228</sup>

**Figure III.C.3: Statewide Inpatient Medical Oncology Payer Mix (2019-2023)**



Source: HPC analysis of CHIA Massachusetts Hospital Discharge Database.

Note: Includes medical oncology discharges at all Massachusetts hospitals, excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age.

<sup>226</sup> Competitor hospitals were defined as those providing the majority of Massachusetts' adult inpatient oncology care, consisting of Massachusetts General Hospital, South Shore Hospital, Tufts Medical Center, and UMass Memorial Medical Center.

<sup>227</sup> The declining share of Medicaid-insured discharges may have, at least in part, resulted from the MassHealth redeterminations process, which resulted in MassHealth membership decreasing by 16% from April 2023 through May 2024. MASS. EXEC. OFFICE OF HEALTH AND HUMAN SERVICES, JUNE 2024: FINAL UPDATE ON MASSHEALTH REDETERMINATIONS, at 1 (Jun. 24), available at <https://www.mass.gov/doc/june-2024-redetermination-key-takeaways/download>.

<sup>228</sup> HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database, including discharges at all Massachusetts hospitals and excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age. We found that the statewide share of commercially insured discharges declined over time, though the decline was slower than that for oncology discharges. Over the same period, the proportion of Medicaid-insured discharges decreased, and the share of Medicare-insured discharges increased.

The parties serve a larger proportion of commercially insured and Medicaid-insured medical oncology inpatients than the statewide average. DFCI's inpatient oncology commercial mix has historically been higher than the statewide average.<sup>229, 230</sup> However, DFCI's inpatient oncology Medicaid mix has been increasing over time, and it was higher than the statewide average in 2023.<sup>231</sup> In 2023, BIDMC had a higher inpatient oncology commercial and Medicaid mix than statewide,<sup>232</sup> even though, consistent with Massachusetts trends, its commercial and Medicaid mix have decreased since 2019.<sup>233</sup>

In confidential production to the HPC, the parties stated that they do not expect the transaction to have a significant impact on their payer mix, although DFCI has indicated to the DoN program that the proposed transaction might increase DFCI's MassHealth mix, which would enhance access for a population that often faces barriers to obtaining oncology care.<sup>234, 235</sup> Section III.C.3 details the parties' planned access and equity efforts, some of which may impact their payer mix, but DFCI's payer mix in the new facility would likely resemble a combination of the current mix of BIDMC, DFCI, and the hospitals from which DFCI is most likely to draw patients, including BWH and MGH. This would likely result in an increase in DFCI's mix of Medicare patients and maintain DFCI's relatively high mix of commercial patients.

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<sup>229</sup> Accounting for patients managed by DFCI at BWH, DFCI and BWH together have higher inpatient medical oncology commercial mix, higher Medicaid mix, and lower Medicare mix than the statewide average. HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database.

<sup>230</sup> HPC analysis of DFCI's combined inpatient and outpatient payer mix using gross patient service revenue (GPSR) data from CHIA Hospital Cost Reports found that DFCI's overall payer mix is primarily commercial and Medicare, with DFCI having a Medicaid mix of only 8.2%. Comparator GPSR data for other hospitals are not limited to oncology service lines, but the statewide hospital median Medicaid mix by GPSR is 21.5%. CTR. FOR HEALTH INFO. & ANALYSIS, MASSACHUSETTS HOSPITAL PROFILES ACUTE DATABOOK DATA THROUGH FISCAL YEAR 2022 (Feb. 2024) [Hereinafter CHIA 2022 HOSPITAL PROFILES DATABOOK], *available at* <https://www.chiamass.gov/assets/docs/r/hospital-profiles/2022/FY22-Massachusetts-Hospital-Profiles-Databook.xlsx>.

<sup>231</sup> HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database. See the Data Appendix, Figure A6, showing DFCI's inpatient medical oncology payer mix over time.

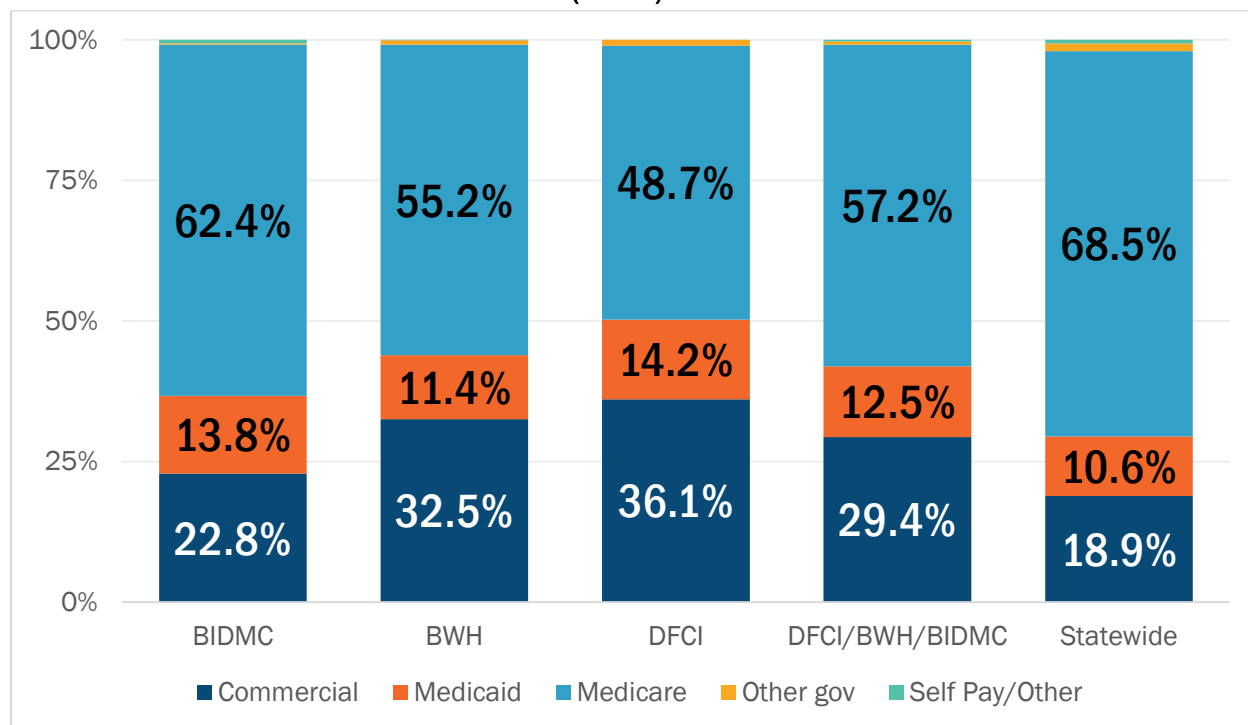
<sup>232</sup> BIDMC's GPSR-based payer mix across all inpatient and outpatient services is comparable to the statewide hospital median, with BIDMC having slightly lower Medicaid mix and slightly higher Medicare mix. CHIA 2022 HOSPITAL PROFILES DATABOOK, *supra* note 230.

<sup>233</sup> HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database. See the Data Appendix, Figure A7, showing BIDMC's inpatient oncology payer mix over time.

<sup>234</sup> See the Data Appendix, Figure A5, Infographic on Disparities in Cancer Incidence, Care, and Outcomes.

<sup>235</sup> DFCI "expects that its MassHealth payor mix will increase, due in part to the efforts BIDMC has made in recent years to increase its MassHealth population and the preferred provider relationship that will exist between [DFCI] and BIDMC." DFCI Response to Applicant Questions #4 *supra* note 77, at 6.

**Figure III.C.4: Inpatient Medical Oncology Payer Mix for Select Hospitals and Statewide (2023)**



Source: HPC analysis of CHIA Massachusetts Hospital Discharge Database.

Note: Includes medical oncology discharges at all Massachusetts hospitals, excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age.

**b. Based on certain indicia of social need, BIDMC's oncology patients reside in areas with greater social determinant of health burden than DFCI's patients.**

The HPC examined whether the parties' oncology inpatients come from communities with greater indicia of social need compared to statewide and comparator hospitals.<sup>236</sup> The social determinant of health (SDoH) metrics examined included per capita income, the proportion of households with limited English speaking, and the proportion of the population that was unemployed.<sup>237</sup> As shown in Figure III.C.5, we found that DFCI's oncology patients on average reside in areas with a lesser SDoH burden than the statewide average and a lesser burden than BIDMC, while BIDMC oncology patients tended to come from communities with a higher proportion of households with limited English speaking and a higher unemployment rate.

<sup>236</sup> Comparable data were not available for outpatients on an all-payer basis.

<sup>237</sup> For more detail on the SDoH measures, see *Social Determinants of Health Resources*, AGENCY FOR HEALTH CARE RESEARCH & QUALITY, <https://www.ahrq.gov/sdoh/resources.html> (last visited February 27, 2025).

**Figure III.C.5: Select SDoH Measures for Medical and Surgical Oncology Inpatients of Party Hospitals, Comparators, and Statewide (2023)**

	Hospital	Average Value
Per Capita Income	UMass Memorial Medical Center	\$ 38,853
	Statewide	\$ 45,350
	Tufts Medical Center	\$ 48,512
	South Shore Hospital	\$ 48,795
	Beth Israel Deaconess Medical Center	\$ 49,315
	Brigham and Women's Hospital	\$ 49,671
	Dana-Farber Cancer Institute	\$ 49,924
	Massachusetts General Hospital	\$ 50,629
Households with Limited English Speaking	Tufts Medical Center	7.5%
	Beth Israel Deaconess Medical Center	6.5%
	Massachusetts General Hospital	6.1%
	Statewide	5.2%
	UMass Memorial Medical Center	5.0%
	Dana-Farber Cancer Institute	4.8%
	Brigham and Women's Hospital	4.7%
	South Shore Hospital	3.2%
Population that was Unemployed (Ages 16+)	Tufts Medical Center	5.2%
	Beth Israel Deaconess Medical Center	5.1%
	Statewide	5.0%
	UMass Memorial Medical Center	4.9%
	Dana-Farber Cancer Institute	4.8%
	Brigham and Women's Hospital	4.8%
	Massachusetts General Hospital	4.8%
	South Shore Hospital	4.7%

Source: HPC analysis of AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, SOCIAL DETERMINANTS OF HEALTH DATABASE, available at <https://www.ahrq.gov/sdoh/data-analytics/sdoh-data.html>.

Note: Measures include sum of households with limited English speaking, sum of population that was unemployed (age 16 years +), and sum of population with income to poverty ratio < 1.24. Measures were calculated as the average score in the zip codes where a given hospital's oncology patients resided, weighted by proportion of each hospital's patients in each relevant zip code. Analysis limited to inpatient medical and surgical oncology discharges for Massachusetts residents aged 18+.

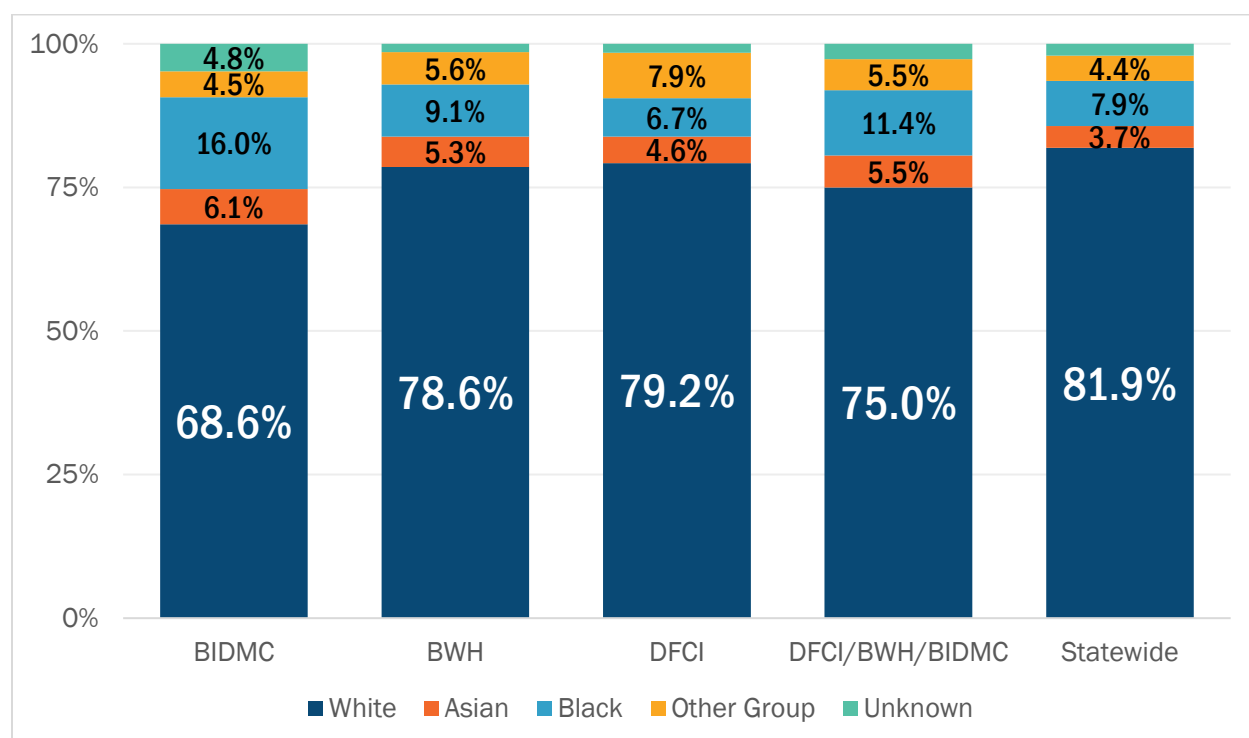
- c. **DFCI and BIDMC serve a greater proportion of BIPOC and Hispanic oncology patients than the statewide average, with BIDMC serving a particularly high proportion of Black individuals who would likely shift to the new facility.**

We examined data on the racial and ethnic demographics of the parties' medical oncology inpatients compared to statewide and other major cancer care providers. From 2019 – 2023, the statewide share of medical oncology discharges for BIPOC patients increased slightly, while the

share of discharges for Hispanic patients was relatively constant at approximately 6%.<sup>238</sup> These trends were similar to trends across all discharges statewide.<sup>239</sup>

The parties serve a greater proportion of BIPOC and Hispanic inpatient medical oncology discharges than the statewide average. DFCI's share of BIPOC oncology discharges increased slightly from 2019 – 2023 and was 2.7 percentage points greater than statewide in 2023.<sup>240</sup> In 2023, BIDMC had a significantly larger share of BIPOC oncology discharges, particularly discharges for Black patients, than the statewide average. DFCI and BIDMC both had a higher share of Hispanic oncology discharges than statewide in 2023, though DFCI's share was higher than BIDMC's.

**Figure III.C.6: Inpatient Medical Oncology Discharges by Race for Select Hospitals and Statewide (2023)**



Source: HPC analysis of CHIA Massachusetts Hospital Discharge Database data.

Note: Includes medical oncology discharges at all Massachusetts hospitals, excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age.

<sup>238</sup> HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database.

<sup>239</sup> HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database, including discharges at all Massachusetts hospitals and excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age. We found that, from 2019-2023, the statewide proportion of discharges for BIPOC patients increased slightly, while the proportion for white patients decreased slightly.

<sup>240</sup> When we expanded our analysis to include all the patients that DFCI currently manages in both DFCI beds and BWH beds, we found that the proportion of BIPOC individuals DFCI serves is slightly higher than the proportion of BIPOC patients just in DFCI beds.

Given the parties' expectation that BIDMC's patients would begin receiving oncology services from DFCI and given BIDMC's relatively large share of oncology discharges for BIPOC patients, DFCI would likely serve a greater share of BIPOC patients following the affiliation. To the extent that this occurs, the transaction would enhance equitable access to oncology services for traditionally underserved individuals facing disparities in cancer incidence, mortality, screening, and timely care.<sup>241</sup>

**d. DFCI has the largest proportion of oncology discharges from rural areas among major cancer providers in Boston and would likely serve a greater share of patients from nearby urban areas in the new facility.**

From 2019 to 2023, the share of inpatient medical oncology discharges for patients from rural areas<sup>242</sup> did not substantially change statewide or for BIDMC.<sup>243</sup> Over the same period, DFCI's and BWH's share of oncology inpatients from rural areas increased slightly.<sup>244</sup> In 2023, DFCI had the largest proportion of inpatient medical oncology discharges from rural areas (10.4%) among major cancer providers in Boston (BWH at 9.5%, MGH at 7.8%, BIDMC at 3.9%, and Tufts Medical Center at 3.3%), although a smaller proportion than the statewide average of 12%.<sup>245</sup> DFCI's relatively high rural mix may in part stem from its clinical partnerships with providers across Massachusetts. For example, DFCI's Cancer Care Collaborative, which includes UMass Memorial Hospital, Berkshire Medical Center, and Cape Cod Hospital, offers expedited access to DFCI services for member hospitals' patients presenting with complex cancers.<sup>246</sup> DFCI also has community-based locations across Massachusetts and New Hampshire, though some of these locations are co-branded with BWH.<sup>247</sup>

DFCI's new facility would represent a significant expansion of inpatient medical oncology services in downtown Boston. After its construction, the facility would likely serve a greater share of patients from nearby urban areas, including BIDMC's current patients, although the parties also

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<sup>241</sup> See the Data Appendix, Figure A5, Infographic on Disparities in Cancer Incidence, Care, and Outcomes.

<sup>242</sup> The HPC defined rural areas in accordance with the Massachusetts State Office of Rural Health, which considers a municipality to be rural if it meets one of the following criteria: 1) meets at least one of three federal rural definitions (Census Bureau, Office of Management and Budget, or rural-urban commuting area codes) at the sub-county level, 2) has a population less than 10,000 people and a population density below 500 people per square mile, and/or 3) has an acute care hospital in the town that meets the state hospital licensure definition of a small rural hospital, or is a certified critical access hospital. *Rural Definition*, MASSACHUSETTS STATE OFFICE OF RURAL HEALTH, <https://www.mass.gov/doc/rural-definition-detail-0/download> (last visited February 27, 2025).

<sup>243</sup> Trends were similar for all discharges statewide. HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database, including discharges at all Massachusetts hospitals and excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age.

<sup>244</sup> From 2019 – 2023, the share of inpatient medical oncology discharges from rural areas decreased by 0.5 percentage points for BIDMC and increased by 0.3 points statewide, by 1.2 points for DFCI, and by 1.8 points for BWH. HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database.

<sup>245</sup> HPC analysis of 2019 – 2023 CHIA Massachusetts Hospital Discharge Database.

<sup>246</sup> *Collaborations*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/about/collaborations> (last visited February 27, 2025).

<sup>247</sup> DFCI has community-based locations in Brighton, Milford, South Weymouth, Methuen, Foxborough, and Londonderry (NH). *Locations*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/locations> (last visited February 27, 2025).

expect DFCI will continue to attract patients from across the Commonwealth.<sup>248</sup> DFCI also expects to hire 2,400 additional clinical and nonclinical staff,<sup>249</sup> which would increase competition and therefore costs for other provider organizations providing oncology care. If DFCI opens its new hospital as planned, large and well-resourced providers like MGB would likely to be better positioned to respond competitively, with smaller and more financially vulnerable providers including community hospitals potentially facing both a loss of oncology patients and revenue and upward pressure on labor costs as DFCI staffs its new facility. To the extent these pressures destabilize or diminish the ability of other oncology providers to invest in or maintain facilities and staff, it would likely negatively impact health care equity and access as well as potentially increase health care spending.

The expansion of inpatient oncology services and subsequent competition for oncology healthcare workforce may further concentrate the provision of oncology care in Boston. While concentration of care at urban specialty hospitals could create economies of scale and ensure that patients receive care at sites with certain therapeutic technologies and from providers who are specialized in providing oncology care, it also may challenge access to care. As capacity becomes more concentrated in Boston, oncology patients might have travel an increased distance to receive services, which has been shown to be associated with “more advanced disease at diagnosis, inappropriate treatment, a worse prognosis, and a worse quality of life.”<sup>250</sup> Further, increased travel burden might impose financial hardships on patients who are likely already struggling with the expense of care.<sup>251</sup> DFCI has confidentially indicated to the HPC that it expects to maintain its various clinical partnerships and would seek to preserve its community-based locations following the affiliation. If the transaction proceeds as planned, there will be a need for greater coordination between major oncology providers, including the parties, and community providers throughout the state to maintain and improve local access to care despite the significant investments in Boston-based capacity.

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<sup>248</sup> See DFCI STAFF REPORT, *supra* note 15, at 25 (“[DFCI] envisions that inpatient admissions [to the new hospital] will occur through a number of additional pathways, that include the outpatient environment, elective admissions, admissions from observation beds, admissions from the expanded Dana-Farber oncology-specific Acute Care Clinic, transfers from other general acute care hospitals, and transfers from post-acute facilities and nursing homes”).

<sup>249</sup> See *supra* note 77.

<sup>250</sup> Massimo Ambroggi et al., *Distance as a Barrier to Cancer Diagnosis and Treatment: Review of the Literature*, 20 THE ONCOLOGIST 1378, (Oct. 2015), available at [https://pmc.ncbi.nlm.nih.gov/articles/PMC4679078/pdf/theoncologist\\_15110.pdf](https://pmc.ncbi.nlm.nih.gov/articles/PMC4679078/pdf/theoncologist_15110.pdf).

<sup>251</sup> See *Annual Report to the Nation Part 2: Patient economic burden of cancer care more than \$21 billion in the United States in 2019*, NATIONAL INSTITUTE OF HEALTH, (Oct. 26, 2021), available at <https://www.nih.gov/news-events/news-releases/annual-report-nation-part-2-patient-economic-burden-cancer-care-more-21-billion-united-states-2019>.

**3. The parties currently engage in programs designed to improve access and equitable care for oncology patients and state that they intend to collaborate on expanding these efforts, although their plans are not yet sufficiently developed for the HPC to evaluate the likelihood of any specific impacts.**

The parties are each engaged in numerous efforts designed to increase equitable access to their oncology services. DFCI's current initiatives include its Cancer Care Equity Program, which offers patient navigation services,<sup>252</sup> co-location of screening clinics at community health centers,<sup>253</sup> and efforts to "[increase] minority representation in clinical trials."<sup>254</sup> BIDMC's oncology-specific access and equity efforts include cancer screening and prevention programs run by BILH, a Multicultural Cancer Task Force, survivorship symposiums, and patient navigation programs, in addition to access-oriented programs available to all patients.<sup>255</sup> In addition, the parties have initiatives designed to support patients with behavioral health co-morbidities. For example, DFCI employs social workers which provide psychosocial assessments and interventions to DFCI patients following a cancer diagnosis and which work to address concerns such as anxiety, depression, substance use, and the impact of cancer on family, work, finances, etc.<sup>256</sup>

The parties also noted a variety of efforts that they have undertaken to increase access to their services for MassHealth patients. Recently, DFCI expanded its MassHealth MCO contracting, raising the percentage of MassHealth members in Massachusetts who were enrolled in a health plan that offered access to DFCI services from 67% to 88%.<sup>257</sup> DFCI also has several programs designed to reach patients covered by MassHealth and other underserved populations, including screenings at Whittier Street Health Center and through DFCI's Mammography Van;<sup>258</sup> financial counseling services, including assistance with Medicaid applications and answering questions about insurance coverage;<sup>259</sup> and community benefits work for certain priority neighborhoods that

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<sup>252</sup> See *Cancer Care Equity Program*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/research/departments-centers/cancer-care-equity> (last visited February 27, 2025). See also DFCI STAFF REPORT, *supra* note 15, at 49 (stating that "the Cancer Care Equity Program is a community-based clinical intervention that uses a combination of co-location and patient navigation, to extend cancer care to marginalized populations").

<sup>253</sup> *Cancer diagnostic services in a community health center speed diagnosis for underserved populations*, DANA-FARBER CANCER INSTITUTE, (Mar. 20, 2023), available at <https://www.dana-farber.org/newsroom/news-releases/2023/cancer-diagnostic-services-in-a-community-health-center-speed-diagnosis-for-underserved-populations>.

<sup>254</sup> *Our Research: Equity in Discovery and Innovation*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/about/inclusion-diversity-equity/research> (last visited February 27, 2025).

<sup>255</sup> Materials provided confidentially to the HPC summarized BIDMC's oncology-specific access and equity efforts.

<sup>256</sup> *Adult Social Work Program*, DANA-FARBER CANCER INSTITUTE, <https://www.dana-farber.org/cancer-care/treatment/adult-social-work> (last visited February 27, 2025).

<sup>257</sup> DFCI DoN NARRATIVE, *supra* note 8, at 33-34.

<sup>258</sup> Materials provided confidentially to the HPC show that DFCI's Whittier Street Health Center and Mammography Van provide screenings mostly to Medicaid-insured individuals.

<sup>259</sup> *Insurance and Financial Information*, DANA-FARBER CANCER INSTITUTE, <https://www.danafarberbostonchildrens.org/patients-and-families/insurance-and-financial-information> (last visited February 27, 2025).

have higher rates of Black and Hispanic patients, non-English speakers, unemployment, and MassHealth enrollment compared to DFCI's average.<sup>260</sup> In recent years, the broader BILH system has expanded marketing and advertising to MassHealth patients in its service area.<sup>261</sup>

Following the transaction, the parties are likely at baseline to have inpatients similar to the legacy patient mix at BIDMC, DFCI, and the hospitals from which DFCI is likely to draw patients for its new facility, including BWH and MGH. However, the parties have stated that they intend to collaborate to expand “access to and affordability of cancer care”<sup>262</sup> and have identified three priorities guiding the planning for their affiliation: expanding clinical access to the full spectrum of cancer services for historically marginalized communities, reducing cancer disparities in health outcomes within their diverse population of patients, and expanding investments in historically marginalized communities to close socio-economic disparities that impact health.<sup>263</sup> Further, the parties have jointly defined shorter- and longer-term clinical access and equity initiatives. Shorter-term priorities include sharing best practices and current program inventories; developing screening priorities for specific disease states with known disparities (e.g., colorectal screening for Black patients); and exploring opportunities for programs in FQHCs and CHCs where DFCI/BIDMC have a shared presence. The parties' longer-term plans include aligning financial assistance policies; broadening diagnostic pathways for cancer patients (with emphasis on removing barriers for vulnerable patient populations); developing an LGBTQ+ focused cancer program; developing a lung cancer screening program and tobacco cessation work; focusing on cancer-specific patient navigation programs; and developing and implementing equity dashboards and reporting.<sup>264</sup> Finally, in confidential production to the HPC, the parties identified preliminary commitments to each other on certain performance metrics, including metrics related to timely access to care. If the parties follow through with collaboration and investment in these priority areas, they have the potential to improve equitable access to cancer care. However, because the parties have not yet moved substantially beyond identifying these priorities and exchanging information on their current efforts,<sup>265</sup> the HPC is unable to evaluate the likelihood that specific potential benefits would be realized. Should the proposed affiliation proceed, regular public reporting on the implementation and results of the parties' proposed access and equity initiatives,

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<sup>260</sup> DANA-FARBER CANCER INSTITUTE, DANA-FARBER CANCER INSTITUTE COMMUNITY NEEDS ASSESSMENT (CHNA), 2020-2023, at i (Sept. 2019) (stating that DFCI's Community Benefits office “provides education and outreach across Boston and beyond, offers support services and resources, and conducts evidence-based interventions through its collaborative work in local neighborhoods as well as through its national and international public and professional education initiatives”), *available at*: <https://dfci.widen.net/s/vnkspjggqx/chna-report-approved-9.11.19.pdf>.

<sup>261</sup> In materials provided confidentially to the HPC, BIDMC described its efforts to expand access for MassHealth patients.

<sup>262</sup> Materials provided confidentially to the HPC noted the parties' shared commitment to sustain access to and affordability of oncology services for their respective patients. Further, the parties state that they are “committed to expanding access to and affordability of cancer care for all patients, but particularly MassHealth enrollees, by improving access to cancer screening and navigation services and exploring financial assistance policy alignment and other opportunities to reduce patients' financial barriers to care.”

<sup>263</sup> Materials provided confidentially to the HPC include information on three access and equity priorities guiding the parties' planning.

<sup>264</sup> Materials provided confidentially to the HPC included information on the parties' joint transaction planning, containing their shorter- and longer-term clinical access and equity focus areas.

<sup>265</sup> Materials provided confidentially to the HPC detailed the parties' progress on their efforts regarding the joint access and equity initiatives.

including reporting on the parties' mix of publicly insured patients and any continued efforts to expand access for MassHealth patients, as well as other efforts to expand access to services for vulnerable populations including patients with co-occurring behavioral health conditions, would allow the Commonwealth to assess whether and to what extent the transaction enhanced equitable access to oncology care. Annual reporting relevant to several of these areas has been proposed as part of the conditions for approval of DFCI's DoN.<sup>266</sup>

One notable plan on which the parties have made a specific public commitment is their plan to align financial assistance policies. As non-profit organizations, the parties are subject to federal tax code that requires hospitals to establish written financial assistance policies that include eligibility criteria for free and/or discounted care, basis for amounts charged to patients, process for applying for financial assistance, and potential consequences of nonpayment.<sup>267</sup> DFCI has stated in responses to DoN inquiries that it will align its financial assistance policy with that of BIDMC.<sup>268</sup> This may improve affordability for patients with low incomes, as BIDMC's financial assistance policy appears to be more generous than DFCI's.<sup>269</sup>

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In summary, although statewide inpatient oncology utilization may increase over time due to Massachusetts' aging population, given the many factors that may impact future inpatient oncology utilization, the limits of statistical modeling, and the inability to fully assess other inpatient oncology capacity, it is unclear to what extent the parties' specific proposal is necessary or sufficient to ensure future access to inpatient oncology care.

Regarding their role in serving traditionally underserved and government-payer populations, DFCI and BIDMC have a relatively large proportion of commercially insured and Medicaid-insured oncology patients, BIDMC's oncology patients reside in areas with greater indicia of social need than DFCI's patients, DFCI and BIDMC serve a greater proportion of BIPOC and Hispanic oncology inpatients than the statewide average, and DFCI has the largest share of oncology discharges from rural areas among other major cancer providers in Boston. DFCI's patient population after the transaction would tend to resemble the characteristics of BIDMC and

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<sup>266</sup> DFCI STAFF REPORT, *supra* note 15, at 84 and Appendix I.

<sup>267</sup> THE COMMONWEALTH FUND, STATE PROTECTIONS AGAINST MEDICAL DEBT: A LOOK AT POLICIES ACROSS THE U.S (Sept. 2023), available at <https://www.commonwealthfund.org/publications/fund-reports/2023/sep/state-protections-medical-debt-policies-across-us>.

<sup>268</sup> DFCI Response to Applicant Questions #4 *supra* note 77, at 6.

<sup>269</sup> Under DFCI's current Patient Financial Assistance Program, patients with income less than 150% of FPL are eligible to have 100% of their financial obligations for medically necessary services waved. *Notice to Dana-Farber Cancer Institute Patients: Availability of Financial Counseling, Payment Plans, and Financial Assistance*, DANA-FARBER CANCER INSTITUTE, <https://dfci.widen.net/s/h5lsvfbw9/financial-assistance-summary.pdf> (last visited February 27, 2025). Under BIDMC's current Financial Assistance Policy, patients at or below 400% of the FPL are eligible to have 100% of their "patient responsible balance" waved for medically necessary services. *Financial Assistance Policy Plain Language Summary*, BETH ISRAEL DEACONESS MEDICAL CENTER, <https://www.bidmc.org/-/media/files/beth-israel-org/patient-and-visitor-information/patient-information/bidmc-financial-assistance-pl-summary-english-100120.pdf> (last visited February 27, 2025). Both BIDMC and DFCI offer additional assistance, including medical hardship discounts and financial counseling services.

other hospitals from which it would draw patients. The parties are currently engaged in programs designed to improve access and equitable care for their oncology patients and have developed plans to collaborate on expanding access and improving affordability for low-income patients following the transaction, but their plans are preliminary and do not yet include details necessary to assess the likelihood of specific potential access improvements.

Should the proposed affiliation proceed, regular public reporting on the implementation and results of the parties' proposed access and equity initiatives, including reporting on the parties' mix of publicly insured patients and any continued efforts to expand access for MassHealth patients, would allow the Commonwealth to assess whether and to what extent the transaction enhanced equitable access to oncology care. The proposed conditions of approval of DFCI's DoN include reporting of this kind. The Commonwealth must also consider the implications of continued significant investment in specialty care capacity in Boston for the accessibility of these services in other parts of the state, and the parties and other major oncology providers should commit to expanding coordination with community providers.

## IV. CONCLUSION

As described in Section III, the HPC found:

- A. **Cost and Market:** DFCI and BIDMC both serve patients primarily from eastern Massachusetts, and MGB (in conjunction with DFCI) and BILH are the two largest providers of oncology services in their service areas and in the Commonwealth generally. DFCI and BIDMC commercial prices for *inpatient* medical and surgical oncology services, respectively, are generally lower than prices for the same services at BWH, but higher than those of some other hospitals. DFCI commercial *outpatient* prices are generally higher than outpatient oncology prices of other Massachusetts hospitals, while BIDMC's are generally moderate.

The proposed transaction and the construction of the new DFCI facility would likely shift a large volume of oncology care from BIDMC, BWH, and other oncology providers to DFCI. BIDMC would also likely gain surgical oncology volume. BIDMC and BWH are also likely to backfill any volume that shifts to DFCI. Each of these volume shifts would impact health care spending.

For commercial insurers, shifts in inpatient care are likely to reduce spending at current price levels. Specifically, shifts in inpatient oncology care from BIDMC, BWH, and other oncology providers to DFCI would likely reduce annual commercial spending by approximately \$18.5 million to \$23 million at current prices. Backfill of newly available inpatient capacity at BIDMC would likely additionally reduce annual commercial spending by \$3.5 million to \$5.3 million at current prices, while backfill of capacity at BWH would likely increase annual commercial spending by \$4.2 million to \$15.9 million at current prices.

Most shifts in hospital outpatient care as a result of the transaction would likely increase commercial spending due to DFCI's high commercial outpatient prices, especially for hospital-administered oncologic drugs. In total, shifts in outpatient oncology services that the HPC could quantify would likely increase annual commercial spending by approximately \$39 million; \$26.5 million of this spending increase would be due to higher commercial prices for oncologic drugs at DFCI.

Medicare spending may also increase as a result of the transaction. At current rates, shifts of inpatient care to DFCI would reduce Medicare spending by approximately \$5.7 million to \$9.1 million. However, DFCI's inpatient reimbursement from Medicare is based on its costs per patient, meaning that, to the extent its costs per patient increase in the newly constructed hospital, its Medicare reimbursement rate would also increase, reducing any savings or potentially increasing spending. Shifts of outpatient Medicare volume to DFCI would increase annual Medicare spending, likely in excess of \$10 million annually.

Any increases in the parties' prices as a result of the proposed transaction would reduce savings or increase spending. Commitments to limit future inpatient and outpatient rate increases and address DFCI's already high outpatient prices may help to mitigate these concerns.

- B. **Quality and Care Delivery:** DFCI and BIDMC are internationally recognized for their oncology care and have historically generally performed comparably to statewide averages on available oncology care quality metrics. Research literature suggests hospitals with specialized oncology care offerings achieve superior outcomes for their patients, although these studies did not directly compare DFCI to other Commonwealth hospitals with specialized oncology care programs. The parties have emphasized several aspects of their plans designed to improve care quality, including their stated intention to integrate and expand existing care delivery initiatives, as well as quality benefits DFCI expects to realize by building its new facility. These plans have the potential to improve clinical quality over time but are not sufficiently developed for the HPC to be able to assess the likelihood of any specific impacts. In the short-term, it will be critical for the parties and other oncology providers to develop robust plans for care coordination and management to avoid disruptions in continuity of care as long-standing provider relationships shift.
- C. **Access to and Equity of Care:** In assessing the potential impacts of the proposed new cancer hospital on access to oncology care in the future, the HPC examined oncology utilization trends, demographic trends, technological changes, and other factors that could impact future need for additional inpatient oncology capacity. While Massachusetts' aging population is likely to result in higher cancer rates in Massachusetts in the future, modeling based on demographic trends and current utilization rates is likely to overstate future need for inpatient oncology care. Ultimately, it is unclear to what extent the proposed transaction is either necessary or sufficient to ensure future access to oncology care. This assessment is based on a number of factors, including rapid advancements in

cancer treatment and other factors that may impact future inpatient oncology utilization, the limits of statistical modeling, and the inability to fully assess other inpatient oncology capacity with existing data resources.

Regarding the parties' role in serving traditionally underserved and government-payer populations, DFCI and BIDMC have relatively large proportions of commercially insured and Medicaid-insured oncology patients, BIDMC's oncology patients reside in areas with relatively high indicia of social need, DFCI and BIDMC serve a greater proportion of BIPOC and Hispanic oncology inpatients than the statewide average, and DFCI has the largest share of oncology discharges from rural areas compared to other major cancer providers in Boston. The parties are also currently engaged in programs designed to improve access and equitable care for their oncology patients and have developed plans to collaborate on expanding access and improving affordability for low-income patients following the transaction. However, their plans are preliminary and do not yet include details necessary to assess the likelihood of specific potential access improvements.

DFCI's new facility would significantly expand inpatient medical oncology services in downtown Boston. While concentration of care at urban specialty hospitals may create economies of scale and promote beneficial specialization, it also may challenge access to care, particularly for patients for whom travel presents a greater burden. If DFCI opens its new hospital as planned, large and well-resourced providers like MGB would likely to be better positioned to respond competitively, with smaller and more financially vulnerable providers including community hospitals potentially facing both a loss of oncology patients and revenue and upward pressure on labor costs as DFCI staffs its new facility. If these pressures destabilize or diminish the ability of other oncology providers to invest in or maintain facilities and staff, it is likely to impact health care equity and access as well as potentially increase health care spending.

Should the proposed affiliation proceed, commitments by the parties and public monitoring could help to address the cost and access concerns raised in this report. The parties should consider commitments regarding spending impacts, including DFCI's high prices for outpatient services including oncologic drugs and future changes in DFCI's commercial and Medicare reimbursement rates. In addition, the parties should consider commitments such as reporting on the development and implementation of plans to coordinate care among oncology providers and transition planning for current patients during and after the transition of DFCI's affiliation from BWH to BIDMC, and the implementation and results of the parties' proposed access and equity initiatives, including on the parties' mix of publicly insured patients. Given the implications of continued significant investment in specialty care capacity in Boston for the accessibility of these services at other providers and in other parts of the state, the parties should commit to expanding coordination with community providers.

We invite the parties to address these and other concerns documented throughout this report in their written response, including any commitments. Following the period for written response, we look forward to publishing our Final Report, including any referrals or recommendations to other state agencies.

## DATA APPENDIX

### A. Inpatient Diversion Model and Spending Impacts

The HPC used a multinomial logit hospital choice model to estimate the likelihood that particular patients would choose to receive inpatient oncology care at DFCI to fill the bed capacity of its new proposed facility or to backfill capacity at BWH or BIDMC that would be newly available as patients shift to DFCI. CHIA 2022 hospital discharge data used in the estimation account for patient factors, including geographic origin, demographic information (age, gender, race), and clinical information (diagnosis, disease category, number of diagnoses, and number of procedures). These data are combined with indicator variables (fixed effects) for each Massachusetts hospital that capture the combined effect of each hospital's attributes (e.g., location, teaching status, service offerings, etc.) to allow for an econometric analysis of the factors that, on average, lead particular types of patients to choose a given hospital. The HPC focused the analysis to eastern Massachusetts adult cancer patients, defined as patients whose zip codes lie within a 60-minute drive-time radius from city hall. The HPC separately modeled patient choices for commercial and Medicare patients and for medical oncology, surgical oncology, and other general acute care patients.

The HPC then used 2022 APCD data (for shifts in oncology discharges) and CHIA 2022 hospital relative price data (for shifts in general acute care discharges) to estimate impacts on total spending and hospital revenues. Inpatient facility impacts were based on the payer mix-adjusted spending per discharge at DFCI and BIDMC compared to the hospitals at which the diversion model estimates patients would otherwise have received care. Spending estimates were adjusted for the predicted acuity (case mix) profile of patients likely to shift. The HPC estimated the physician component of revenue for shifting commercial care by applying the proportion of physician commercial revenue relative to facility revenue observed in the APCD, for both the origin and recipient hospital, to the estimate of shifting facility revenue. The applied professional to facility ratios were weighted by the origin hospital's MDC mix and payer mix. The sum of the difference in estimated professional spending between the origin and recipient hospitals produced an estimated impact of shifts in inpatient care on total commercial professional spending. Medicare spending impact estimates reflect facility revenue impacts only.

### B. Outpatient Market Share Analysis

To examine market shares in outpatient service lines relevant to the proposed transaction, the HPC defined clusters of Current Procedural Terminology (CPT) codes. For our market share analysis, we focused on service lines for which most services billed are expected to be oncology-related.

The CPT Codebook published by the American Medical Association includes approximately 300 clinical categories, which the HPC aggregated into 42 categories that parallel major

specialties and subspecialties in clinical care. The HPC then further refined these categories into relevant clusters based on descriptions of the proposed transaction and the guidance of clinical experts. The codes included in our market share analysis are as follows:

- Outpatient medical oncology:
  - Infusion administration: 96413, 96375, 96417, 96361, 96411, 96372, 96365, 96415, 96402, 96367, 96401, 96409, 96360, 96416, 96368, 96374, 96366, 96376, 96450, 96369, 96370, 96371, 96377, 96422, 96423, 96425
  - Oncologic drugs: J0129, J0135, J0178, J0215, J0480, J0485, J0490, J0594, J0638, J0717, J0718, J0894, J1300, J1438, J1440, J1441, J1442, J1446, J1595, J1602, J1675, J1745, J1826, J1830, J1950, J2323, J2355, J2504, J2505, J2562, J2793, J2820, J3262, J3315, J3357, J7308, J7309, J7315, J7500, J7501, J7502, J7504, J7505, J7507, J7508, J7511, J7513, J7515, J7516, J7517, J7518, J7520, J7525, J7527, J7599, J8510, J8520, J8521, J8530, J8560, J8561, J8562, J8565, J8600, J8610, J8700, J8705, J8999, J9000, J9001, J9002, J9010, J9015, J9017, J9019, J9020, J9025, J9027, J9031, J9033, J9035, J9040, J9041, J9042, J9043, J9045, J9047, J9050, J9055, J9060, J9065, J9070, J9098, J9100, J9120, J9130, J9150, J9151, J9155, J9160, J9171, J9178, J9179, J9181, J9185, J9190, J9200, J9201, J9202, J9206, J9207, J9208, J9211, J9212, J9213, J9214, J9215, J9216, J9217, J9218, J9219, J9225, J9226, J9228, J9230, J9245, J9250, J9260, J9261, J9262, J9263, J9264, J9265, J9266, J9267, J9268, J9270, J9280, J9293, J9300, J9301, J9302, J9303, J9305, J9306, J9307, J9310, J9315, J9320, J9328, J9330, J9340, J9351, J9354, J9355, J9357, J9360, J9370, J9371, J9390, J9395, J9400, J9600, J9999
- Radiation oncology: 55920, 57155, 57156, 58346, 64625, 76145, 76950, 77011, 77014, 77261, 77262, 77263, 77280, 77285, 77290, 77293, 77295, 77299, 77300, 77301, 77305, 77306, 77307, 77310, 77315, 77316, 77317, 77318, 77321, 77326, 77327, 77328, 77331, 77332, 77333, 77334, 77336, 77338, 77370, 77371, 77372, 77373, 77385, 77386, 77387, 77399, 77401, 77402, 77403, 77404, 77406, 77407, 77408, 77409, 77411, 77412, 77413, 77414, 77416, 77417, 77418, 77421, 77422, 77423, 77424, 77425, 77427, 77431, 77432, 77435, 77469, 77470, 77499, 77520, 77522, 77523, 77525, 77600, 77605, 77610, 77615, 77620, 77750, 77761, 77762, 77763, 77767, 77768, 77770, 77771, 77772, 77776, 77777, 77778, 77785, 77786, 77787, 77789, 77790, 77799, 79005, 79101, 79200, 79300, 79403, 79440, 79445, 79999, 0073T, 0182T, 0190T, 0197T, 0394T, 0395T, 0735T, A9513, A9606, C1716, C1717, C1719, C2616, C2634, C2635, C2636, C2638, C2639, C2640, C2641, C2642, C2643, C2644, C2645, C2698, C2699, C9407, C9725, C9726, C9727, G0339, G0340, G3001, G6001, G6002, G6003, G6004, G6005, G6006, G6007, G6008, G6009, G6010, G6011, G6012, G6013, G6014, G6015, G6016, G6017, Q3001
- Mammography: 77067, 77063, G0279, 77066, 77065

The HPC defined outpatient visits in the 2022 APCD within each clinical cluster as all outpatient facility claims with the same NPI for the same patient on the same day. Our analysis included hospital and ambulatory surgery center facility claims, defined as claims billed either on

a facility claim form or on a professional claim form with a non-person NPI (i.e., an institutional or medical group provider rather than an individual). We limited our analysis to encounters for patients aged 18 years or older that contained at least one claim billed with a cancer diagnosis code, identified using the list of ICD-10 codes from DFCI's DoN application.

Our analysis included claims for BCBS, HPHC, THP, Health New England (HNE), Mass General Brigham Health Plan (MGBHP), and Anthem due to greater confidence in data integrity for these payers.<sup>270</sup> However, one key limitation of this methodology is that some clinic-licensed providers bill for relevant services solely under individual provider identifiers rather than institutional identifiers for certain payers, making it impossible to distinguish anchor claims for visits from the professional component of a visit with the same CPT. For example, Atrius Health (Atrius) claims to BCBS for advanced imaging include non-person professional type claims, but Atrius imaging claims to HPHC and THP use individual professional type claims. Our models thus understates the share of services attributable to certain non-hospital providers for certain payers.

## C. Outpatient Price and Spending Impact Analysis

For our outpatient price analyses, we expanded the set of focal service lines to include services that are often provided to cancer patients, but that are not exclusive to oncology. To narrow the scope to services that are likely to be most relevant to oncology, we selected codes within each service line with significant volume either at DFCI (for infusion administration, radiation oncology, diagnostic radiology, labs, and pathology), or at BILH and MGB's AMCs (for surgical oncology). The codes we used in our outpatient price analyses are as follows:<sup>271</sup>

- Infusion administration: 96413, 96375, 96417, 96361, 96411, 96372, 96365, 96415, 96402, 96367, 96401, 96409, 96360, 96416, 96368, 96374
- Radiation oncology: 77280, 77300, 77334, 77336, 77385, 77386, 77387, 77412, 77417
- Diagnostic radiology:
  - MRI: 70553, 74183, 72197, 77049, 72158
  - CT: 71260, 74177, 71250, 70491, 74176
  - PET: 78815, 78816
  - Mammography: 77067, 77063, G0279, 77066, 77065
- Labs and pathology: 88305, 88184, 88185, 88313, 88311, 85025, 80053, 83735, 83615, 84100, 83520, 82378, 86900, 86901, 86850, 86941, 87497, 87799, 81268, 88262, 81206, 84165, 86334, 84166, 86335
- Outpatient surgical oncology:

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<sup>270</sup> Although HPHC and THP have since merged to form Point32Health, all analyses in this report are based on pre-merger data, and the plans are referred to separately throughout.

<sup>271</sup> The methodology described in this section applies to all service lines other than oncologic drugs and evaluation and management services. Methodologies for those service lines are described in the Cost and Market Functioning section of the report.

- Endoscopy: 43235, 43238, 43239, 43251, 43270, 45330, 45331, 45378, 45385, 43242
- Excision: 11401, 11402, 11403, 11422, 11602, 11603, 11606, 20206, 38505, 38525, 46221, 49180, 50200, 55250, 56605, 57500, 58100, 60220, 60500

To calculate the average price per encounter for services in the outpatient clusters defined above, the HPC examined the prices of outpatient BCBS, HPHC, THP, HNE, MGBHP, and Anthem claims for patients aged 18 years or older in the 2022 APCD. For infusion administration, radiation oncology, diagnostic radiology, and labs and pathology, we limited our analysis to encounters where at least one claim contained a cancer diagnosis code. For outpatient endoscopy and surgical excision, we did not apply a diagnosis code filter because there was not a sufficient volume visits of containing a cancer diagnosis code filter to evaluate prices.

We defined a single patient encounter as a set of claims for the same patient, date of service, and CPT code. We included both facility and associated professional claims in the calculation of prices per encounter, but required that a facility claim was present in order for the encounter to be included in the analysis. When the claims within a single encounter were associated with more than one facility, the claim was assigned to the facility whose claim had the highest allowed amount.

Within each outpatient service line, we calculated the average price per encounter at each provider by dividing total revenue by total encounters, dropping payer-procedure code combinations with 10 or fewer visits from the calculation. For the comparison of outpatient prices described in Section III.A.4.b, we then calculated what each provider's average price would have been for each service line if the provider had received the statewide average rates for each payer for the procedure codes it provided. We divided the provider's observed average price by its recalculated average price based on statewide average rates to arrive at a price relativity for each provider.

To calculate the spending impacts described in Section III.A.6, we first compared each source hospital's observed average price per encounter for each service line to what its average price per encounter would have been if it had received the recipient hospital's rates for each payer for the procedure codes it provided, dropping payer-procedure code combinations with 10 or fewer visits from the calculation. We applied the resulting price differentials to an estimate of the source hospital's annual revenue in each service line to estimate a spending impact.<sup>272</sup>

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<sup>272</sup> The HPC used production provided by BIDMC to estimate annual revenue for the infusion administration and radiation oncology service lines. For diagnostic radiology, labs and pathology, and surgery, we estimated total annual revenue based on claims for each service line observed in the APCD. For diagnostic radiology, labs, and pathology, HPC conservatively included only encounters that included a cancer diagnosis code, which may undercount situations in which a patient has not yet been diagnosed with cancer. The HPC estimates that claims for 42% of statewide commercial members are captured in our APCD analyses. We therefore impute total revenue based on an assumption that observed revenue represents 42% of total commercial revenue.

## D. Non-Oncology Quality Metric Performance for BILH Providers

### i. Hospital Quality Measures

BILH hospitals generally performed at or above statewide performance on inpatient CMS Hospital Compare metrics. On eight Unplanned Hospital Visit metrics BILH hospitals performed comparably to the state average, with two hospitals performing statistically better and one hospital performing statistically worse on at least one metric.<sup>273</sup> On four Timely and Effective care metrics, BILH hospitals performed comparably to the state average, with ten hospitals performing statistically better and four hospitals performing statistically worse on at least one metric.<sup>274</sup> On two quality metrics related to provider vaccination rates, nine BILH hospitals performed statistically better on one or more metrics than statewide averages, while six BILH hospitals performed statistically worse on one or more metrics.<sup>275</sup> On Patient Experience metrics, one BILH

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<sup>273</sup> Winchester Hospital performed statistically worse relative to statewide averages on the *Thirty Day Readmission for Heart Failure Patients* metric. Beth Israel Deaconess Hospital Plymouth performed statistically better on the *Thirty Day Readmission Hospital Wide* metric. New England Baptist Hospital performed statistically better on the *Thirty Day Readmission After Hip/Knee Surgery* and *Thirty Day Readmission Hospital Wide* metrics. MGH performed statistically better on the *Rate of Unplanned Hospital Visits After an Outpatient Colonoscopy* and *Thirty Day Readmission Hospital Wide* metrics. See *Hospital Compare Datasets*, *supra* note 161.

<sup>274</sup> Anna Jaques performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* and statistically worse on the *Safe Use of Opioids* metrics. Beth Israel Deaconess Hospital Milton performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* and statistically worse on the *Safe Use of Opioids* metric. Beth Israel Deaconess Hospital Needham performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* metric. Beth Israel Deaconess Hospital Plymouth performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* metric and statistically worse on the *Safe Use of Opioids* metrics. BIDMC performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* metric. BWH performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* and statistically worse on the *Safe Use of Opioids* metrics. Lahey performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* and *Intensive Care Unit Venous Thromboembolism Prophylaxis* metric. MGH performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* and *Venous Thromboembolism Prophylaxis* and statistically worse on the *Safe Use of Opioids* metrics. Mount Auburn Hospital performed statistically better on the *Safe Use of Opioids* and statistically worse on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients*, *Venous Thromboembolism Prophylaxis*, and *Intensive Care Unit Venous Thromboembolism Prophylaxis* metrics. New England Baptist Hospital performed statistically better on the *Venous Thromboembolism Prophylaxis* and *Intensive Care Unit Venous Thromboembolism Prophylaxis* metrics. Northeast Hospital performed statistically better on the *Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients* and *Intensive Care Unit Venous Thromboembolism Prophylaxis* and statistically worse on the *Safe Use of Opioids* metrics. Winchester Hospital performed statistically better on the *Left Before Being Seen at the Emergency Department*, *Safe Use of Opioids*, and *Intensive Care Unit Venous Thromboembolism Prophylaxis* metrics. See *Hospital Compare Datasets*, *supra* note 161.

<sup>275</sup> Anna Jaques Hospital performed statistically better than statewide averages on the *Healthcare Workers Given Influenza Vaccination* metric. Beth Israel Deaconess Hospital Milton performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and statistically worse on the *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. Beth Israel Deaconess Hospital Needham performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and statistically worse on the *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19*

hospital performed statistically worse and four BILH hospitals performed statistically better than statewide averages.<sup>276</sup> On AHRQ mortality and patient safety metrics, seven BILH hospitals had 1-4 metrics where their performance was statistically below state levels, while five BILH hospitals had 1-3 metrics with performance levels statistically above statewide levels.<sup>277</sup>

## ii. Ambulatory Quality Measures

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*Vaccinations* metrics. Beth Israel Deaconess Hospital Plymouth performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. BIDMC performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. BWH performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. Lahey performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and statistically worse on the *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. MGH performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. Mount Auburn Hospital performed statistically worse on the *Healthcare Workers Given Influenza Vaccination* and *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. Northeast Hospital performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and statistically worse on the *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. Winchester Hospital performed statistically better on the *Healthcare Workers Given Influenza Vaccination* and *Percentage of Healthcare Personnel Who Are Up to Date With COVID-19 Vaccinations* metrics. See *Hospital Compare Datasets*, *supra* note 161.

<sup>276</sup> Northeast Hospital performed statistically worse on the *Overall Hospital Rating* metric. BIDMC, BWH, Lahey, MGH, Mount Auburn Hospital, and New England Baptist Hospital performed statistically better on the *Overall Hospital Rating* and *Willingness to Recommend Hospital* metrics.

<sup>277</sup> Anna Jaques performed statistically worse on the *Heart Failure (CHF) Mortality Rate*, *Death Rate in Low-Mortality Diagnosis Related Groups*, *Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate*, and *Abdominopelvic Accidental Puncture or Laceration Rate* metrics. Beth Israel Deaconess Hospital Milton performed statistically better on the *Death Rate in Low-Mortality Diagnosis Related Groups* metrics. Beth Israel Deaconess Hospital Needham performed statistically better on the *Acute Stroke Mortality Rate* and *Death Rate in Low-Mortality Diagnosis Related Groups* and statistically worse on the *Iatrogenic Pneumothorax* metrics. Beth Israel Deaconess Hospital Plymouth performed statistically worse on the *Death Rate in Low-Mortality Diagnosis Related Groups* and *Perioperative Hemorrhage or Hematoma Rate* metrics. BIDMC performed statistically worse on the *Acute Stroke Mortality Rate* and *Acute Stroke Mortality Rate: Ischemic Stroke* metrics. BWH performed statistically better on the *Acute Stroke Mortality Rate*, *Acute Stroke Mortality Rate: Intracerebral Hemorrhage*, *Acute Stroke Mortality Rate: Subarachnoid Hemorrhage*, and *Death Rate in Low-Mortality Diagnosis Related Groups* and statistically worse on the *Central Venous Catheter Related Bloodstream Infections* metrics. Lahey performed statistically worse on the *Pneumonia Mortality Rate* and *Death Rate in Low-Mortality Diagnosis Related Groups* metrics. MGH performed statistically better on the *Pancreatic Resection Mortality Rate: Absence of Pancreatic Cancer*, *Heart Failure (CHF) Mortality Rate*, *Acute Stroke Mortality Rate*, *Acute Stroke Mortality Rate: Ischemic Stroke*, *Pneumonia Mortality Rate*, *Death Rate in Low-Mortality Diagnosis Related Groups*, and *Iatrogenic Pneumothorax* metrics. Mount Auburn Hospital performed statistically worse on the *Death Rate in Low-Mortality Diagnosis Related Groups* metric. New England Baptist Hospital performed statistically better on the *Death Rate in Low-Mortality Diagnosis Related Groups* metric. Northeast Hospital performed statistically better on the *Death Rate in Low-Mortality Diagnosis Related Groups* and *Heart Failure (CHF) Mortality Rate* metrics. Winchester Hospital performed statistically better on the *Acute Stroke Mortality Rate: Ischemic Stroke*, *Pneumonia Mortality Rate*, *Death Rate in Low-Mortality Diagnosis Related Groups* and statistically worse on the *Postoperative Wound Dehiscence Rate: Non-Open Approach* metrics. See *Quality Indicators Software Instructions and Data Dictionary*, SAS® QI v2023, *supra* note 165.

On HEDIS ambulatory quality measures collected by CHIA, BIDCO exceeded statewide performance on three metrics and underperformed on four.<sup>278</sup> For patient experience metrics collected by CHIA, BIDCO performed statistically better than statewide performance levels on 1 of 9 metrics.<sup>279</sup>

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<sup>278</sup> The HEDIS measures analyzed by the HPC are reported by CHIA. See *Select Clinical Quality and Patient Experience Measures, 2020–2022*, CENTER FOR HEALTH INFORMATION AND ANALYSIS (August 2024), available at <https://www.chiamass.gov/a-focus-on-provider-quality-selected-clinical-measures>. The measures publicly reported by CHIA are a subset of metrics from the 2022 Aligned Measure Set, a collection of measures endorsed for prioritization and accountability by the EOHHS Quality Measure Alignment Taskforce. The data for the metrics was provided by six Massachusetts health plans. All measures were attributed to the enrollee's assigned primary care provider (PCP) as of December 31st of the measurement year. BIDCO performed statistically better than statewide averages on the *Use of Imaging Studies for Low Back Pain*, *Prenatal and Postpartum Care – Postpartum Care*, and *Prenatal and Postpartum Care – Timeliness of Prenatal Care* and statistically worse on the *Breast Cancer Screening*, *Chlamydia Screening in Women Ages 16 to 20*, *Eye Exam for Patients with Diabetes*, and *Follow-Up After Emergency Department Visit for Mental Illness (7-Day)* metrics. Mass General Brigham performed statistically better on the *Breast Cancer Screening*, *Cervical Cancer Screening*, *Colorectal Cancer Screening*, *Prenatal and Postpartum Care – Postpartum Care*, and *Prenatal and Postpartum Care – Timeliness of Prenatal Care* and statistically worse on the *Asthma Medication Ratio*, *Chlamydia Screening in Women Ages 16 to 20*, *Chlamydia Screening in Women Ages 21 to 24*, *Eye Exam for Patients with Diabetes*, and *Use of Imaging Studies for Low Back Pain* metrics.

<sup>279</sup> The patient experience measures analyzed by the HPC are reported by CHIA. See *Select Clinical Quality and Patient Experience Measures, 2020–2022*, *supra* note 278. The measures reported by CHIA are derived from the Massachusetts Health Quality Partners (MHQP) Patient Experience Survey. Survey data is collected from three health plans in Massachusetts. BIDCO performed statistically better than the statewide average on the Adult Behavioral Health metric. MGB performed statistically better on the Adult Behavioral Health, Trust, and Willingness to Recommend metrics.

## E. Figures

Figure A1: 2022 Commercial Shares of Inpatient Oncology Services

Hospital/System	Shares of medical oncology discharges			Shares of surgical oncology discharges		
	Statewide	BIDMC PSA	DFCI/ BWH PSA	Statewide	BIDMC PSA	DFCI/ BWH PSA
<b>Mass General Brigham</b>	<b>39.6%</b>	<b>48.4%</b>	<b>45.8%</b>	<b>47.6%</b>	<b>55.8%</b>	<b>53.9%</b>
Brigham and Women's Hospital	19.4%	21.5%	21.0%	22.3%	23.1%	24.1%
Massachusetts Eye and Ear Infirmary	0.1%	0.1%	0.1%	1.8%	2.3%	2.1%
Massachusetts General Hospital	14.1%	19.1%	17.6%	17.4%	22.7%	20.6%
NSMC Salem Hospital	1.6%	2.3%	2.3%	1.3%	1.9%	1.8%
Newton-Wellesley Hospital	2.2%	3.4%	2.9%	2.3%	3.4%	3.0%
<b>Beth Israel Lahey Health</b>	<b>17.3%</b>	<b>24.1%</b>	<b>21.4%</b>	<b>18.5%</b>	<b>25.8%</b>	<b>22.7%</b>
Beth Israel Deaconess Medical Center	8.8%	13.1%	11.0%	9.9%	14.1%	11.8%
Lahey Hospital and Medical Center	3.2%	4.7%	4.5%	4.8%	6.7%	6.3%
<b>UMass Memorial Health Care</b>	<b>8.1%</b>	<b>2.0%</b>	<b>5.1%</b>	<b>7.6%</b>	<b>1.4%</b>	<b>4.7%</b>
<b>Tufts Medicine</b>	<b>5.8%</b>	<b>7.4%</b>	<b>7.6%</b>	<b>5.4%</b>	<b>6.8%</b>	<b>7.0%</b>
Lowell General Hospital	1.8%	1.5%	2.5%	1.2%	0.9%	1.6%
Tufts Medical Center	3.2%	4.7%	4.0%	3.8%	5.0%	4.8%
<b>Dana-Farber Cancer Institute</b>	<b>3.8%</b>	<b>4.3%</b>	<b>3.9%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.5%</b>
<b>South Shore Hospital</b>	<b>3.6%</b>	<b>3.9%</b>	<b>5.0%</b>	<b>2.4%</b>	<b>2.5%</b>	<b>3.0%</b>
<b>Boston Medical Center Health System</b>	<b>3.4%</b>	<b>5.2%</b>	<b>4.6%</b>	<b>4.2%</b>	<b>4.6%</b>	<b>4.5%</b>
Boston Medical Center	1.7%	2.8%	2.3%	1.5%	2.2%	1.7%
St. Elizabeth's Medical Center	0.8%	1.1%	0.9%	2.3%	2.1%	2.2%
<b>Lawrence General Hospital</b>	<b>1.6%</b>	<b>2.5%</b>	<b>2.3%</b>	<b>0.6%</b>	<b>1.0%</b>	<b>0.9%</b>
<b>Other Hospitals</b>	<b>16.8%</b>	<b>2.4%</b>	<b>4.4%</b>	<b>13.3%</b>	<b>1.7%</b>	<b>2.8%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Current-State HHI	2,041	3,046	2,708	2,745	3,856	3,524
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Source: CHIA Hospital Discharge Data (2022).

Note: Hospitals and systems shown in table have at least 2% share in one or more PSAs.

Figure A2: All-Payer Shares of Inpatient Oncology Services

Hospital/System	Shares of medical oncology discharges			Shares of surgical oncology discharges		
	Statewide	BIDMC PSA	DFCI/ BWH PSA	Statewide	BIDMC PSA	DFCI/ BWH PSA
<b>Mass General Brigham</b>	<b>29.7%</b>	<b>40.2%</b>	<b>36.3%</b>	<b>39.0%</b>	<b>47.8%</b>	<b>45.7%</b>
Brigham and Women's Hospital	11.6%	14.0%	13.4%	17.3%	18.8%	19.4%
Massachusetts General Hospital	10.3%	15.2%	13.4%	14.6%	19.6%	17.7%
NSMC Salem Hospital	2.5%	4.0%	3.7%	1.6%	2.6%	2.4%
Newton-Wellesley Hospital	2.2%	3.9%	3.1%	1.7%	2.9%	2.5%
<b>Beth Israel Lahey Health</b>	<b>19.4%</b>	<b>27.7%</b>	<b>25.3%</b>	<b>19.3%</b>	<b>27.2%</b>	<b>24.7%</b>
Beth Israel Deaconess Medical Center	7.5%	11.8%	10.0%	9.7%	13.8%	12.2%
Lahey Hospital and Medical Center	3.5%	5.4%	5.0%	4.9%	7.2%	6.8%
<b>UMass Memorial Health Care</b>	<b>8.9%</b>	<b>2.5%</b>	<b>6.0%</b>	<b>8.3%</b>	<b>1.9%</b>	<b>5.1%</b>
UMass Memorial Medical Center	2.3%	3.0%	3.1%	3.4%	3.4%	3.7%
<b>Boston Medical Center Health System</b>	<b>5.3%</b>	<b>8.3%</b>	<b>7.3%</b>	<b>6.8%</b>	<b>9.1%</b>	<b>8.2%</b>
Boston Medical Center	3.0%	5.3%	4.3%	3.4%	5.7%	4.6%
<b>Tufts Medicine</b>	<b>5.1%</b>	<b>7.0%</b>	<b>7.3%</b>	<b>5.0%</b>	<b>6.7%</b>	<b>7.0%</b>
Tufts Medical Center	2.2%	3.3%	2.9%	3.1%	4.4%	4.2%
<b>South Shore Hospital</b>	<b>4.6%</b>	<b>5.5%</b>	<b>6.7%</b>	<b>2.7%</b>	<b>3.2%</b>	<b>3.8%</b>
<b>Dana-Farber Cancer Institute</b>	<b>2.1%</b>	<b>2.4%</b>	<b>2.3%</b>	<b>0.4%</b>	<b>0.5%</b>	<b>0.5%</b>
<b>Lawrence General Hospital</b>	<b>2.0%</b>	<b>3.3%</b>	<b>3.1%</b>	<b>1.1%</b>	<b>1.7%</b>	<b>1.6%</b>
<b>Other Hospitals</b>	<b>22.9%</b>	<b>3.1%</b>	<b>5.7%</b>	<b>17.3%</b>	<b>1.9%</b>	<b>3.3%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Current-State HHI	1,491	2,560	2,168	2,091	3,173	2,863
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Source: CHIA Hospital Discharge Data (2022).

Note: Hospitals and systems shown in table have at least 3% share in one or more PSAs.

Figure A3: Statewide Commercial Shares of Outpatient Oncology Services

Hospital/System	Infusion administration	Oncologic drugs	Radiation oncology	Mammography
<b>Dana-Farber Cancer Institute</b>	<b>38.7%</b>	<b>34.7%</b>	<b>15.1%</b>	<b>25.2%</b>
<b>Mass General Brigham</b>	<b>21.2%</b>	<b>20.3%</b>	<b>48.8%</b>	<b>42.8%</b>
Massachusetts General Hospital	15.4%	12.6%	35.8%	25.5%
Newton-Wellesley Hospital	1.8%	1.6%		7.7%
Cooley Dickinson Hospital	1.8%	1.6%	2.9%	2.4%
Emerson Hospital	1.3%	1.6%		1.0%
Brigham and Women's Hospital	0.2%	1.5%	10.1%	2.8%
Brigham and Women's Faulkner Hospital	0.0%	0.4%		2.0%
<b>Beth Israel Lahey Health</b>	<b>15.7%</b>	<b>16.8%</b>	<b>12.0%</b>	<b>20.0%</b>
Beth Israel Deaconess Medical Center	10.4%	8.7%	2.3%	4.5%
Beth Israel Deaconess Hospital - Plymouth	1.5%	1.8%	1.2%	
Winchester Hospital	1.2%	1.5%		4.0%
Northeast Hospital	0.9%	1.1%		3.5%
Mount Auburn Hospital	0.8%	0.9%	0.9%	3.5%
Lahey Hospital and Medical Center	0.1%	1.6%	7.6%	4.2%
<b>Baystate Health</b>	<b>6.4%</b>	<b>9.1%</b>	<b>4.4%</b>	<b>2.8%</b>
Baystate Medical Center	5.1%	7.0%	3.9%	2.1%
Baystate Reference Laboratory	0.7%	1.1%	0.5%	0.6%
<b>UMass Memorial Health Care</b>	<b>4.7%</b>	<b>4.5%</b>	<b>1.6%</b>	<b>3.5%</b>
UMass Memorial Medical Center	3.9%	3.7%	1.6%	2.0%
<b>Tufts Medicine</b>	<b>2.6%</b>	<b>2.8%</b>	<b>3.0%</b>	<b>2.3%</b>
Tufts Medical Center	1.6%	1.7%	0.3%	0.7%
Lowell General Hospital	0.9%	1.0%	1.8%	0.4%
MelroseWakefield Hospital	0.0%	0.1%	0.9%	1.1%
<b>Cape Cod Healthcare</b>	<b>1.7%</b>	<b>1.9%</b>	<b>3.4%</b>	<b>0.3%</b>
Cape Cod Hospital	1.7%	1.8%	3.4%	0.3%
<b>Mercy Medical Center</b>	<b>1.5%</b>	<b>1.0%</b>	<b>2.1%</b>	<b>0.1%</b>
<b>Berkshire Health Systems</b>	<b>1.5%</b>	<b>1.6%</b>	<b>1.4%</b>	<b>0.4%</b>
Berkshire Medical Center	1.4%	1.6%	1.4%	0.4%
<b>Southcoast</b>	<b>1.2%</b>	<b>1.3%</b>	<b>2.2%</b>	<b>0.2%</b>
<b>Boston Medical Center Health System</b>	<b>1.0%</b>	<b>1.4%</b>	<b>0.7%</b>	<b>0.6%</b>
Boston Medical Center	0.9%	1.3%	0.3%	0.4%
<b>Tenet Healthcare</b>	<b>0.8%</b>	<b>1.0%</b>	<b>1.7%</b>	<b>0.4%</b>
Saint Vincent Hospital	0.5%	0.6%	1.2%	0.2%
<b>Brown University Health</b>	<b>0.4%</b>	<b>0.4%</b>	<b>1.5%</b>	<b>0.3%</b>
Steward Saint Anne's Hospital	0.4%	0.3%	1.5%	0.2%
<b>Other Hospitals</b>	<b>2.6%</b>	<b>3.2%</b>	<b>2.1%</b>	<b>1.2%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: CHIA All-Payer Claims Database (2022).

Note: Hospitals and systems shown in table have at least 1% share in one or more service lines.

Figure A4: Outpatient Commercial Price Relativities

Service Line	Source Hospital	Recipient Hospital	Recipient: Source Price Ratio	Average Price Difference per Encounter
Medical oncology				
Infusion	BIDMC	DFCI	1.28	\$114
Oncologic Drugs	BIDMC	DFCI	2.06	n/a
Radiation Oncology				
	BIDMC	DFCI	1.39	\$388
	BWH	DFCI	1.21	\$334
Radiology				
MRI	BIDMC	DFCI	1.93	\$1,090
MRI	BWH	DFCI	1.18	\$316
MRI	BWH	BIDMC	0.73	(\$450)
CT	BIDMC	DFCI	1.80	\$552
CT	BWH	DFCI	1.30	\$285
CT	BWH	BIDMC	0.84	(\$148)
PET-CT	BIDMC	DFCI	1.08	\$352
PET-CT	BWH	DFCI	0.97	(\$131)
PET-CT	BWH	BIDMC	1.05	\$212
Mammography	BIDMC	DFCI	1.35	\$86
Mammography	BWH	DFCI	0.95	(\$13)
Mammography	BWH	BIDMC	0.78	(\$87)
Lab				
Lab	BIDMC	DFCI	1.83	\$36
Lab	BWH	DFCI	1.65	\$107
Lab	BWH	BIDMC	1.13	\$21
Evaluation & Management Visits				
	BILH	DFCI	2.03	\$266
Surgical Oncology				
Endoscopy	BWH	BIDMC	0.82	(\$423)
Excision	BWH	BIDMC	0.78	(\$256)

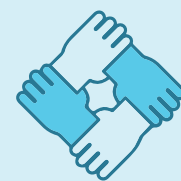
Source: HPC analysis of CHIA All-Payer Claims Database (2022)

Figure A5: Infographic on Disparities in Cancer Incidence, Care, and Outcomes



## PAYER

- Providers serving high proportions of oncology patients insured by Medicaid function as important points of access for patients who often face barriers to obtaining care<sup>1</sup> or disproportionately high morbidity and mortality rates.<sup>2</sup>
- A provider's payer mix may impact its financial and quality performance due to lower payments by government payers relative to commercial payers<sup>3</sup> and socioeconomic factors that disproportionately impact the complexity and health outcomes of government payer patients. This can incentivize providers to try to attract commercial patients rather than focusing on Medicaid patients.<sup>4</sup>



## RACE/ETHNICITY

- In Boston, Black individuals have higher cancer incidence, mortality, and premature mortality rates across all invasive cancers compared to other races and ethnicities.<sup>8</sup>
- Nationally, Hispanic individuals are twice as likely to be diagnosed with and die from stomach cancer than non-Hispanic individuals.<sup>9</sup>
- Asian/Pacific Islander individuals have almost twice the incidence of liver & IBD cancer compared to non-Hispanic white individuals.<sup>10</sup>
- Across Massachusetts, white non-Hispanic individuals have higher age-adjusted incidence rates from all invasive cancers than other racial/ethnic groups. Despite their higher incidence rates, white non-Hispanic individuals saw statistically significant decreases in mortality from all cancers from 2016–2020, unlike Black and Hispanic individuals.<sup>11</sup>
- The overall cancer screening rate is lower for BIPOC individuals,<sup>12</sup> and BIPOC individuals tend to receive later-stage diagnoses than white individuals.<sup>13</sup>
- Beyond disparities in incidence, mortality, screening, and timely care, some races/ethnicities may face a greater degree of difficulty accessing care or discrimination and bias within the healthcare system.<sup>14</sup>



## SOCIAL DETERMINANTS OF HEALTH

- Individuals with greater burden from social determinants of health, including lower socioeconomic status, have higher mortality and rates of late-stage diagnoses<sup>6</sup> than their counterparts.
- Per the American Cancer Society's 2023 report cancer disparities, racial, ethnic, and geographic cancer disparities align with "disparities in exposure to risk factors and access to cancer prevention, early detection, and treatment, which are largely rooted in fundamental inequities in social determinants of health in social determinants of health."<sup>7</sup>

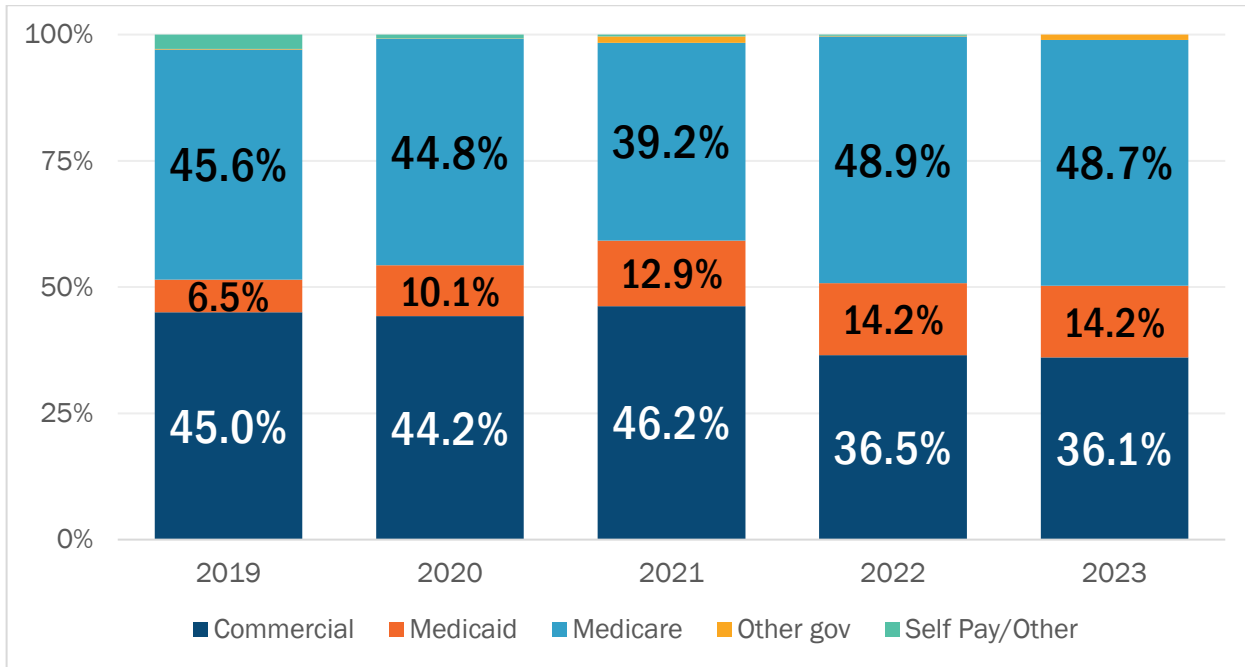


## GEOGRAPHY

- Individuals living in rural areas may face higher incidence of certain cancers, including tobacco- and HPV-associated, lung and bronchus, cervical, and colorectal cancers,<sup>15</sup> as well as higher mortality rates.<sup>16</sup>

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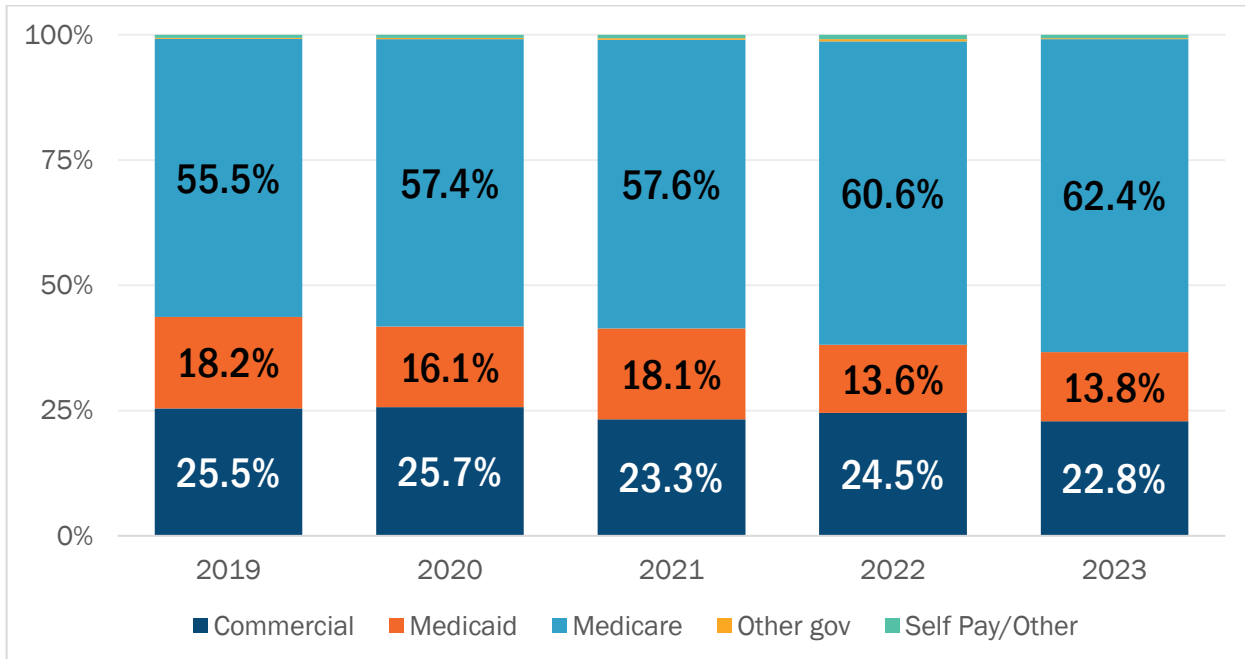
**Figure A6: DFCI's Inpatient Medical Oncology Payer Mix (2019 – 2023)**



Source: HPC analysis of CHIA Massachusetts Hospital Discharge Database.

Note: Includes medical oncology discharges at all Massachusetts hospitals, excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age.

**Figure A7: BIDMC's Inpatient Medical Oncology Payer Mix (2019 – 2023)**



Source: HPC analysis of CHIA Massachusetts Hospital Discharge Database.

Note: Includes medical oncology discharges at all Massachusetts hospitals, excluding non-MA residents, normal newborns, and discharges for patients under 18 years of age.

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