CENTER FOR HEALTH INFORMATION AND ANALYSIS

MASSACHUSETTS ACUTE HOSPITAL AND HEALTH SYSTEM FINANCIAL REPORT

TECHNICAL APPENDIX

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I. Description of Financial Ratios

Table of Contents

I.	Description and Interpretation of Financial Metrics	Pages 2- 4
II.	General Data Caveats	Pages 5 - 6
III.	Fiscal Year-End Information	Page 7
IV.	Cohort Designations	Page 8
V.	Hospital-Specific Data Caveats	Page 9

I. Description of Financial Metrics

Financial ratio analysis is one critical component of assessing an entity's financial condition. The Center for Health Information and Analysis (CHIA) reports on profitability, liquidity, and solvency metrics. Below are the descriptions and calculations for each.

Measures are used for hospitals, health systems, physician organizations and health plans.

Note: The line numbers referenced below correspond to the lines in the submissions filed.

Profitability

This category evaluates the ability of an entity to generate a surplus. A negative surplus, or loss, is usually a sign of financial difficulty.

Operating Margin
Definition: Operating Income/Total Revenue

Operating income is income from normal operations of an entity, including patient care and other activities, such as research, gift shops, parking, and cafeteria, minus the expenses associated with such activities. Operating Margin is a critical ratio that measures how profitable the entity is when looking at the performance of its primary activities.

Operating Margin = (Line 57.2-Line 73) / Line 65

Non-Operating Margin
Definition: Non-Operating Income/Total Revenue

Non-operating income includes items that are not related to operations, such as investment income, contributions, gains from the sale of assets and other unrelated business activities.

Non-Operating Margin = Line 64.1/Line 65

Total Margin
Definition: Total Income/Total Revenue

This ratio evaluates the overall profitability of the entity using both operating surplus (or loss) and non-operating surplus (or loss).

Total Margin = Line 74/Line 65

Liquidity

This category evaluates the ability of the entity to generate cash for normal business operations. A worsening liquidity position is usually a strong indication that an entity is experiencing financial distress.

Current Ratio
Definition: Total Current Assets/Total Current Liabilities

This ratio measures the entity's ability to meet its current liabilities with its current assets (assets expected to be realized in cash during the fiscal year). A ratio of 1.0 or higher indicates that all current liabilities could be adequately covered by the entity's existing current assets.

Current Ratio = Line 16 / Line 37

Average Days in Accounts Receivable
Definition: Net Patient Accounts Receivable/ (Net Patient Service Revenue/365)

This ratio measures the average number of days in the collection period. A larger number of days represents cash that is unavailable for use in operations.

Average Days in Accounts Receivable = Line 10 / (Line 55 / # Days in period)*

Average Payment Period
Definition: (Total Current Liabilities-Estimated 3rd Party Settlements)/ [(Total Expenses-(Depreciation Expense + Amortization Expense))/365)]

This ratio measures the average number of days it takes an entity to pay its bills.

Average Payment Period = (Line 37 – Line 34) / [(Line 73 – Line 68) / # Days in period]*

*Note: Number of days in period: Quarter 1= 91.25, Quarter 2 = 182.5, Quarter 3 = 273.75, or Annual = 365 days.

Solvency

This category evaluates the health of an entity's capital structure, measuring an entity's ability to meet its financing commitments and the entity's ability to take on more debt. Both measures are critical to the entity's long-term solvency.

Debt Service Coverage
Definition: (Total Income + Interest Expense + Depreciation Expense + Amortization Expense)/ (Interest Expense + Current Portion of Long-Term Debt)

This ratio measures the ability of an entity to cover current debt obligations with funds derived from both operating and non-operating activity. Higher ratios indicate an entity is better able to meet its financing commitments. A ratio of 1.0 indicates that average income would just cover current interest and principal payments on long-term debt.

Debt Service Coverage Ratio = (Line 74 + Line 68 + Line 69) / (Line 69 + Line 32)

Cash Flow to Total Debt
Definition: (Total Income + Depreciation Expense + Amortization Expense) / (Current Liabilities + Long-Term Debt)

This ratio reflects the amount of cash flow being applied to total outstanding debt (all current liabilities in addition to long-term debt), and reflects how much cash can be applied to debt repayment. The lower the ratio, the more likely an entity will be unable to meet debt payments of interest and principal, and the higher the likelihood of violating any debt covenants.

Cash Flow to Total Debt = (Line 74 + Line 68) / (Line 37 + Line 39)

Equity Financing
Definition: Total Net Assets/Total Assets

This ratio reflects the ability of an entity to take on more debt and is measured by the proportion of total assets financed by equity. Low values indicate an entity used substantial debt financing to fund asset acquisition and, therefore, may have difficulty taking on more debt to finance further asset acquisition.

Equity Financing = (Line 51/Line 29)

Other Measures

The following are individual line items from the Quarterly Hospital Standardized Financial Filing.

- **Operating Surplus (Loss):** Total dollar amount of surplus or loss derived from operating activities.
- **Total Surplus (Loss):** Total dollar amount of surplus or loss derived from all operating and non-operating activities.
- **Total Net Assets***:* For not-for-profit entities, this represents the difference between the assets and liabilities of an entity, comprised of retained earnings from operations and contributions from donors. Changes from year to year are attributable to two major categories: (1) increases and/or decreases in Unrestricted Net Assets, which are affected by operations, and (2) changes in Restricted Net Assets (restricted contributions). The for-profit equivalent of Total Net Assets is Owner's Equity.
- **Assets Whose Use is Limited:** The current and non-current funds set aside for specific purposes, such as debt repayment, funded depreciation and other board designated purposes. Board-designated funds are most readily available to the organization as the board has the ability to make these funds available if needed. This is a valuable measure because it reveals potential resources that the entity may have available for cash flow if necessary.
- **Net Patient Service Revenue (NPSR)***:* Revenue an entity would expect to collect for services provided, including premium revenue, less contractual allowances. NPSR is the primary source of revenue for an entity.

II. General Data Caveats

Data Sources

Data is drawn from the CHIA Quarterly and Annual Hospital Standardized Financial Filings. Hospital Standardized Financial Filings may not reflect all of the financial resources available to the entity, such as resources available through associations with foundations or parents/affiliates. Health System, Physician and Health Plan information was derived from the consolidated audited financial statements and was standardized by CHIA using the same method as the entitys. Financial information must be interpreted within the context of other factors, including, but not limited to, management plans, payment changes, market behavior and other factors affecting performance.

Profitability percentages may not add due to rounding.

Hospital Cohort Definitions

Academic medical centers (AMCs) are a subset of teaching hospitals. AMCs are characterized by (1) extensive research and teaching programs; (2) extensive resources for tertiary and quaternary care; (3) are principal teaching hospitals for their respective medical schools; and (4) are full service hospitals with case mix intensity greater than 5% above the statewide average.

Teaching hospitals are those hospitals that report at least 25 full-time equivalent medical school residents per one hundred inpatient beds in accordance with Medicare Payment Advisory Commission (MedPAC) and do not meet the criteria to be classified as AMCs.

Community hospitals are hospitals that do not meet the 25 full-time equivalent medical school residents per one hundred beds criteria to be classified as teaching hospitals and have a public payer mix of less than 63%.

Community-High Public Payer (HPP) are community hospitals that are disproportionately reliant upon public revenues by virtue of a public payer mix of 63% or greater. Public payers include Medicare, MassHealth and other government payers including the Health Safety Net.

Specialty hospitals are not included in any cohort comparison analysis due to the unique patient populations they serve and/or the unique sets of services they provide. However, specialty hospitals are included in all statewide median calculations.

Note: Some AMCs and teaching hospitals have HPP status.

Data Caveats

In FY 2012 and earlier periods, the provision for bad debt was reported as an expense item while beginning in FY 2013, the provision has been reported as a deduction from patient service revenue. This change is due to an update in the reporting criteria by the Financial Accounting Standards Board. CHIA has determined that this change will have a minimal impact on the comparability of metrics reported.

Annual Reporting

Annual financial performance reports display twelve months of financial data for each acute hospital, regardless of an entity's fiscal year end date.

Quarterly Reporting

Hospitals submit three quarterly reports of cumulative year-to-date financial data for the first three quarters of the entitys' fiscal year. Reports are due forty-five days after the end of each quarter. Refer to Fiscal Year End Information section for more information about individual hospitals' months of data reported quarterly.

Databook

Databooks containing hospitals balance sheet, statement of operations, cash flow statement and financial ratios are published quarterly and annually on CHIA's website.

Performance Trends (Factsheets)

Acute Hospital Financial Performance Trends factsheets are published annually on CHIA's website. Five years of financial trend data are displayed.

Northeast US 2015 Median data included in FY 2016 Factsheets come from *Optum's 2016 Almanac of Hospital Financial Operating Indicators*. Northeast US medians published in this report are based on 2015 Medicare cost report data.

A blank Debt Service Coverage Ratio indicates a facility with no current long-term debt or interest in the period covered.

III. Fiscal Year-End Information

Each period in which data is reported represents different cumulative quarters of information depending on an entity's fiscal year-end. Below is a chart indicating the reporting period and the number of months of data represented for an entity in that reporting period based on the given hospital's fiscal year-end.

Note that annual data for each hospital is due 110 days after the entity's fiscal year end. As a result, a full twelve months of data for each hospital is included in the Annual Financial Performance report.

Quarterly Hospital Reporting Schedule

Hospitals	Data as of 3/31	Data as of 6/30	Data as of 9/30	Data as of 12/31
Steward Health Care (8 hospitals) **MetroWest Medical Center** **Saint Vincent Hospital**	Three Months of Data	Six Months of Data	Nine Months of Data	Not included as data is not yet due
Shriners (2 hospitals) **Fiscal Year End: 12/31**	January through March	January through June	January through September	January through December
Cambridge Health Alliance **Mercy Medical Center**	Nine Months of Data	Not included as data is not yet due	Three Months of Data	Six Months of Data
Fiscal Year End: 6/30	July through March	July through June	July through September	July through December
Other Acute Hospitals (49 hospitals)	Six Months of Data	Nine Months of Data	Not included as data is not yet due	Three Months of Data
Fiscal Year End: 9/30	October through March	October through June	October through September	October through December

Annual Hospital Reporting Schedule

Hospitals	Twelve months of data for the same fiscal year end regardless of year-end date.

IV. Cohort Designation

Hospital Name	Cohort Type	Count
	Academic Medical Centers	6
Beth Israel Deaconess Medical Center		
Boston Medical Center^		
Brigham and Women's Hospital		
Massachusetts General Hospital		
Tufts Medical Center		
UMass Memorial Medical Center^		
	Teaching Hospitals	7
Baystate Medical Center^		
Cambridge Health Alliance^		
Lahey Hospital & Medical Center		
Mount Auburn Hospital		
Saint Vincent Hospital^		
Steward Carney Hospital^		
Steward St. Elizabeth's Medical Center^		
	Community Hospitals	15
Anna Jaques Hospital		
Baystate Mary Lane Hospital		
Beth Israel Deaconess Hospital - Milton		
Beth Israel Deaconess Hospital - Needham		
Brigham and Women's Faulkner Hospital		
Cooley Dickinson Hospital		
Emerson Hospital		
Heywood Hospital		
Martha's Vineyard Hospital		
Milford Regional Medical Center		
Nantucket Cottage Hospital		
Newton-Wellesley Hospital		
South Shore Hospital		
Steward Norwood Hospital		
Winchester Hospital		
	Community-HPP^ Hospitals	29
Athol Hospital		
Baystate Franklin Medical Center		
Baystate Noble Hospital		
Baystate Wing Hospital		
Berkshire Medical Center		
Beth Israel Deaconess Hospital - Plymouth		
Cape Cod Hospital		
Clinton Hospital		
Fairview Hospital		
Falmouth Hospital		
Hallmark Health		
Harrington Memorial Hospital		
HealthAlliance Hospital		
Holyoke Medical Center		
Lawrence General Hospital		
Lowell General Hospital		

Marlborough Hospital	
Mercy Medical Center	
MetroWest Medical Center	
Morton Hospital	
Nashoba Valley Medical Center	
North Shore Medical Center	
Northeast Hospital	
Signature Healthcare Brockton Hospital	
Southcoast Hospitals Group	
Steward Good Samaritan Medical Center	
Steward Holy Family Hospital	
Steward Saint Anne's Hospital	
Sturdy Memorial Hospital	
Specialty	6
Boston Children's Hospital	
Dana-Farber Cancer Institute	
Massachusetts Eye and Ear Infirmary	
New England Baptist Hospital	
Shriners Hospitals for Children - Boston	
Shriners Hospitals for Children - Springfield	
Total	**63**

^ Indicates hospital meets the HPP criteria

V. Hospital-Specific Data Caveats

This section identifies Massachusetts acute care hospital acquisitions, affiliations, closures, and mergers from 2012 through 2016.

Quincy Medical Center, which was purchased by **Steward Health Care System** in October 2011, closed in December 2014, the campus currently operates as a satellite Emergency Department under the Carney Hospital license.

Jordan Hospital was purchased by Beth Israel Deaconess Medical Center and became **Beth Israel Deaconess Hospital – Plymouth** effective January 2014.

Merrimack Valley Hospital, which was purchased by **Steward Health Care System** in May 2011, merged with Steward Holy Family Hospital effective August 2014.

MetroWest Medical Center was purchased by **Tenet Healthcare Corp**. in November 2013 (previous owner was Vanguard Health Systems).

Milton Hospital was purchased by Beth Israel Deaconess Medical Center and became **Beth Israel Deaconess Hospital – Milton** effective January 2012.

North Adams Regional Hospital closed in March 2014.

Saint Vincent Medical Center was purchased by **Tenet Healthcare Corp**. in November 2013 (previous owner was Vanguard Health Systems).

Saints Medical Center merged with Lowell General Hospital in July 2012.

Wing Memorial Hospital(now Baystate Wing Hospital) ownership transferred from UMass Memorial Health Care to **Baystate Health** effective September 2014.

Baystate Mary Lane Hospital merged with Baystate Wing Hospital in September 2016.

Winchester Hospital became affiliated with Lahey Health effective July 2014.

Tufts and **Circle Health (Lowell General Hospital's parent)** merged in FY 2015, however for FY 2015 1nd FY 2016 they were not financially consolidated. As such, their data is reported separately.

Kindred – Boston and Kindred – North Shore were sold to Curahealth in 2016 and are now rehabilitation hospitals.