CENTER FOR HEALTH INFORMATION AND ANALYSIS

Total Medical Expense (TME) Trends Across Massachusetts Communities

Executive Summary

March 2024

CHIA

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Introduction

Background

Each year, pursuant to M.G.L. c. 12C, the Center for Health Information and Analysis (CHIA) collects aggregate total medical expense (TME) data from commercial and commercially managed health plans and reports on medical spending trends as part of the Annual Report on the Performance of the Massachusetts Health Care System. CHIA's annual analysis and reporting of TME data investigates cost drivers and spending trends, and how these vary across payer and provider entities.

New this year, CHIA examined variations in medical spending across Massachusetts communities, and whether there was a relationship between certain spending categories and community characteristics. These key findings were also published as part of CHIA's Annual Report.

Health care spending trends are driven by the volume and types of services utilized as well as the prices of those services. Variation in community medical spending trends may be influenced by multiple interrelated factors, including individual health status, adequacy and proximity of provider networks, provider price differences, and differences in insurance coverage and affordability. Geographic variation in community medical claims spending patterns may also be attributed to social and economic risk factors, which can impact access to care.[1]

Methodology

Total medical expense (TME) data for Massachusetts residents with private commercial or commercially-managed MassHealth coverage was linked with American Community Survey (ACS) data for calendar year (CY) 2021. Medical spending data reported to CHIA at the

member ZIP Code level was linked with ACS population demographic data at the ZIP Code Tabulation Area (ZCTA) level. This analysis allowed CHIA to assess correlations between population characteristics (including median family income, race, ethnicity, citizenship, and nativity) and average per member per month (PMPM) medical claims spending overall and by TME service category.

In this section, correlations refer to the relationship between two variables; when both variables increase or decrease in the same direction, this is considered a "positive correlation." Conversely, a "negative correlation" refers to the relationship between two variables wherein one variable increases as another decreases. Correlation results reflect statistically significant findings ($P<0.05$) but may not necessarily reflect strong correlation (r) values.[2] Correlations with r values of 0.2 or greater are referred to as "positively correlated," while correlations with r values of -0.2 or less are referred to as "negatively correlated," and correlations with r values between 0.2 and -0.2 are considered to have no correlation. R values for results displayed in this section and marked as correlations range from absolute values of 0.20 to 0.67. Please see the databook for more detailed correlation statistics.

The following summary provides a few key findings from the community TME analysis. For a more comprehensive view of the data and related analyses, CHIA has published an interactive dashboard which presents data on demographics by community (municipality and ZCTA) and the relationships between these community characteristics and total medical expenses by insurance type and across all TME service categories.

Terms

American Community Survey (ACS): An annual survey conducted by the United States Census Bureau. Data on community demographics is gathered and made publicly available at **https://data.census.gov/table**.

ZIP Code Tabulation Area (ZCTA): ZIP Code Tabulation Areas or ZCTAs (pronounced zik-tahs) are a geographic product of the U.S. Census Bureau created to allow mapping, display, and analyses of the United States Postal Service (USPS) Zone Improvement Plan (ZIP) Codes dataset.[3] ZIP codes available in TME data were linked to ZCTAs available in ACS data in order to apply a community lens to TME spending patterns. For more information on ZCTAs and CHIA's approach to linking these two data sets, please see the technical appendix.

Per Member Per Month (PMPM) Spending: Average per member spending on medical services each month within the stated insurance type.

Physician: A service category gathered as part of TME data collection. This service category captures all payments for services provided by a doctor of medicine or osteopathy. Physician spending includes both primary care and specialty care doctors.

Other Professional: A service category gathered as part of TME data collection. This service category captures all payments for services provided by licensed practitioners other than physicians, including occupational and physical therapists, nurse practitioners, physician assistants, and certain behavioral health providers.

Hospital Inpatient: A service category gathered as part of TME data collection. This service category captures all payments made to hospitals for inpatient care.

Telehealth: Telehealth spending includes all payments made to providers for services delivered remotely (i.e., over the phone or via video chat). Telehealth spending in this section refers to the aggregate of all telehealth spending across the physician, other professional, hospital outpatient, and other medical TME service categories. For more information on telehealth spending by service category, please see CHIA's Annual Report. ■

Correlation of Medical Spending with Community Demographics: Median Family Income

Despite near-universal health care coverage in Massachusetts, affordability issues persist, which have been shown to affect middle- and low- income families more than higher-income families.[4]

One of the demographic descriptors available from the ACS was an estimate of each ZCTA's median family income. In 2021, the median family income of all Massachusetts communities was just above $114,000. Within individual communities (ZCTAs), the median family income ranged from $27,000 to $250,000.

The impact of median family income on community spending trends differed by service category. Communities with a higher median family income tended to have higher levels of physician and telehealth PMPM spending. However, the median family income did not significantly impact hospital inpatient, other professional, or overall medical spending.

Service Category	Median Family Income of ZCTA
Telehealth	▲
Physician	▲
Other Professional	—
Hospital Inpatient	—
Total Medical Expenses	—

KEY ▲ Positive correlation ▼ Negative correlation — No correlation (r<0.20)

Higher median income in a community was associated with greater PMPM spending on telehealth and physician services.

Sources: 2021 American Community Survey, 5-year estimates of median family income at the ZCTA level, and medical expenses reported to CHIA by payers at the ZIP code level. ZCTAs were cross-walked to ZIP Codes to be able to compare data across both data sets. See technical appendix for details.

Data Notes: This analysis includes commercial full-claims data and data from MassHealth MCOs and ACO-As. Commercial full-claims data represents members for whom the payer has access to and is able to report all claims expenses and represented 63.5% of total commercial member months in 2021. MassHealth MCOs and ACO-As are commercially managed MassHealth plans, and account for 36.6% of MassHealth membership. Telehealth spending presented here is the sum of telehealth spending across the hospital outpatient, physician, other professional, and other medical service categories. Spending for all service categories was calculated on a per member per month (PMPM) basis. Results shown here reflect statistically significant findings (P<0.05) but may not necessarily reflect strong correlation (r) values. R values for correlated results displayed on this page range from 0.49 to 0.67 (in absolute terms). Please see the databook for more detailed correlation statistics.

Correlation of Medical Spending with Community Demographics: Race and Ethnicity

Total medical spending PMPM also showed correlations with community race and ethnicity demographics. Communities with higher proportions of individuals identifying as White, Non-Hispanic tended to have higher total medical spending PMPM in 2021, while the opposite was seen in communities with higher proportions of individuals identifying as Asian, Non-Hispanic, or Hispanic or Latino which had lower total medical spending PMPM during the same time period.

Among TME service categories, spending on health care services delivered by physicians varied across communities with differences in racial and ethnic compositions. Communities with higher proportions of individuals identifying as White, Non-Hispanic tended to have higher PMPM spending on physician services, while the opposite trend was seen in communities with higher proportions of individuals identifying as Black or African American, Non-Hispanic, or Hispanic or Latino. Communities with higher proportions of individuals identifying as Asian, Non-Hispanic correlated with increased telehealth spending PMPM.

Hospital inpatient and other professional spending PMPM had weak to no correlation with community race and ethnicity demographics.

	Percentage of the Population Identifying as:				
Service Category	**Asian, Non-Hispanic**	**Black or African American, Non-Hispanic**	**White, Non-Hispanic**	**All Other Races, Non-Hispanic**	**Hispanic or Latino**
Telehealth	▲	—	—	—	—
Physician	—	▼	▲	—	▼
Other Professional	—	—	—	—	—
Hospital Inpatient	—	—	—	—	—
Total Medical Expenses	▼	—	▲	—	▼

KEY ▲ Positive correlation ▼ Negative correlation — No correlation (r<0.20)

Communities with higher proportions of individuals identifying as non-Hispanic Black or African American, as well as communities with higher proportions of individuals identifying as Hispanic or Latino, correlated with lower PMPM spending on physician services.

Data Source: 2021 American Community Survey, 5-year estimates of population proportions at the ZCTA level, and medical expenses reported to CHIA by payers at the ZIP code level. ZCTAs were cross-walked to ZIP Codes to compare data across both data sets. See technical appendix for details.

Data Notes: This analysis includes commercial full-claims data and data from MassHealth MCOs and ACO-As. Commercial full-claims data represents members for whom the payer has access to and is able to report all claims expenses and represented 63.5% of total commercial member months in 2021. MassHealth MCOs and ACO-As are commercially managed MassHealth plans, and account for 36.6% of MassHealth membership. Telehealth spending presented here is the sum of telehealth spending across the hospital outpatient, physician, other professional, and other medical service categories. Spending for all service categories was calculated on a per member per month (PMPM) basis. Results shown here reflect statistically significant findings (P<0.05) but may not necessarily reflect strong correlation (r) values. R values for correlated results displayed on this page range from 0.22 to 0.39 (in absolute terms). Please see the databook for more detailed correlation statistics.

Correlation of Medical Spending with Community Demographics: Citizenship and Nativity

Total medical spending tended to be lower in communities with higher proportions of individuals who are not US citizens and communities with higher proportions of individuals who are foreign-born. Physician spending also tended to be lower in communities with higher proportions of non-US citizens, while no relationship was observed between physician spending and communities with higher foreign-born populations.

Telehealth spending, however, tended to be higher in communities with higher proportions of individuals who are not US citizens, as well as communities with higher proportions of individuals born outside the US. Telehealth spending for these communities was higher specifically for hospital outpatient and other medical services.[5]

As seen with other community demographics (e.g., median income, race, and ethnicity), community-level citizenship and nativity demographics did not have significant relationship with hospital inpatient spending or other professional PMPM spending, suggesting that these community demographics have little impact on spending for these services.

	Percentage of the Population:	
Service Category	**Who Are Not U.S. Citizens**	**Who Are Foreign Born**
Telehealth	▲	▲
Physician	▼	—
Other Professional	—	—
Hospital Inpatient	—	—
Total Medical Expenses	▼	▼

KEY ▲ Positive correlation ▼ Negative correlation — No correlation (r<0.20)

PMPM spending on telehealth services tended to be higher in communities with higher proportions of individuals who are not US citizens and communities with higher proportions of individuals born outside the US, while total medical spending PMPM tended to be lower in those communities.

Data Source: 2021 American Community Survey, 5-year estimates of population proportions at the ZCTA level, and medical expenses reported to CHIA by payers at the ZIP code level. ZCTAs were cross-walked to ZIP Codes to be able to compare data across both data sets. See technical appendix for details.

Data Notes: This analysis includes commercial full-claims data and data from MassHealth MCOs and ACO-As. Commercial full-claims data represents members for whom the payer has access to and is able to report all claims expenses and represented 63.5% of total commercial member months in 2021. MassHealth MCOs and ACO-As are commercially managed MassHealth plans, and account for about 36.6% of all MassHealth membership. Telehealth spending presented here is the sum of telehealth spending across the hospital outpatient, physician, other professional, and other medical service categories. Spending for all service categories was calculated on a per member per month (PMPM) basis. Results shown here reflect statistically significant findings (P<0.05) but may not necessarily reflect strong correlation (r) values. R values for correlated results displayed on this page range from 0.20 to 0.27 (in absolute terms). Please see the databook for more detailed correlation statistics.

Notes

1 Examination of Health Care Cost Trends and Cost Drivers. Office of Attorney General Maura Healey. 2022. https://www.mass.gov/files/documents/2022/11/02/2022-11-2%20COST-TRENDS-REPORT_PUB_DRAFT4_HQ.pdf.

2 Mukaka MM. Statistics corner: A guide to appropriate use of correlation coefficient in medical research. Malawi Med J. 2012 Sep;24(3):69-71. PMID: 23638278; PMCID: PMC3576830. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3576830/

3 ZIP Code Tabulation Areas (ZCTAs). United States Census Bureau. 2024. https://www.census.gov/programs-surveys/geography/guidance/geo-areas/zctas.html

4 *Massachusetts Health Insurance Survey.* Chiamass.gov. 2023. https://www.chiamass.gov/massachusetts-health-insurance-survey/

5 CHIA's TME specifications describe the Other service category as "all payments generated from claims to health care providers for medical services not otherwise included in other categories. Includes, but is not limited to, skilled nursing facility services, home health services, durable medical equipment, freestanding diagnostic facility services, hearing aid services and optical services."

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Publication Number 24-073-CHIA-05