Risk Adjustment Based on Social Factors: State Approaches to Filling Data Gaps

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Introduction

As state policymakers increasingly rely on value-based payment arrangements to reduce health care costs while ensuring quality, there also has been a growing, related focus on how social factors impact health—a concept commonly known as "social determinants of health." Health-related social factors include not only health care but also issues such as food insecurity, housing instability, and transportation barriers. These factors can influence health status and pose challenges to making equitable improvements in health outcomes.

Efforts to address health-related social risks through health care systems—by screening for social risks and referring patients to public assistance or community resources, for instance—require health care providers to expend additional resources, making it harder for them to contain costs.¹ There is concern that health care payment and delivery reforms that do not address health-related social risks could further disadvantage people who already experience health inequities.²³ Because provider payments are tied to quality performance, and patients with one or more social risk factors are associated with poor health outcomes, providers may be incentivized to limit health care services to high-need populations, further exacerbating health care disparities. To address this tension and mitigate the risk that providers could be unfairly penalized based on the higher costs of addressing their patients' social needs or for quality performance that is hampered by their patients' social risk factors, some states have developed risk adjustment methodologies that take patients' social risk factors into account. However, because data on social risk factors typically are not collected from patients in a systematic and consistent way, obtaining the necessary data to inform a social risk-adjustment model is no small challenge.

This issue brief will examine examples from two state Medicaid programs and one nonprofit quality measurement and reporting organization of the data sources they use to identify patients' social risk factors when risk-adjusting payments or quality measure performance. Within the brief, we will examine both their approaches to risk adjustment based on social risk factors and how each entity filled their gaps in data on social risk factors. To inform this issue brief, we reviewed publicly available documentation and articles on the three profiled examples of risk adjustment based on social risk factors. We also conducted supplemental interviews with Medicaid staff from Minnesota's Department of Human Services and staff from Minnesota Community Measurement. As noted above, states will need to be mindful of the limitations of these data sources to prevent further exacerbating health care disparities.

Background

There is a substantial body of research demonstrating the existence of health disparities across various demographic groups, with especially dire examples showing differences in life expectancy by race and ethnicity, income, and education. ^{4,5,6} In recent years, there has also been growing interest in the role that social risk factors have in influencing health, as evidenced by innovative approaches to address issues such as housing instability, food insecurity, and transportation access through programs such as the Center for Medicare & Medicaid Innovation's (CMMI) Accountable Health Communities (AHCs) and similar

HEALTH-RELATED SOCIAL FACTORS

This issue brief employs the following terms to reference related but distinct concepts.

Social determinants of health – Social conditions that can affect community or individual health in positive or negative ways, such as income and economic security and housing stability.

Social risk factors – Social conditions for a community or individual that are associated with negative health status or outcomes, such as food insecurity.

state-based models, including Washington state's Accountable Communities of Health and Michigan's Community Health Innovation Regions.⁷

The idea that individuals have unique circumstances that can affect their health care outcomes is not new to health care; that concept is the underpinning for risk adjustment, which is a tool used to account for individuals' risk factors when setting payment rates or calculating performance on quality measures. Historically, risk adjustment has focused primarily on medical history (e.g., whether patients have diabetes or hypertension), and this type of medically based adjustment has been used for decades in health care. The idea of incorporating social risk factors, however, has been ardently debated due to concerns that it could have unintended consequences, such as masking disparities and institutionalizing different standards of performance.⁸ For these reasons, the National Quality Forum (NQF), a nonprofit organization that endorses health care quality measures and makes recommendations for their use in payment and reporting programs, has thus far maintained a policy "prohibiting the inclusion of social risk factors ... in risk adjustment models."⁹

In response to growing evidence linking social risk factors and health, the NQF convened an expert panel in 2014 to examine this policy and launched two trials investigating the impact of allowing the inclusion of social risk factors in risk adjustment models. The 2017 final report from the first trial found "a very limited effect of (including) social risk factors" in quality measure risk adjustment, but it also noted that it might have been influenced by the specific methods used by measure developers during the trial as well as the "limited availability of robust data on social risk factors." The panel also recommended that the NQF "allow inclusion of social risk factors ... when conceptual reasons and empirical evidence demonstrate it is appropriate." Intending to further study remaining questions from the first trial, the NQF initiated a second trial that same year to help determine whether the organization should permanently change its policy against social risk factor adjustment. Along a similar vein, the U.S. Department of Health and Human Services' Office of the Assistant Secretary for Planning and Evaluation (ASPE) commissioned a series of five reports, published in 2016 and 2017 by the National Academy of Medicine, on how the Centers for Medicare & Medicaid Services (CMS) could account for social risk factors in Medicaid value-based payment (VBP) programs should the agency decide to take that step in the future.

While the question of how to account for social factors in risk adjustment methodologies and VBP arrangements is still under debate at the national level, some states and state-level organizations have already undertaken such efforts. This brief highlights the data sources used by Massachusetts and Minnesota's Medicaid programs to implement risk adjustment approaches that incorporate social risk factors, and also provides a third example of data sources used by a state-level nonprofit measurement organization in Minnesota. We focus on how these entities have handled the challenge of social risk factor data availability, as well as how their data source approaches aim to mitigate common concerns about accounting for social risk factors in risk adjustment.

Use of Administrative and Claims Data: Minnesota's Medicaid ACO

In 2018, the Minnesota Department of Human Services (DHS) launched an update to its existing Integrated Health Partnerships (IHP) program—an accountable care organization-type (ACO) model in the state's Medicaid program—known in the state as "Medical Assistance." Among other changes, the updated IHP program introduced a new population-based payment that is adjusted based on the medical and social risk factors of IHP program beneficiaries. The rationale for the supplemental risk-adjusted, population-based payment was to support activities typically not reimbursed by the state's Medical Assistance program, recognizing that some beneficiaries have greater risk factors, including both medical conditions and social risk factors.

To develop its methodology for risk-adjusting IHP's population-based payments, DHS staff leaned on earlier research conducted by the Office of the Medical Director for Medical Assistance, which had studied the relationship between social risk factors and health outcomes. In designing the IHP social risk adjustment methodology, staff decided relatively early to rely on administrative data and claims data that DHS and other state agencies already had available. This

decision was made in part because those data could be accessed without new data collection and because the risk factors identified through those data could be definitively tied to individual beneficiaries' specific circumstances (unlike methods that rely on survey data, discussed later in this brief).

Informed by the Office of the Medical Director's earlier research findings, department staff conducted further studies using Medical Assistance claims data to identify which measures of social risk factors were associated with increased costs and then used those measures as a proxy for health status and outcomes. In addition to using the findings from that analysis to select the measures that would be included in the IHP social risk adjustment methodology, DHS staff also used the cost-analysis findings to determine how heavily those different variables should influence the population-based payments.

Ultimately, DHS developed sets of social risk factors for children and for adults that are used to enhance the medically based risk adjustment methodology being employed to calculate IHP's population-based payments. Most of the measures used for children and adults are either the same or similar. For example, the adjustment for children and adults both include a measure of homelessness (parental homelessness for children), which is identified either through beneficiaries' self-reporting of homelessness or by DHS' determination that

MINNESOTA'S APPROACH

Several measures of social risk factors, all obtained from administrative and claims data.

Adults

- Diagnosis of substance use disorder (SUD), serious mental illness (SMI), or severe and persistent mental illness (SPMI)
- Deep poverty (income below 50 percent of the Federal Poverty Level (FPLI)
- Homelessness: self-reported, or address determined to be a homeless shelter or nonresidential address
- Past incarceration

Children

- Parent with diagnosis of SUD, SMI, or SPMI
- Parent income at deep poverty level
- Parent with homelessness: self-reported or address determined to be a homeless shelter or nonresidential address
- Parent with past incarceration
- Involvement with child protective services

an individual's provided address is a homeless shelter or nonresidential address.¹⁴ The adjustment for adults includes a measure of deep poverty (income below 50 percent of the federal poverty level [FPL]) or parental deep poverty for children. Additionally, the methodology for adults includes measures of whether beneficiaries have a diagnosed substance use disorder (SUD), serious mental illness (SMI), or severe and persistent mental illness (SPMI), and the methodology for children includes measures for whether a parent has a diagnosis of SUD, SMI, or SPMI.¹⁵

The methodology for adults also considers whether beneficiaries have been formerly incarcerated (using public data from the state Department of Corrections), while the methodology for children ascertains whether a parent has been formerly incarcerated. Minnesota's methodology does use one risk factor measure that is unique to children—considering whether they are involved in child protective services, as identified through administrative data housed within DHS.

Staff from DHS did acknowledge that there were some limitations to their approach of relying exclusively on data that already were available and that were tied to individual beneficiaries' own social risk factors. ¹⁶ For example, they would have liked to account for whether beneficiaries were experiencing food insecurity. However, they wanted to begin their risk adjustment effort based on social factors without embarking on a new, statewide data collection effort, and they wanted their methodology to use data the state already had available on individual beneficiaries' specific social risk factors rather than employing a proxy approach that has been used elsewhere.

Use of Survey Data: Minnesota Community Measurement

Another entity in the state, Minnesota Community Measurement (MNCM), is a nonprofit organization that collects, analyzes, and publishes health care quality and cost data. Though not a Medicaid agency like the prior example from Minnesota or the following example from Massachusetts, the approach used by MNCM to risk-adjust based on social risk factors could be readily duplicated by a state Medicaid agency as it does not use proprietary data.

Among other areas of work, MNCM is also a contractor to the state of Minnesota—supporting Minnesota's Statewide Quality Reporting and Measurement System (a "standardized quality measure set") and analyzing quality metrics for Medicaid compared to other payers. Additionally, MNCM collects and publicly reports data on

MINNESOTA COMMUNITY MEASUREMENT'S APPROACH

A geographic "deprivation index" using variables from the U.S. Census Bureau's American Community Survey, including the percentage of:

- Residents receiving Supplemental Nutrition Assistance Program (SNAP) benefits
- Residents receiving cash assistance benefits
- Residents with incomes less than 100 percent of the Federal Poverty Level (FPL)
- Adult residents who are unemployed
- Households with children and a single female parent as residents

how health care providers in the state perform on certain cost and quality measures, such as depression remission and the average total cost of care.

Many of the health care quality measures that MNCM collects and reports are outcome measures. Although outcome measures are often viewed as more valuable than process measures, adjusting for factors that are beyond the influence of health care providers can be important in enabling fair comparisons and avoiding penalizing providers for factors beyond their control, such as the influence of social risk factors. MNCM's risk adjustment methodology has continually evolved over time and, in 2018, it added a new component of risk adjustment based on social risk factors.

MNCM's method for incorporating social risk factors into its risk adjustment of quality measures was based on recommendations from the organization's board of directors as well as its measurement and reporting committee, both of which are composed of representatives from various stakeholder groups including health plans, health care provider organizations, employers, consumers, and state government. Historically, MNCM had risk-adjusted these measures based on demographic factors such as age, insurance coverage type, and illness severity (if available), but MNCM's stakeholders wanted the organization to explore going beyond those steps to include more social risk factors in its risk adjustment methodology.

Similar to the experiences of Medicaid agencies, MNCM faced a key challenge in determining where to obtain data on individual patients' social risk factors. Unlike Medicaid agencies, which collect data such as addresses, income, and family composition to determine individuals' eligibility and enroll them in the program, MNCM does not have access to data on individual patients beyond basic demographics and is not able to link its data to other sources of information. However, MNCM determined that one piece of data reported to them by provider organizations could be invaluable in creating a proxy measure for social risk factors: individual patients' ZIP codes for their home addresses.

Because MNCM did not already have data on individual patients' social risk factors and did not want to increase the burden on health care providers by requiring them to collect and report new data, they instead sought to leverage the patient-level ZIP code data already on hand. MNCM developed a geographic "deprivation index" of several measures of social risk factors drawn from publicly available data from the U.S. Census Bureau's American Community Survey (ACS), using the social risk factors associated with the ZIP codes where individual patients live as a proxy for their own social risk factors and for community-level risk factors. MNCM staff selected the ACS variables that comprise their deprivation index through a literature review of research on social risk factors and their relationship to health. In addition to avoiding increased provider burden, another potential advantage of this strategy is that the data are known to be

of uniform quality across patients and health care providers, which would not necessarily be the case with providercollected data on social risk factors.

MNCM did encounter some limitations to their approach of using a survey-based social risk factor index based on patient addresses. For example, the ACS does not include variables for some social risk factors that could be desirable to explicitly incorporate, such as homelessness or food insecurity. Another potential limitation is the fact that the data available to MNCM do not include geographic detail below the ZIP code level, and ZIP codes may include people with a wide range of social risk factors from "very low" to "very high." To address this issue, MNCM did conduct a pilot study that compared results of risk-adjusting based on patients' ZIP codes against a method using patients' Census block groups (generally a smaller, more precise level of geography than ZIP codes) by using actual addresses submitted by providers for a limited number of patients. Ultimately, the study results did not suggest a need to use full addresses for MNCM's purposes, and MNCM determined it did not warrant the additional burden of requiring providers to report addresses for all patients. However, MNCM staff noted they would likely use a method based on Census block groups rather than ZIP codes if they already had patients' full addresses on file, as Medicaid agencies do.¹⁷

Hybrid Use of Survey Data and Administrative and Claims Data: Massachusetts Medicaid MCOs and ACOs

In Massachusetts, the state's Medicaid program "MassHealth" has incorporated measures of beneficiaries' social risk factors into its methodology for risk-adjusting payments to Medicaid Managed Care Organizations (MCOs) since 2016 and Accountable Care Organizations (ACOs) since 2018. Part of the state's rationale for accounting for social risk factors in its payments to MCOs and ACOs was to "mitigate the incentive [they] might otherwise have to limit care or avoid members with greater health care needs," recognizing that individuals with social risk factors may face additional needs and greater challenges to optimal health outcomes. ^{18,19}

Unlike the state of Minnesota's exclusive use of administrative data on social risk factors to adjust payments to its ACOs or Minnesota Community Measurement's exclusive use of survey data to approximate the social risk factors of providers' patient panels in risk-adjusting quality measures, Massachusetts has developed a hybrid approach using both administrative and survey data. Massachusetts' approach has also evolved since it first implemented the model, with the state's partners at the University of Massachusetts Medical School making iterative refinements based on continued analysis of the relationship between social risk factors and health care costs.

Similar to the methodology created by Minnesota for its IHP program, Massachusetts uses various elements of

MASSACHUSETTS' APPROACH

Administrative and claims data

- Disability, determined by status as client of the state Departments of Mental Health or Developmental Services, or Medicaid eligibility due to disability
- Behavioral health diagnosis of SMI, SUD, or Opioid Use Disorder (OUD)
- Housing problems of homelessness or housing instability, determined by a Z-code or at least three addresses on file in a single year
- Rural area, based on classification of beneficiary addresses

Survey data

Neighborhood Stress Score index of seven variables from the U.S. Census Bureau's American Community Survey—percentages of:

- Families with incomes less than 100 percent of the Federal Poverty Level (FPL)
- Families with incomes less than 200 percent of the FPL
- Adults who are unemployed
- Households receiving public assistance
- Households with no car
- Households with children and a single parent
- People age 25 or older without a high school diploma

Medicaid claims data and administrative data from within the Medicaid agency and other departments. For example, MassHealth accounts for disability, which it treats as a marker of social risk factors, by using enrollment data from the state's Department of Mental Health and Department of Developmental Services to determine whether individual beneficiaries also are clients of those agencies, as well as MassHealth's own eligibility data to determine if beneficiaries are eligible due to a disability.

MassHealth also uses claims-based diagnosis codes to determine whether individual beneficiaries have diagnoses that would be considered an SMI, opioid use disorder (OUD), or both SMI and OUD. This area of the model is an example of multiple iterative improvements. Initially, earlier versions of the model included any SUD, but ongoing analysis found that only OUD was associated with higher health care costs, while SUDs involving alcohol and other substances were not. In response to those results, the model first narrowed its initial SUD indicator to one only considering OUD. Second, earlier versions of the model considered whether beneficiaries had SMI or SUD but did not give special consideration to whether beneficiaries had both. Through further analysis, Massachusetts found that SMI alone, OUD alone, and SMI combined with OUD were all associated with varying levels of increased health care costs. Based on that information, the state again revised its model to consider whether individuals have just one or both diagnoses.²⁰

The state also developed an indicator of housing problems—housing instability or homelessness—based on whether an individual has been identified as homeless via an International Classification of Disease (ICD) claims Z-code or has had three or more addresses on file within a single calendar year.²¹ This part of Massachusetts' model has also evolved over time. While the state's initial model considered simply whether an individual had housing problems, the model now considers the interaction of housing problems in combination with medical risk adjustment score and whether an individual has behavioral health diagnoses (SMI and/or SUD [i.e., not only OUD in this instance]). This is a result of the state's analysis, which found a relationship between housing problems, behavioral health diagnoses, and other medical conditions when examining their association with health care costs. For example, while housing problems alone were associated with somewhat higher health care costs, housing problems in combination with complex medical conditions (e.g., diabetes, high blood pressure) and an SMI or SUD diagnosis were associated with even higher costs.

While the measures that MassHealth pulls from administrative and claims data represent social risk factors tied directly to individual beneficiaries, the agency also employs an approach of using survey data as a proxy for individuals' own social risk factors. Its approach is similar to that of MNCM, creating an index of several variables from the ACS—such as the percentage of households without a car and adults without a high school diploma—which the state calls a "Neighborhood Stress Score" (NSS).²² Because MassHealth already has exact addresses for individual beneficiaries, however, it is able to identify through geocoding the exact Census block group where beneficiaries live and use the social risk factor characteristics from what is generally a more precise level of geography than ZIP codes, which Minnesota Community Measurement uses. This data-based survey part of the model has also been revised over time, with changes such as accounting for an interaction between the NSS and medical risk score and recognizing that social risk factors were associated with even higher health care costs for beneficiaries who also have greater medical risks. In addition to the address-based NSS, Massachusetts added a "rural" variable in the latest version of its model, which accounts for higher health care costs associated with beneficiaries living in more sparsely populated parts of the state.

Other Potential Data Sources

The three examples of risk adjustment methodologies profiled in this brief relied primarily on data that already existed and were readily available—either through the federal ACS survey or administrative data that were collected by state agencies for other purposes, such as determining individuals' eligibility for Medicaid coverage and enrollment. However, another option for states considering risk adjustment based on social factors would be to engage in new data collection aimed specifically at gathering information regarding individuals' social risk factors. Two potential vehicles for states considering such data collection are health care claims Z-codes and screenings for social risk factors.

Z-codes

The current set of ICD codes used for recording diagnoses and billing for health care services include a set of Z-codes for "persons with potential health hazards related to socioeconomic and psychosocial circumstances." Included among these Z-codes are several that pertain to social risk factors, some of which measure concepts used in the risk adjustment examples discussed earlier in this brief such as food insecurity (Z59.4, lack of adequate food and safe drinking water), income (Z59.5, extreme poverty; Z59.6, low income), and homelessness (Z59.0). In fact, Massachusetts uses the Z-code for homelessness as one factor for identifying homelessness and housing insecurity for its social risk factor methodology to adjust Medicaid MCO and ACO payments. One potential barrier to using Z-codes for purposes such as risk-adjusting payment or quality measure performance is that Z-codes are not widely used in a systematic or consistent way, although there are efforts to improve documentation of social risk factors in electronic health records. However, by offering health care providers an incentive to improve their use of Z-codes—tying certain Z-codes to payment or quality measure performance, for instance—a state's Medicaid program could drive greater use of these codes by providers.

Social Risk Screening Tools

Recognizing the relationship between social risk factors and health, some initiatives to transform health care through innovative delivery system models have adopted screening tools to identify individuals' social risks. Often, the intention is for providers to connect their patients with public programs or community-based organizations, such as SNAP or food pantries for food insecurity, when patients identify those social risks as social needs. In some cases, efforts to screen for social risk factors use standardized instruments, such as the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE) toolkit developed by the National Association of Community Health Centers, ²⁶ and the Center for Medicare and Medicaid Innovation's (CMMI) Health-Related Social Needs screening tool for the Accountable Health Communities (AHC) model.²⁷ In other cases, initiatives may prescribe certain social risk factor domains—such as housing instability, food insecurity, and transportation access—that providers are required to screen for, without requiring use of a specific tool.²⁸ While none of the examples profiled in this brief used data from social risk screenings in their risk-adjustment methodologies, data collected from such screenings could potentially be used to fill gaps in individual-level social risk factor data, especially when they are collected through systematic efforts, such as by Medicaid MCOs during the enrollment process or by providers in a Medicaid ACO or Patient-Centered Medical Home program.

Conclusion

As policymakers seek to improve the value of health care spending through alternative payment and delivery systems that reward providers for containing costs and achieving quality goals, one concern is that those reforms may further disadvantage already vulnerable populations whose social circumstances put them at risk for worse health. If health care providers are financially rewarded or penalized based on their patients' health outcomes and costs, then those who disproportionally treat patients with social risk factors associated with worse health outcomes and higher health care costs are likely to be penalized—resulting in reduced health care resources for people with high needs. However, one potential approach to mitigating that possibility is by risk-adjusting health care payments or quality measures based on the social factors that place patients at higher risk.

A key challenge to that form of risk adjustment, however, is obtaining data regarding patients' social risk factors. Historically, data on many commonly recognized social risk factors (e.g., housing instability, food insecurity, and educational attainment) have not been collected consistently or systematically in ways that data on medical diagnoses and procedures have been recorded. To address this limitation, three examples of innovative approaches to filling gaps of data on patients' social risk factors have been profiled within this brief: using survey data as a proxy for individuals' own social risk factors, repurposing existing administrative data pertaining to social risk factors, and, in the case of

Massachusetts, taking an initial step toward collecting data on social risk factors specifically for risk adjustment by incorporating Z-codes for homelessness, which historically have not been widely used.

Despite the data gaps that present substantial challenges to risk-adjusting based on patients' social risk factors, the examples in this brief illustrate how early movers have identified data sources to begin filling those gaps. While each of these solutions has limitations, they nevertheless offer a starting point for states looking to develop social risk factor adjustment methodologies that could later be refined with dedicated data collection efforts, such as systematic social risk factor screenings of individual beneficiaries.

FILLING SOCIAL RISK FACTOR DATA GAPS

A key challenge to incorporating social risk factors into risk-adjustment methodologies is filling data gaps, since health care historically hasn't systematically collected data on issues such as food insecurity, transportation access, and housing stability.

However, the examples in this brief illustrate innovative approaches to addressing that challenge:

Administrative/claims data

In some cases, states already have data on Medicaid beneficiaries that could be used to identify social risks, such as identifying housing instability through frequent address changes. Medicaid agencies may also fill other gaps through data sharing with other state agencies, such as departments of corrections or child protection.

Survey data

Medicaid agencies may also take advantage of publicly available survey data on social risk factors, such as from the U.S. Census Bureau's American Community Survey. Although those data aren't specific to individual beneficiaries' particular circumstances, they may be used as a geographically based proxy.

New data collection

States may also consider new data collection efforts to fill gaps on social risk factors. For example, Massachusetts began using Z-codes for homelessness in its risk adjustment methodology—giving health care providers an incentive to use those existing but inconsistently used codes.

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STATE HEALTH ACCESS DATA ASSISTANCE CENTER

This brief was prepared by Colin Planalp. SHADAC produces rigorous, policy-driven analyses focused on translating complex research findings into actionable information. SHADAC's multidisciplinary team is comprised of nationally recognized experts in collecting and applying data to inform or evaluate health policy decisions and have expertise in both federal and state data sources. SHADAC is based at the University of Minnesota. For more information visit: www.shadac.org.

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Second, MNCM generally only risk-adjusts outcome measures based on social risk factors, on the assumption that performance on process measures falls almost entirely under the responsibility of providers and shouldn't be influenced by differences in patients' social risk factors. However, it makes certain exceptions, such as risk-adjusting its colorectal cancer screening measure based on social factors, because individuals with social risk factors (for instance, lack of transportation access) may face extra barriers to completing a time-consuming colonoscopy screening procedure.

Third, despite some discussion of the idea, MNCM made an intentional decision not to treat race and ethnicity as social factors for risk adjustment, consistent with concerns raised by an NQF expert panel that doing so could mask disparities that may be the result of discrimination or bias.

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