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**| RESEARCH ARTICLE**

# The Geography of Health: Rethinking Value-Based Payments

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**| ABSTRACT**

Geographic location—specifically ZIP code—profoundly influences health outcomes and healthcare costs, with research suggesting up to 60% of a person's health status is determined by social and environmental conditions associated with where they live. This paper examines the significant disparities between communities, revealing how some areas experience nearly three times the emergency department utilization rates of others, resulting in cost differentials exceeding 50%. The research proposes a comprehensive framework for integrating Social Determinants of Health (SDOH) into value-based payment contracts through five key mechanisms: SDOH-adjusted risk models, informed cost benchmarking, provider incentive restructuring, alternative payment model enhancements, and refined attribution methodologies. While valuable data sources exist to support geographic analysis, the challenge lies in effectively integrating diverse sources into actionable insights—a process requiring substantial investment and specialized expertise. As healthcare transitions to value-based models, organizations that successfully leverage geographic insights will be better positioned to address social needs proactively, ultimately building a more equitable and effective healthcare system that delivers value across all communities. This geographic perspective represents not just an analytical approach but a fundamental shift in how healthcare organizations understand and address population health needs.

**| KEYWORDS**

SDOH, Geographic disparity, value-based care, value-based payments, health equity, risk adjustment, healthcare costs, alternative payment models

**| ARTICLE INFORMATION**

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## 1. Introduction

A growing body of evidence shows that where someone lives – their ZIP code – may be a more powerful predictor of their health outcomes than their genetic code or even their healthcare provider. Up to 60% of a person's health status is determined by their ZIP code and the associated social and environmental conditions it represents (Orminski, 2021). As the industry shifts toward value-based care models, this reality can no longer be ignored.

## 2. The Stark Impact of ZIP Codes on Health Outcomes

The influence of ZIP codes on health outcomes is both measurable and profound. Recent analyses reveal that two communities just hours apart can have dramatically different healthcare costs and utilization patterns. For instance, a comprehensive employer health study found Greenville, SC showing emergency department visits at 309 per 1,000 members and per-member-per-month (PMPM) costs of $543, compared to Des Moines, IA with just 114 ED visits per 1,000 and PMPM costs of $354 – a 53% cost differential (Health Action Council & UnitedHealth Group, 2024). These variations aren't random; they reflect systematic differences in community resources, social support, and healthcare access.

The data tells a compelling story about how ZIP code shapes healthcare utilization and costs. When examining emergency department use across ZIP codes, research shows that residents of socially vulnerable areas have up to 39% higher rates of ED visits for conditions that could be treated in primary care settings (Macharia et al., 2021). For Medicare and Medicaid dual-eligible beneficiaries, the impact is even more pronounced – with D-SNP members in underserved communities showing significantly higher rates of preventable hospitalizations and emergency department use compared to those in well-resourced areas (Association for Community Affiliated Plans [ACAP], 2022).

What makes this insight particularly powerful is that these geographic patterns are both predictable and actionable. By analyzing hundreds of community-level factors – from food security indexes to transportation access scores – healthcare organizations can now anticipate and address the social determinants driving costly utilization. Studies show that addressing social needs through targeted geographic interventions can yield significant returns – UI Health in Chicago found that providing permanent housing for homeless patients with medical and behavioral health needs reduced costs by healthcare costs by 27% (Relias Media, 2022a).

**3. Why Geographic Insights Matter for Value-Based Care**

Healthcare organizations implementing value-based care programs are increasingly recognizing that fair provider evaluation must account for these geographic disparities. The Centers for Medicare & Medicaid Innovation (CMMI) has acknowledged this reality by introducing social risk adjustments in new payment models, including adjustments for providers serving socially disadvantaged communities (Grossi, 2024). This shift reflects a growing understanding that providers shouldn't be penalized for caring for populations in high-need ZIP codes.

The impact is particularly pronounced in specialized programs like D-SNPs and MLTSS. For MLTSS populations, the ability to live independently is tightly linked to community resources – from availability of home caregivers to accessible transportation. In fact, over 91% of Medicaid managed care plans now report activities to address social determinants in their member populations, recognizing the crucial role of place-based factors in health outcomes (Artiga & Hinton, 2018).

***4 Zip Code Matters***

A member's ZIP code serves as a powerful indicator of Social Determinants of Health (SDOH), offering crucial insights into the complex web of social, economic, and environmental factors that shape health outcomes. Through ZIP code analysis, healthcare organizations can assess critical factors including socioeconomic status, with low-income areas often showing higher rates of chronic disease and healthcare access barriers; healthcare facility proximity, where rural or underserved areas may face provider shortages; and environmental conditions, such as air quality and neighborhood safety, which directly impact physical and mental health. Additionally, ZIP codes reveal patterns in food security, with food deserts contributing to higher rates of nutrition-related illnesses, and transportation accessibility, which affects healthcare utilization and medication adherence.

Beyond these fundamental indicators, ZIP code data illuminates housing stability patterns, where high rental rates and overcrowding can signal increased health risks and mental health challenges. Educational attainment and health literacy levels within specific ZIP codes correlate strongly with health behaviors and disease management capabilities, while public transit availability and car ownership rates provide insights into potential barriers to healthcare access.

***5 SDOH-Driven Actuarially Sound VBP Contract Design***

Payer actuaries can leverage SDOH data to enhance risk adjustment, cost benchmarking, provider incentives, and performance measurement to ensure contracts fairly account for non-clinical factors that impact patient health.

**5.1 SDOH-Adjusted Risk Models**

Traditional risk adjustment models predominantly rely on claims and clinical data, often failing to capture the full scope of risk for populations with high social determinant of health (SDOH) needs. As a result, these models systematically underestimate the true cost of care for underserved communities. To address this gap, payers should begin incorporating non-medical data sources—such as housing instability, food insecurity, and transportation barriers—into their risk adjustment frameworks. Recognizing this necessity, CMS has initiated testing of health equity risk adjustment factors within Medicare Advantage and ACO models to more accurately reflect the increased costs associated with caring for socially disadvantaged populations. Given the evolving landscape, commercial payers should proactively adopt similar methodologies to ensure fair compensation for providers serving high-SDOH-need communities while improving health equity outcomes.

**5.2 SDOH-Informed Cost Benchmarking**

Rather than relying solely on standard cost benchmarks, payer actuaries should incorporate SDOH segmentation to refine cost targets based on social risk factors. Provider cost benchmarks must be adjusted for zip codes with high poverty rates to ensure that those serving vulnerable populations are not unfairly penalized. Additionally, healthcare organizations should leverage AI-

driven geospatial analysis to uncover regional variations in healthcare costs attributed to SDOH, enabling more precise and equitable payment models.

**5.3 SDOH-Driven Provider Incentives & Payment Adjustments**

Value-based payment (VBP) models should incorporate SDOH-driven incentive structures to ensure providers can fairly adjust practice patterns based on the social risk factors of their patient populations. To encourage proactive interventions, providers should receive higher payments for addressing key social determinants of health—such as screening for food insecurity and implementing targeted interventions.

To support providers serving high-need communities, VBP contracts should offer higher shared savings rates for safety-net providers, reflecting the additional resources required to care for disadvantaged populations. Additionally, provider performance scores should be risk-adjusted to account for the impact of social and environmental factors on health outcomes, preventing unfair penalization.

Medicaid Managed Care Organizations (MCOs) have already begun implementing equity-weighted incentives to drive better care delivery in socially vulnerable areas. This approach blends:

- Risk-adjusted base payments reflect the higher costs of serving high-SDOH-need populations.
- Enhanced quality bonuses that reward providers for improving care outcomes in underserved communities.
- Targeted support programs that fund interventions addressing specific social barriers to care.

For example, some MCOs offer a 15% higher quality bonus for improving diabetes management in high-risk ZIP codes or provide enhanced reimbursement for reducing emergency department utilization in socially disadvantaged areas. These financial incentives create a strong motivation for providers to invest in social risk factor mitigation, ultimately leading to better health outcomes and lower costs.

**Commercial payers should adopt similar models**, leveraging equity-based incentives to align provider payments with the realities of social risk and ensure value-based care delivers equitable outcomes

5.4 **Integrating SDOH into Alternative Payment Models (APMs)**

Payers should embed social determinants of health (SDOH) into quality incentive programs, shared savings/risk arrangements, capitation, and bundled payment models to more accurately reflect the true cost of care for underserved populations. For example,

- Capitation models should incorporate SDOH-adjusted per-member-per-month (PMPM) payments to ensure adequate funding for social needs interventions, such as housing support, nutrition programs, and transportation services.
- Episode-based bundled payments should expand reimbursement structures to include non-clinical services, recognizing that factors like stable housing and reliable transportation are critical to improving health outcomes and reducing avoidable costs.
- Performance measurement frameworks should incorporate SDOH-adjusted readmission rates to prevent hospitals and providers serving high-risk communities from being unfairly penalized.

While these adjustments help create a more equitable payment landscape, careful calibration is essential to avoid unintended bias. Over-adjusting for SDOH could inadvertently lower expectations for care quality in disadvantaged populations, reinforcing disparities rather than addressing them. Therefore, models should strike a balance between fairness and accountability, ensuring high-quality care remains the standard across all communities.

**5.5 SDOH-Integrated Attribution & Performance Measurement**

Payers should refine patient attribution models to better account for the impact of social determinants of health (SDOH) on healthcare engagement. Traditional attribution models primarily assign patients to providers based on medical complexity and claims data, often overlooking critical non-clinical factors that influence care access and utilization.

SDOH-enhanced attribution models incorporate additional factors such as housing stability, food security, access, transportation access, and social support networks to create a more accurate and equitable assignment of patients to providers. For instance, homeless patients may be proactively attributed to providers with integrated social work services, ensuring they receive comprehensive support beyond clinical care.

By integrating SDOH into attribution logic, healthcare organizations can improve continuity of care, reduce unnecessary utilization, and better align provider incentives with patient needs, ultimately driving better outcomes in value-based care models.

**6 Role of Data**

As in most models, data plays a critical role to incorporate SDOH in the VBC programs design. To Forward-thinking organizations are leveraging ZIP code-level insights in several ways. First, they're using standardized ICD-10 Z codes (Z55-Z65) to document social needs in claims data, allowing for better tracking of geographic patterns in social risk. While utilization of these

codes is still emerging – only about 1.6% of Medicare fee-for-service beneficiaries had a Z code on a claim in 2019 – their use is steadily increasing as the industry recognizes their value (Avalere Health, 2022).

Healthcare organizations are also enriching their analytics with public data sources. The Agency for Healthcare Research and Quality (AHRQ) has released a comprehensive social determinants database that aggregates community-level indicators which can be linked by ZIP or county to patient data (Actuarial Standards Board, n.d.). This allows for more sophisticated risk stratification – identifying not just who has high clinical risk, but who faces high social risk based on their geographic location.

The results of these data-driven approaches are compelling. Housing interventions targeting high-utilization ZIP codes have shown up to 67% reductions in healthcare costs for enrolled (Relias Media, 2022a).

While valuable and wide-reaching data sources exist to inform geographic analysis, accessing and integrating them requires dedicated effort. The CDC's Social Vulnerability Index provides detailed insights at the census tract level across 15 social factors (Centers for Disease Control and Prevention [CDC], 2023). The Census Bureau's American Community Survey offers extensive demographic and socioeconomic indicators updated annually. Additional rich sources include the Bureau of Labor Statistics for employment data, FBI uniform crime reporting statistics, and the Robert Graham Center's Social Deprivation Index. Centers for Medicare & Medicaid Services (CMS) also maintain valuable geographic data on healthcare access and utilization patterns. However, the challenge lies not in the availability of data but in effectively combining these diverse sources into actionable insights.

Data availability and standardization remains a challenge – SDOH data sources, e.g., community surveys, EHRs, and census data, vary in quality and completeness. Organizations must invest in data integration capabilities and analytical tools to transform this wealth of community-level information into meaningful interventions that improve outcomes and reduce costs. We find that many of our clients are stuck at the crossroads of having identified the need but are looking for technology and analytics partners to support their data integration and analysis

**7 Looking Ahead: Geography as a Core Component of Value-Based Payments**

The healthcare industry is at an inflection point in how it views and uses geographic data. CMS's 2021 guidance explicitly encouraged states to use available flexibilities to address social determinants of health in their programs (Centers for Medicare & Medicaid Services [CMS], 2021). This policy direction, combined with advances in data analytics, is creating new opportunities for value-based care innovation.

The path forward is clear but requires a systematic approach. For healthcare executives and payers, the implications are significant. Success in value-based care increasingly depends on understanding and acting on geographic insights. Organizations that can identify high-risk ZIP codes, deploy targeted interventions, and measure the resulting impact on utilization and costs will be better positioned to succeed in risk-based contracts. More importantly, they'll be better equipped to fulfill the promise of value-based care: delivering better outcomes while controlling costs.

However, organizations often find that building and maintaining the necessary data integration infrastructure can cost millions of dollars annually, requiring specialized expertise in healthcare data models, geographic information systems, and advanced analytics. Many are finding that partnering with established healthcare technology vendors can provide a more cost-effective path to transforming this wealth of community-level information into meaningful interventions that improve outcomes and reduce costs.

The view that "your ZIP code matters more than your genetic code" is no longer just an observation – it's becoming a guiding principle for innovative health systems. By embracing geographic data as a core component of value-based care strategy, organizations can move from reactive to proactive care delivery, addressing social needs before they manifest as costly medical conditions. In doing so, they can build a more equitable and effective healthcare system that truly delivers value for all communities.

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**Conflicts of Interest**: Edifecs offers value-based care payment and electronic data interchange software in use by large segments of payers in the United States healthcare market.

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