Incorporating SDOH in Medicaid: Lessons for Texas

Developed for the Episcopal Health Foundation

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Executive Summary

This report identifies promising interventions that address the housing, food, and transportation social determinants of health (SDOH) of Texas Medicaid beneficiaries through managed care organizations (MCOs), section 1115 waiver demonstrations, and home and community-based services (HCBS) waivers. SDOH are the "conditions in which people are born, grow, live, work, and age".[1] Limited social service spending and a legacy of discrimination reinforce the consequences of disparities in SDOH in the United States. That legacy is still evident today, as shown by the COVID-19 pandemic's disproportionate impact on the health and mortality of Black, Hispanic, and Asian residents.[2]

Medicaid provides coverage for over 83 million Americans.[3] Medicaid is uniquely positioned to improve health and address disparities of Medicaid enrollees, 60% of whom are non-white, through SDOH interventions.[4] Strategies to address SDOH through Medicaid are particularly important in Texas, where 75% of beneficiaries are children and 55% are Hispanic.[5]

Interventions addressing housing, food, and transportation insecurities are the most supported by existing research and evidence. These interventions address the sizable housing needs, hunger, and limited mobility of Texas's predominantly Hispanic and child Medicaid beneficiaries. People of color are over-represented in populations experiencing housing insecurity.[6] Children comprise a third of that population and face several negative consequences, including reductions in literacy, difficulty focusing, and increased risk of food insecurity.[7] Texas is one of nine states with a food insecurity rate (13.5%) above the national average of 10.5%.[8] Poor nutrition increases the risk of several chronic illnesses that are particularly harmful for vulnerable children and seniors.[9] Transportation can intensify other insecurities and is often cited as a barrier to healthcare in Texas, where a lack of transportation increases the risk of food insecurity, poor physical health.[10]

MCOs are essential partners in a successful strategy to address SDOH. MCOs provide over 95% of Medicaid coverage in Texas.[11] Section 1115 waivers and section 1915 HCBS waivers can provide additional flexibility to support such interventions using existing federal dollars. Employing all these existing mechanisms in concert is necessary to address the SDOH-related needs of Medicaid beneficiaries and improve health equity in Texas.

This report includes several direct and indirect interventions with support from the literature and evidence from similar efforts by other states. When possible, costs for such programs are included. Below are several broad findings:

Program Evaluation: Insufficient program evaluation is an oft-cited limitation of Medicaid SDOH interventions. Without further research, our understanding of what works is limited. Support for such evaluations must be incorporated into interventions as a primary, not secondary, goal.

Standardized Screening & Referral: Research by the Episcopal Health Foundation and new literature identified in this report both find a lack of standardized methods for screening Medicaid patients for SDOH and systematic referral to available community-based resources. Communicating industry-standards ensures patient needs are met with relevant non-medical community-based resources.

The Flexibility & Unpredictability of Section 1115 Waivers: Section 1115 waiver demonstrations allow states to implement services beyond what Medicaid regulations typically allow. This gives states such as Texas the opportunity to implement changes that promote equity through non-medical services that could address SDOH. Nevertheless, such waivers are subject to federal

executive administration prerogative and are not guaranteed renewal. An example is the yearslong uncertainty surrounding the renewal of Texas's existing waiver, which funds the Delivery System Reform Incentive Payment (DSRIP) program. A more systematic and predictable process may improve the likelihood other waivers are approved without delay.

Target Several SDOH: Several of the interventions in this report with the best evidence for an increased benefit to participants address more than a single SDOH. Transportation insecurity is a key barrier to accessing any resource. Housing and food insecurity are correlated and may benefit from strategies that address both.

Texas has an opportunity to improve health and address disparities by prioritizing SDOH interventions in Medicaid. Such interventions must have sufficient capacity to evaluate program effectiveness. MCOs can take direct action to incorporate these interventions, but state action is necessary to provide sufficient incentives and support. Section 1115 and Section 1915 HCBS waivers are a means for states to seek additional support from the federal government.

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Introduction

Clinical care only accounts for 16% of improvements in length and quality of life.[12] In contrast, SDOH accounts for approximately 80% of health outcomes. Several "upstream" SDOH, such as economic resources, education, and racial discrimination, affect "downstream" SDOH, such as diet, substance use, and sexual activity.[13] Public policy can improve SDOH because they are conditions shaped by political, social, and economic forces.[14]

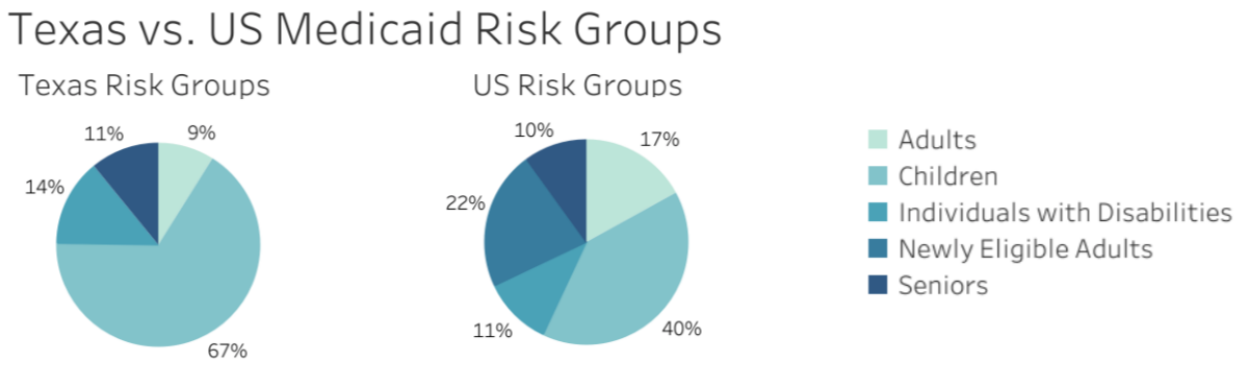
Spending on social services that address SDOH can improve health more efficiently and effectively than spending on health care services.[15] The dearth of social services spending in the United States reinforces disparities in who bears the burden of SDOH-related negative health consequences. In the United States, marginalized communities and low-income groups disproportionately bear the negative health consequences of SDOH. Low-income households, households with a Black or Hispanic head of the house, and less-educated households are more likely to experience food insecurity.[16] Groups with low socioeconomic status and minority groups often have less access to recreational facilities and a higher risk of chronic illness.[17] A history of redlining, discriminatory lending practices, and exclusionary zoning has limited the ability of minorities to obtain adequate housing and build generational wealth.[18] Marginalized communities are more likely to be exposed to lead, air pollution, and similar pollutants.[19] Ongoing racial disparities continue to place a disproportionate burden on communities of color. Black, Hispanic, and Asian American individuals have higher COVID-19 rates of infection, hospitalization, and mortality compared to whites.[20] Addressing the SDOH needs of marginalized communities is essential to improve health outcomes and address disparities in health.

Medicaid is uniquely positioned to improve health and address disparities through SDOH interventions. Medicaid is the largest payer of healthcare for approximately 83 million Americans.[21] According to the Medicaid and CHIP Payment and Access Commission, over 60% of Medicaid beneficiaries in 2018 were identified as non-white.[22] States can advance health equity by capitalizing on Medicaid's broad coverage of people of color and incorporating health equity into Medicaid services.[23]

This is especially important in Texas. Our analysis of 2019 American Community Survey data reveals that most Medicaid beneficiaries are children and Hispanic (See Appendix B).[24] According to our analysis, 61.6% of enrollees in Texas are children, compared to 44.2% across the U.S. While adults comprise 43.6% of all enrollees in the U.S., in Texas they only account for 26.2% of state enrollees. Both differences are statistically significant ($p<0.01$). Of the more than 5.1 million people enrolled in Medicaid in Texas,

3.9 million are children (See Figure Appendix B). Individuals with disabilities and seniors make up the second and third largest groups of Texas Medicaid enrollees, respectively.

Figure 1. 2019 Medicaid Enrollment by Risk Group[25]



Our analysis of racial and ethnicity finds that Hispanics are the largest enrollee group in Texas, accounting for 55.1% of Texan enrollees compared to 27.6% of all U.S. Medicaid enrollees. This is a 27.49 percentage point difference that is statistically significant ($p<0.01$). Hispanic population growth across the U.S over the last decade increased by 23% compared to a 7% overall growth in the U.S.[26] People who identify as AAPI, American Indian/Alaska Native, Black, Hispanic, or multiple races make up over half of Medicaid beneficiaries, both in Texas and the nation as a whole.[27] Coverage expansion of Medicaid decreased the disparities in uninsured rates of individuals who identify as a minority race.[28] However, even when enrolled in Medicaid, racial minority populations face disparities in healthcare treatment compared to white Medicaid enrollees, including in MCOs.[29] For additional statistics describing the Texas Medicaid population and the methods of this analysis, see Appendix B.

This report explores options to improve health and equity related to SDOH managed care organizations (MCOs), section 1115 waiver demonstrations, home, and community-based services (HCBS) waivers. Any push to address SDOH-related needs through health care must incorporate MCOs, which provide services for over 95% of Medicaid enrollees in Texas.[30] States can incentivize MCOs to incorporate SDOH interventions through contractual requirements that reward such interventions,

emphasizing standardized SDOH screening and robust referral systems that connect clients with non-medical services.

Funding mechanisms such as section 1115 and HCBS waivers can provide additional flexibility and support for such interventions. Section 1115 waiver demonstrations allow states to use Medicaid funds in ways that go beyond existing Medicaid programs and services, such as incorporating health equity.[31] HCBS waivers, also known as section 1915 waivers, are more specialized, providing additional options to provide long-term at-home services to beneficiaries to allow them to remain in-residence rather than transfer to a nursing home or other institutionalized setting.[32] Employing these existing mechanisms is necessary to address the SDOH-related needs of Medicaid beneficiaries and improve health equity in Texas.

Following the discussion of mechanisms, this report also identifies several Medicaid-relevant interventions, the most effective of which appear to address three main SDOH: housing, food, and transportation. These are not the only or even the most important SDOH but represent interventions for which there is strong evidence and address key needs.

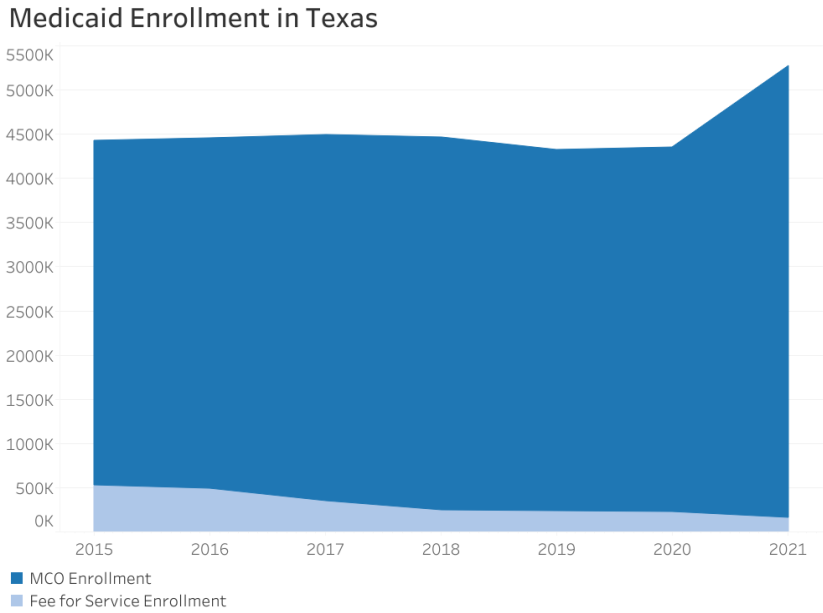
The Role of Managed Care Organizations

In Texas, MCOs are well-positioned to implement policies that address SDOH. MCOs are private organizations (insurers) that deliver Medicaid health benefits and services through contracts with state Medicaid agencies.[33] These contracts can be targeted to improve health plan performance, health care quality, and health outcomes for beneficiaries. MCOs can address SDOH because the Medicaid funds MCOs receive can support nonmedical needs to improve health outcomes or contain costs.[34] The COVID-19 pandemic expanded the demand for non-medical, social service care from MCOs.[35] A qualitative study of 14 Medicaid MCOs in Florida, Georgia, Illinois, Kentucky, New Jersey, New York, and South Carolina finds these health care companies employed existing relationships with community-based organizations and social service agencies to address a broad range of social needs.[36] The study finds that the pandemic has spurred a recognition of the importance of addressing SDOH by MCOs. This combination of market dominance and interest in SDOH services positions MCOs as a key factor in any effort to expand SDOH services in the health care sector.

The dominance of MCOs in Medicaid coverage represents a departure from the traditional fee-for-service payments in an effort to minimize costs to the state while improving overall patient health.[37] Fee-for-service is a traditional health care payment method where providers are paid for each service performed.[38] In contrast, MCOs are prepaid at a monthly set rate, known as a "capitation payment," limiting state liability.[39]

The Texas Legislature voted in 1995 to begin a phased transition from standard Medicaid fee-for-service to Medicaid MCOs across the state with rollout phased by county.[40] Urban areas switched first and rural areas finished the transition in 2012. From 1994 to 2009, enrollment in Texas MCOs increased from 2.9% to 70.8% of the Medicaid population.[41]

Figure 2. MCO and Fee for Service Enrollment from 2015 to 2021



MCO enrollment in Texas continues to grow. From 2015 to 2021, the number of MCO enrollees has increased, while the number of fee-for-service members continued to fall (Figure 2). Table 1 shows the percentage of Texans enrolled in Medicaid administered by MCOs. Most Medicaid enrollees and all of CHIP enrollees in Texas are covered by MCOs. Except for 2019, the share of Medicaid enrollees covered by MCOs has risen every year. Compared to the United States, Texas relies more on MCOs for service delivery. In 2021, MCOs covered 65% of Medicaid enrollment in the US.[42]

Table 1. Percent of Enrollees in Managed Care in Texas

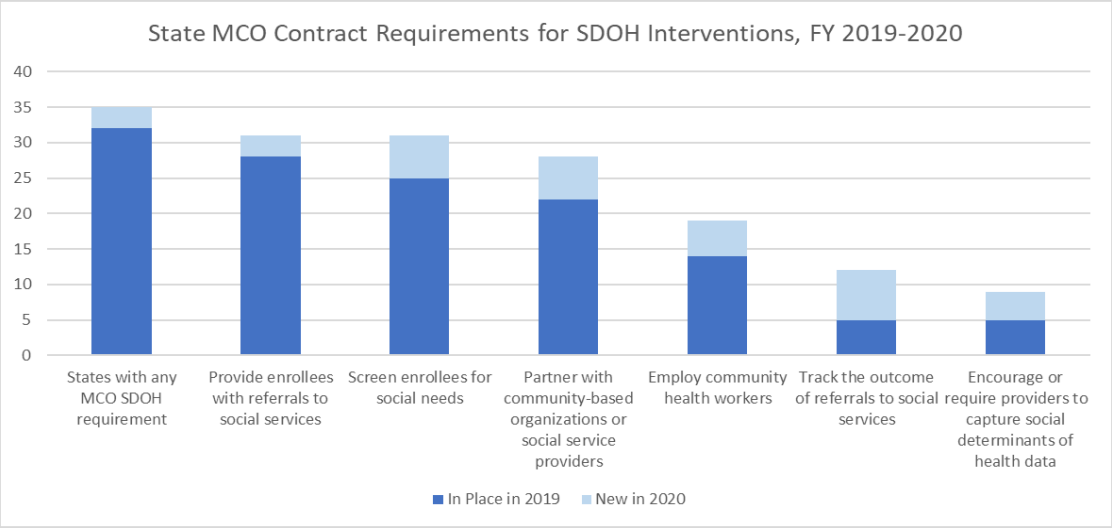
Percent Managed Care	2015	2016	2017	2018	2019	2020	2021
Medicaid	86.9%	87.9%	91.5%	93.9%	93.9%	94.4%	96.9%
CHIP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Several states use their contracts with MCOs to provide SDOH interventions. Of the 41 states with Medicaid MCOs in the fiscal year 2020, 35 require MCOs to engage with

SDOH in some way.[43] As seen in Figure 3, 31 states require MCOs to screen enrollees for social needs and provide enrollees with referrals to social services. Twenty-eight states have MCOs partner with community-based organizations or social service providers to address SDOH. Less common contract requirements include support from community health workers (19 states), outcome tracking for referrals to social services (12 states), and data collection on SDOH from health care providers (7 states).

Adjusting how states pay MCOs, and for what services, may be essential to incentivizing the adoption of services and interventions that address SDOH. A 2021 Kaiser Family Foundation survey of Medicaid directors found that most report including SDOH strategies as a requirement in MCO contracts.[44] Including SDOH requirements in MCO contracts could provide MCOs flexibility to address SDOH how they see fit without onerous state oversight through the existing system of capitation payments.[45] Implementing such non-medical SDOH interventions in existing payments systems is not straightforward. Traditionally, Medicaid regulations prohibit spending on non-medical services.[46] Instead, states could reimburse MCOs based on health outcomes and reductions in cost, without specifying a specific non-medical intervention, a method known as a "value-based" payment.[47] A value-based payment model provides MCOs the freedom to incorporate non-medical SDOH interventions using existing Medicaid dollars and may encourage patient use of non-medical services that benefit health.[48]

Figure 3. MCO SDOH Interventions by State[49]



Addressing SDOH-related needs through Medicaid managed care is not without its challenges. Incorporating a value-based payment model may increase administrative costs to determine how value is estimated.[50] It also is important to note that the

flexibility of value-based payments systems does not provide MCOs additional funds to address SDOH. Those funds must come from other programs and services or from savings. Thus, strong evidence is likely required to support the business case for value. There is also evidence that the transition from a fee-for-service model to MCOs widened health disparities. MCOs historically covered a smaller percentage of vulnerable populations who may be more expensive to treat, including the disabled, elderly, and marginalized.[51] Research on the effects of the transition from fee-for-service to managed care in Texas found a 15% increase in Black infant mortality and a 22% increase in Hispanic infant mortality, which may be caused by an incentive introduced by capitation payments to select healthier clients and minimize risk.[52] Those existing disparities could have been exacerbated by the COVID-19 pandemic, which disproportionately impacted Black, Hispanic, American Indian, and Alaska Native people.[53] Incorporating SDOH strategies into MCO contracts is a relatively new solution to address disparities in health care and lower costs associated with SDOH.[54]

MCO Contract Requirements & Incentives

Successful implementation of SDOH interventions requires commitment by states, MCOs, and health care providers. Contractual requirements are a tool to incentivize such interventions in the health care system. States frequently use contractual requirements, rewards, and penalties to incentivize MCOs to address SDOH-related needs.[55] Contractual requirements include community investment and care coordination, SDOH-related screening, and referral systems that connect patients to community-based services (See Appendix C). See Appendix D for financial incentives incorporated into MCO payment models.

Community investments have the reputation as an advantageous way for states to address social needs, but they lack sufficient research on health outcomes and cost savings. States use Medicaid funds to support community-based programs. Capacity building, including increased funds, for nonprofit organizations enhances and expands service delivery.[56]

States can alter payment models to incentivize MCOs to meet SDOH-related needs outside of contract requirements, as seen in Appendix D. MCOs receive state-adjusted capitation payments through Medicaid. States create financial incentives for MCOs by altering payment models and imposing penalties for falling short of SDOH-related goals. These penalties should hold MCOs accountable, but little research exists on whether altering payment models incentivize MCOs to address SDOH-related needs. This may be due to the cost of proper program evaluation.

A similar program, the 80/20 rule in the Affordable Care Act, requires insurance companies to spend a minimum of 80% of the premiums collected on medical claims.[57] If insurance companies do not meet this requirement, they must reimburse the difference to policyholders. This policy is intended to reduce insurance company profit margins. Care must be taken with contract incentives to avoid unintended consequences. Initially, insurance companies provided rebates to the insured, but companies have lobbied to have administrative costs relabeled as medical claims or allowed medical claims to increase.[58] Penalties based on profits may incentivize plans to increase profits to offset the losses incurred.[59] Massachusetts policy incorporates social needs into the capitation rate before payment. This allows for the state of Massachusetts to have more predictability regarding the risk adjustment system. Incorporating social needs into the risk scores that Massachusetts uses to determine payments to MCOs has strengthened the state's risk adjustment system.[60]

Screening & Referral Systems

MCO and health care provider referral systems can reduce unnecessary emergency health care utilization by referring individuals to relevant non-medical services. Such systems connect patients to transportation, nutrition, financial assistance for utilities, education programs, and housing supports. Screening and referral programs are proven to increase health and sometimes reduce costs when beneficiaries can get their social needs met through the referral process. For example, Garg et al. conducted A randomized trial at community health centers where doctors received a screening tool and a single-page handout of community resources found that these tools increased the referral to community-based resources (2015).[61] After a year, participants had higher likelihood of enrolling in a new community resource (39% participant vs. 24% control) and seeking employment assistance (11% participant vs. 2% control), and a lower likelihood of residing in a homeless shelter (2% participant vs. 5% control).

States including Massachusetts, Minnesota, North Carolina, Oregon, Vermont require Medicaid providers like MCOs to screen for Health-Related Social Needs (HSRN), another term for SDOH.[62] WellCare Health Plans, Inc. provides a call center-based social service referral program called HealthConnections to Medicaid managed care beneficiaries across the United States.[63] The referral program consists of four services: the Community Connections Help Line, community-based organization engagement, an integrated social service management system, and data evaluation to assist members with their non-medical needs. A sample study of recipients in 14 states found that MCO programs reduced health expenditures by 12% more for people who could get all their social needs through HealthConnections in the year after referral began.[64]

The analysis indicates that such referral systems likely improve health outcomes and reduce health care costs.

HCBS waivers can complement screening services. Several states, including Kansas, Michigan, New York, and Vermont collect information to identify beneficiaries with SDOH-related needs and connect them with relevant services.[65] These programs screen HCBS program participants for several SDOH, including SUD, food insecurity, housing insecurity, community safety, employment, and education. An evaluation of HCBS funded Michigan Pathways to Better Health Program by the state department of health and human services found that it successfully connected 2,621 clients to primary care, 1,624 to specialty care, 836 to dental care, 778 clients to mental health and 496 clients to vision care.[66]

Screening Services in Texas

Though Texas MCOs commonly utilize SDOH screening, they often do so informally.[67] Arizona, North Carolina, Pennsylvania and Virginia all have statewide platforms for community resource referrals.[68]

In Texas, 11 Medicaid MCOs use findhelp.org (formerly known as Aunt Bertha)[69] and four use 2-1-1 as online referral platforms to connect patients with community resources.[70] These platforms are websites where patients or patient assistant navigators enter their zip code and can find resources for many SDOH needs such as housing, transportation, food, financial assistance, education, legal aid, and work.[71] If a patient has limited mobility and needs to be connected to a food delivery service, they can type in their zip code and see all of the food delivery programs in their area with information on how to connect to these services.[72] ConnectATX is a platform created by partners from community, school and healthcare, to work with the United Way for Greater Austin to be a screening and referral system in the Austin area.[73]

Connecting patients with local resources will likely increase personnel costs, especially if MCOs hire additional patient navigators. Health care professionals, especially primary physicians, can use their considerable influence to connect patients to several community resources.[74] The average salary of a patient navigator is $45,895 in the U.S.[75] Research from studying Boston University and affiliated Community Health Centers finds a median caseload of 145 clients per navigator.[76]

Financing SDOH Interventions Through Waiver Programs

Interventions to address SDOH-related needs through MCOs and health care providers often require cross-sector support from multiple levels of government and private

actors. The federal government allows two types of Medicaid program waivers that can permit states to experiment with supporting SDOH in new ways: section 1115 waivers and home and community-based services waivers. Both waivers have unique benefits and challenges.

Section 1115 Waivers

Section 1115 waivers can be used to try new, non-medical services addressing SDOH that are not traditionally allowed under Medicaid regulations.[77] Section 1115 waivers authorize demonstration projects to test the effectiveness of a particular program or policy. Demonstration projects must promote the objectives of Medicaid.[78] Section 1115 waivers must be budget neutral. This means that spending under the waiver cannot exceed estimated federal costs in the absence of the waiver.[79] The Centers for Medicare & Medicaid Services (CMS) perform a case-by-case review of each proposal to determine if the objectives align with Medicaid's goals and satisfy the requirements.[80] The federal government typically approves section 1115 waivers for an initial five-year period that can be extended an additional three to five years.[81]

Section 1115 waiver demonstrations may be able to help address disparities in health in Medicaid. Part of addressing disparities is identifying them. Health disparities can be identified through proper data collection, specifically race, ethnicity, and language data (REL).[82] States such as Connecticut require REL data collection as well as creating coalition/collaboration between health equity experts and healthcare providers.[83] Qualitative data from community-based organizations and members can identify what challenges beneficiaries face and the best to cater programs to deliver the necessary care. An example of this approach has been done in California Medi-Cal where social services, health care providers, and local community partners work together to identify the individuals with the highest need for care and then address SDOH such as transportation or housing support.[84]

Texas's Section 1115 Waivers

The Texas Healthcare Transformation Quality Improvement Program is a section 1115 waiver that funds both the Uncompensated Care payments as well as the Delivery System Reform Incentive Payment (DSRIP).[85] Star, STAR PLUS, Star Health, and CHIP are also funded through Section 1115 waivers.[86] In Texas, these section 1115 demonstrations reimburse providers for "uncompensated care" given to individuals without health insurance.[87] The DSRIP waiver was approved and funded in 2010 and has been extended.[88]

DSRIP provides funding to healthcare providers to incentivize better healthcare delivery reform within specific regions.[89] DSRIP funding has been provided to various regions of Texas based on the rates of uninsured low-income Texans.[90] This program was used to create partnerships between healthcare providers, community-based organizations, and social work providers. In March of 2021, the Texas Health and Human Services commission published the Assessment of Social Factors impacting Health Care Quality in Texas Medicaid as part of the DSRIP transition plan. This report found that there are significant associations between SDOH and quality measures for each Medicaid population enrolled in managed care. The determinants that were significant across all populations included race/ethnicity, mental health, violent crime, exercise, physical inactivity, and food insecurity.[91] Whether or not DSRIP works depends on whether the costs of administering and evaluating DSRIP are outweighed by the benefit to health care providers and patients.[92] Implementing extensive performance-based evaluation requires that performance measures are accurately and regularly communicated, and that they are actually used in administrative and policy decisions.[93] An important question is whether reimbursing providers for treating uninsured Texans, a shift that benefits providers and not just uninsured patients, is a proper use of Medicaid funds. This is a question faced by any program that provides insurance to the previously uninsured or compensates providers for care of the uninsured.[94]

Despite these thorny policy questions, DSRIP still represents a move to transparency and performance-based evaluation that may encourage providers to incorporate social services and referrals to community-based organizations to improve overall patient health.[95] The design of these payment models must be constructed strategically to ensure providers are incentivized to improve health by addressing SDOH.[96] Nevertheless, the renewal of DSRIP funding is uncertain. The section 1115 waiver that funds DSRIP was set to expire September 9 and a recent 1–year extension was rescinded by the Centers for Medicare & Medicaid Services.[97] After some uncertainty, the Centers for Medicare & Medicaid Services have approved an extension of the waiver through 2030.[98]

Eligibility Requirements

Eligibility for section 1115 SDOH programs in every observed state requires beneficiaries have both a health criterion, such as comorbidities or a high-risk pregnancy, and a social risk factor, such as homelessness, food, and transportation insecurity, or risk of interpersonal violence.[99] State section 1115 waiver programs are

generally required to evaluate the impact of non-medical interventions on the health and other program outcomes of Medicaid beneficiaries.[100]

Discussion of Benefits & Challenges

As with several other Medicaid programs, insufficient data collection on program outcomes is a fundamental limitation of section 1115 waivers. Required state annual reports on section 1115 demonstrations consistently fail to report key evaluation components.[101] These state-led evaluations of section 1115 demonstrations provide a limited understanding of whether demonstrations achieve stated objectives.[102] Barriers to adequate evaluations across states include insufficient evaluation of program outcomes, lack of evaluation expertise, short implementation timelines, and limited funds devoted to evaluation.[103] New evaluation guidance from CMS may help make the required evaluations more robust and useful for policy evaluation.[104] With this guidance, CMS provides states with tools to implement, monitor and evaluate programs. States are given a framework to create an implementation plan, a monitoring report template, and an evaluation guide. CMS created this guidance to help states identify key hypotheses, evaluation measures/approaches, as well as evaluation questions.[105]

The often-conflicting priorities of different presidential administrations can create uncertainty surrounding the long-term sustainability of section 1115 waiver demonstrations. A recent example is the section 1115 work requirements permitted by the Trump administration in Arkansas and Arizona.[106] The Trump Administration supported work requirements to increase incentives for individuals to seek out employment so that federal support would no longer be needed.[107] The Trump administration argued that employment could improve health.[108] The Biden administration revoked these work requirements because they resulted in eligible enrollees losing coverage due to complex rules that imposed significant barriers to application.[109] Increased administrative burdens to prove eligibility can lead to higher disenrollment among the still eligible.[110] In February 2021, CMS under the Biden administration withdrew permission for section 1115 work requirements.[111]

Despite the political uncertainty surrounding federal approval, section 1115 waivers can address social determinants of health because they give states the flexibility to try novel methods that advance our understanding of what works. Required evaluation can provide better evidence for renewing programs that work. With proper evaluation, section 1115 waiver demonstrations may improve health by attempting new interventions to address non-medical needs in our most vulnerable populations.

Home and Community-Based Services Waivers

Home and Community-Based Services (HCBS) waivers allow Medicaid enrollees to receive long-term services from the comfort of their own home rather than an institution like a nursing home, hospital, or treatment center.[112] The state waivers fund HCBS programs, including case management, personal care assistance, adult health services, and respite care.[113] States must demonstrate that providing these services will not cost more than it would through an institution. HCBS waivers address the needs of people with functional limitations or other conditions that might put them at risk of institutionalization.[114] Beyond federal requirements, states are free to set their own eligibility criteria.

States seeking to support non-medical housing services may consider adding additional services through HCBS waivers under Section 1905(a) State Plan authorities.[115] Existing Medicaid funds support these programs as "optional" service additions to Medicaid. Optional services are those that states are permitted to provide but are not mandated to under federal law.[116] Services include case management, housing support, rehabilitative services, employment support, and peer support.[117] Appendix C provides a list of several state HCBS programs. However, the long-term sustainability of funding for these programs is uncertain. States can cut optional services during budget shortfalls which can create uncertainty on the long-term sustainability of such programs.[118] HCBS can be comprehensive and consider the full spectrum of patient needs, including non-medical needs. HCBS are inherently about SDOH in that they recognize the importance of the community environment in health. Integrating SDOH into HCBS services may improve the quality of care and improve health outcomes.[119] A study using Moody's Analytics model suggests that positive health outcomes from expansions to Medicaid HCBS services may have positive spillover effects on the economy.[120]

Existing Texas HCBS Programs

Texas currently offers the Texas Home Living Program (TxHmL), which provides services to individuals with intellectual and developmental disabilities, and the Deaf-Blindness and Multiple Disabilities (DBMD) deaf and blind enrollees.[121] Eligible beneficiaries for the TxHmL program must have a diagnosis of Intellectual Disability (ID) or a related condition, an IQ of 75 or below, and an annual salary of less than $13,600.[122] DMBD enrollees must be diagnosed as deaf and blind or a related condition before the age of 22.[123] Both programs offer a range of services, from assisted living and dietary services to behavioral support and community living

support. The state offers other HCBS programs, including STAR+PLUS HCBS and Community Living Assistance Support Services (CLASS). Like TxHmL and DBMD, these programs address SDOH by offering services that include dietary assistance, employment assistance, and assisted living services.[124] Although information on the effectiveness of these programs is limited, these programs provide interventions to address SDOH, which could improve health outcomes. Under the American Rescue Plan Act (ARPA) of 2021, states are offered an additional 10 percentage point increase to the federal medical assistance percentage (FMAP) for Medicaid HCBS.[125] In order to capitalize on the increase, Texas submitted a $287 million HCBS spending plan on July 12, 2021 and was granted conditional approval on January 10, 2022.[126]

Challenges of HCBS

Despite the SDOH-related focus of HCBS waivers, the effectiveness and cost reduction of HCBS programs remains unclear.[127] A retrospective cohort analysis of 34,660 dually eligible elderly Medicare and Medicaid enrollees found that long-term services and supports (LTSS) provided by HCBS spent an estimated $1,344 less than traditional nursing facilities' services.[128] The study performed several subsequent sensitivity analyses of smaller samples to minimize bias and multivariable OLS regression to account for other explanatory variables.[129] The results of the study indicate that HCBS programs could reduce overall cost. Although this data is specific to one state, the information is relevant to Texas as California manages a similarly large Medicaid program and the largest HCBS program in the country.[130]

Additional challenges to successfully implementing HCBS programs include long waiting lists to receive access to waiver services, direct care workforce shortages exacerbated by the COVID-19 health crisis, and a lack of affordable, accessible community-based housing.[131] Another challenge is unequal access to HCBS programs. Rural communities face limited access to HCBS services due to limited provider availability and limited or non-existent transportation.[132] Seniors also face HCBS access disparities. These include high costs to the patient, eligibility requirements, a lack of insurance coverage, and availability of local service providers that can impede enrollment.[133] As HCBS services are covered by state government Medicaid, it is not always the case that senior populations will meet Medicaid's eligibility requirements.[134] This barrier forces the elderly to pay for the services with their personal funds or spend down their savings to become eligible for Medicaid coverage.

Promising Interventions

In this review of Medicaid-relevant SDOH interventions that address the needs of Texans, the most effective appear to address three main SDOH: housing, food, and transportation. This report highlights interventions that do not fit neatly into these three categories in the emerging opportunities section. This is not to say that these are the only or even most influential SDOH. Marginalized communities are more likely to be exposed to lead, air pollution, and similar pollutants.[135] Children are particularly vulnerable to air pollution because their lungs are not fully developed, they have higher breathing rates than adults, and they spend more time outside.[136] Family support and social relationships influence child brain development.[137] Less-educated households are more likely to experience food insecurity.[138] Yet the Medicaid-relevant solutions to these SDOH require broader investments and/or are insufficiently researched.

Housing, food, and transportation insecurities are important needs that can be addressed by more narrowly focused interventions. Figure 4 maps these Medicaid SDOH interventions across states by intervention. Stable housing can reduce the high morbidity and hospital utilization for the over 27 thousand Texans without housing.[139] Twenty-three percent of U.S. residents without homes identify as Hispanic or Latino, while a third of U.S. residents without a home are families with children.[140] Children and seniors are particularly vulnerable to food insecurity, a problem in Texas, where 36% of Hispanic households with children are food insecure.[141] Transportation interacts with several other SDOH but can also limit access to clinical care and is an oft-cited barrier by low-income families, Hispanics, and Medicaid enrollees.[142]

Figure 4. SDOH state section 1115 demonstrations by state frequency[143]

The following section describes several types of interventions in these categories in detail. An explanation of how each intervention works is followed by a discussion of available evidence and a consideration of known costs. Drawn from states across the

nation that are attempting to prioritize SDOH through health care, these interventions represent some of the most effective Medicaid-relevant means of addressing SDOH.

Housing

Stable housing, a crucial SDOH, has significant health implications. According to a 2017 study, individuals experiencing homelessness face poor health outcomes due to exposure to poor living conditions and limited resources.[144] Homelessness is associated with higher morbidity, hospital utilization, and premature death. The burden of homelessness has a disproportionate impact on racial minorities. Structural racism through policies like redlining, have also created negative health outcomes like birth defects and increased rates of cancer and diseases for minorities affected by racist policies.[145] In the U.S., people of color are over-represented in the homeless population.[146] Thirty-nine percent of people experiencing homelessness identify as Black or African American. Twenty-three percent of U.S. residents without homes identify as Hispanic or Latino.

Households with children comprise a third of the U.S. homeless population.[147] Young children are particularly susceptible to the negative consequences associated with housing instability. A longitudinal study of young poor children experiencing housing instability, defined as moving three or more times before the age of five, found that such instability leads to statistically significant reductions in literacy and attention problems.[148] A study of over 22 thousand caregivers with children younger than three years between 1997 and 2007 found that crowding, where more than two people share a bedroom, and moving more than twice in the past year were both associated with child food insecurity and lower child weight.[149]

While a lack of housing may lead to negative health outcomes, homeownership may improve health outcomes. Homeownership can slow the transition to nursing home use on Medicaid.[150] Proper housing reduces stress, allows tenants to build positive communities, and reduces financial strains, improving a participant's overall well-being.[151] A cross-sectional study of interviews of over 900 residents of up-state New York with a mean age of 72.5 years finds that the quality of housing significantly improves psychological well-being.[152] Homelessness rates are affected by housing prices and availability. Since 2012, housing prices have risen from $198,774 to $358,896 as the inventory dropped 50%.[153]

There is demand for housing services to create better health outcomes. A survey by the Episcopal Health Foundation found that 79% of Black and Hispanics Texans compared to 62% of white Texans said that housing is essential or very important to their health.[154] Federal Medicaid dollars cannot pay for room and board but can pay for

housing-related services, such as finding housing and home modification.[155] Several states, including Delaware, Hawaii, and Maryland provide such assistance through section 1115 waiver demonstrations.[156] We next discuss several housing programs from other states that have been trialed in Medicaid populations.

Housing in Texas

According to the US Interagency Council on Homelessness, 27,229 people in Texas (4.7% of the state population) experienced houselessness in 2020.[157] This council breaks down groups experiencing houselessness, including a special breakdown of school children (Table 2). Because not every unhoused person fits into one of those categories, the total of unhoused persons does not equal the number of people in each category.

Table 2. Texas Homelessness Statistics, 2018-2020[158]

Homeless Population (2020)					
Categories	Family Households	Veterans	Young Adults (18-24)	Individuals Experiencing Chronic Homelessness	Total
Percent	7%	7%	5%	15%	
Count	1,912	1,948	1,408	4,033	27,229
Homeless Public-School Students (2018-2019)					
Categories	Unsheltered	In Shelters	Hotels/Motels	Doubled Up	Total
Percent	5%	10%	7%	78%	
Count	5,823	10,952	8,159	89,121	114,055

Temporary Housing Services

Interventions that address temporary housing insecurity have the potential to prevent negative health outcomes. Temporary housing provides participants short-term housing while they are connected with long-term stable housing.[159] Housing instability increases the risk of hospital readmission for Medicaid patients.[160] In Harris County, readmission rates for homeless individuals are nearly three times higher than for housed individuals.[161] Raven et al. interviewed 50 patients who were readmitted to hospitals frequently and found that 60% were experiencing housing instabilities.[162] On

average, each participant cost Medicaid $40,000 annually. Providing housing services could reduce costs while simultaneously improving beneficiary health.

One example of a successful temporary housing service program is from Indiana. An Indianapolis area MCO collaborated with the city of Indianapolis Housing Trust Fund and local nonprofit organizations to create the Blue Triangle Safe Haven Program.[163] The program served Medicaid managed care members struggling with chronic or episodic homelessness. The MCO connected enrollees facing homelessness to the housing program, which provided temporary housing, mental and physical support, and health care navigation assistance. A difference-in-difference analysis of Medicaid administrative data found that program participants had 0.20 fewer emergency department visits and 0.14 more primary care physician visits per member per month when compared to non-participants. Participants also self-reported improved levels of social support. The effects of temporary housing are mixed. This intervention did not reduce medical care costs compared to non-participants but did reduce hospital visits by 0.20 and increase visits to a primary care physician by 0.14 per month.[164] Participants also reported increased social support when exiting the program.

Long-Term Support for Housing Services

Temporary housing may not meet the needs or reduce costs in the long term.[165] In comparison, access to permanent housing is positively correlated with improvement of physical and mental health.[166] A survey of recipients of the housing support services provided by Houston's Integrated Care for the Chronically Homeless Initiative reported a 15-percentage point increase in patients' health-related quality of life that received housing support compared to those that did not.[167] The literature supports integrating housing services to address the needs of the chronically homeless. "Rapid-access" housing interventions that offer access to permanent housing without requiring treatment, also known as "Housing First" programs, can reduce homelessness and hospital utilization.[168] A systematic review of 43 randomized control trials of homelessness and housing stability interventions in 2016 found that interventions that prioritized rapid housing without preconditions have the greatest effect on reducing homelessness.[169] For example, a randomized control trial testing Housing First among 378 homeless adults with psychiatric disabilities in Toronto found that the program improved time spent in stable housing compared to those that did not participate.[170] Over 24 months after the program's start, 75.3% of program participants remained in stable housing, compared to 39% of non-participants.

We highlight two examples of housing programs in Medicaid. First, a study of the Permanent Supportive Housing (PSH) program in Pennsylvania found that permanent housing reduced emergency room visits by 20% and in-patient stays for acute care by

42%.[171] Using a difference-in-differences analysis comparing program participants and nonparticipants, the study found that housing lowered monthly spending by $145 per participant. In another example of long-term housing, Arizona gives state funds to MCOs to provide housing units, known as housing subsidies, to members with a severe mental illness or substance use behavioral health needs.[172] These state funds allow managed care plans to provide housing subsidies instead of paying for homelessness-related medical costs. After determining a patient's eligibility, providers determine the level of supportive services necessary and connect the patient to the supportive housing program. Arizona Health Care Cost Containment System (AHCCCS) reports the program's permanent supportive housing model as an evidence-based and cost-effective strategy.[173] The state plans to evaluate the program using methods designed by the U.S. Department of Housing and Urban Development.[174] Since 1999, Arizona and three partner MCOs report a 31% reduction in emergency department visits, a 44% reduction in inpatient admissions, and a 46% reduction in crisis utilization among participants.[175]

A state section 1115 waiver may make funds available for such housing support in Texas. Texas local governments could receive matching federal funds through the state's section 1115 waiver to provide housing services like Arizona.[176] Houston's health department applied for such funds through the DSRIP program to create Houston's Integrated Care for the Chronically Homeless Initiative.[177] The flexibility of the section 1115 waiver allowed the city health and human services department to pay federally qualified health care centers $8,000 per year per person to address such non-medical and SDOH-related services as housing support.[178] In this way, local governments could use Medicaid funds to address SDOH-related needs even when there is no statewide program. An alternative is expanding connections to existing services provided through Texas HCBS programs funded under a section 1915 waiver to address the needs of patients eligible for HCBS programs.

Food and Nutrition

Food security and a healthy diet are essential to maintain good health and prevent chronic illness. Hunger and health are inextricably linked. Poor diet and physical inactivity account for 33% of all preventable deaths in the U.S., the second-largest preventable death category after tobacco usage.[179] Food insecurity, which affects over fifty million Americans, can lead to harmful health effects, especially for vulnerable children and seniors.[180] It can lead to increased risk of several chronic illnesses, including obesity, hypertension, and Type 2 diabetes.[181] The Episcopal Health Foundation conducted a survey of 14 Texas Health Plans and found that in Texas, Medical Transportation and Food were the two most needed SDOH investments.[182]

MCOs in 12 states are required to screen patients for food insecurity and refer needy patients to services.[183]

Food Insecurity in Texas

Food security is a critical SDOH-related need in Texas. According to a 2021 report by the USDA Economic Research Service, Texas's food insecurity rate is 13.5%, only one of nine states with insecurity rates higher than the national average of 10.5%.[184] Almost 4.9% of Texans experience very low food insecurity compared to the U.S. prevalence of 4.1%.[185] According to the Texas Youth Risk Behavior Survey of 2018, 15% of Texas high school students went hungry "always, most or some of the time" at least one month before taking the survey.[186] The COVID pandemic increased the proportion of Texans experiencing food insecurity to 25% in 2020, a rate much higher than the national average.[187] According to the same study, 30% of households with children identified as food insecure, 36% of Hispanic households with children identified as food insecure, and 41% of Black households with children identified as food insecure.[188] Families with young children are particularly vulnerable to food insecurity.[189]

Medically Tailored Meals

One effective intervention for food insecurity is delivering medically tailored meals to high-need patients. In 2008, the Metropolitan Area Neighborhood Nutrition Alliance (MANNA) of the greater Philadelphia area provided chronically ill members of a Medicaid MCO three free meals each day and nutritional counseling and meal planning training to chronically ill beneficiaries for six months.[190] Analysis found that the 65 clients from a nonprofit over time in comparison with a similar group of Medicaid patients found that the intervention group had 31% lower average monthly health care costs compared to the control group.[191] Another study found that medically tailored meals have a larger ROI than delivered meals with $220 per participant compared to just $10 per participant.[192] Participants had reduced inpatient visits and those who received inpatient care were more frequently discharged to their homes instead of acute care facilities.

These findings suggest that providing meals, meal planning, and nutritional counseling to chronically ill Medicaid MCO beneficiaries through community-based organizations may decrease health care costs and utilization. Providing meals tailored to the needs of the medically ill and assistance with meal planning and nutritional counseling may decrease hospital admissions and increase discharge rates. This intervention could lead to better health outcomes in chronically ill individuals who may suffer from food insecurity. Medically tailored meals have the potential to be funded by Section 1115

waivers. Medically tailored meals are incorporated into North Carolina's section 1115 waiver demonstration, at an estimated cost of $5.05 per delivered meal.[193] This intervention could be statewide or geographically specific to the areas of Texas that experience the most food insecurity.

Food Delivery

Food deliveries are an alternative that can address both nutrition and transportation insecurities. Several states began delivering healthy food boxes during the COVID-19 pandemic. For example, North Carolina used a section 1115 waiver to deliver food boxes, a program-selected mix of produce and shelf-stable food goods, to those in need.[194] Food delivered was not medically tailored. Eligibility requirements for the program require that clients do not have access to transportation and have a nutrition-related chronic illness such as obesity, diabetes, or hypertension.[195] Participants also must have a state-defined social risk factor, such as homelessness, experiencing interpersonal violence, or other food or housing insecurities.[196] In coordination with a local food bank, the program delivers food boxes weekly.[197]

The design of this intervention mirrors previously evaluated tailored and non-tailored meal interventions, only with delivery meeting transportation insecurities. A randomized control trial study of such programs found an associated decline in emergency department visits and use of emergency transportation.[198] Participants in medically tailored programs showed a decline in inpatient visits.[199] This study's limitations include that participants were not randomly granted entry into the meal delivery programs.[200] A similar study of a smaller population of diabetes patients in a randomized-cross over trial found a small increase in consumption of healthy fruits and vegetables in patients who receive food boxes, valued at $16, tailored to their condition.[201] The benefit of home-delivery food interventions agrees with the findings of an EHF-funded report from the Center for Healthcare Strategies.[202]

An example of a health and food bank partnership in Texas is the Texas Health Improvement Network at UT Health. This organization has partnered with 21 food banks to provide mobile screening and food distribution sites, including mobile refrigeration trucks for fresh produce for clients who are traditionally not reaching out to food banks.[203] Working with partners to deliver these programs to delivery sites or homes could address food insecurity in the state. In 2021, home delivered meals in Texas cost an average of $5.66.[204] Research shows that medically tailored programs like those in Texas can reduce individual medical spending by more than the cost.[205] Adapting Medicaid funding through a section 1115 waiver demonstration may be an effective way to fund such food-delivery services, similar to the home-delivery services of North Carolina's Healthy Opportunities Pilot.[206] Two now-terminated Texas section

1115 waiver demonstrations that operated through the early 2010s, the Texas Community Based Alternatives and Texas Consolidated Waiver Program 0374, provided home-delivered meals.[207]

Vegetable Vouchers/Prescriptions

Another option is to provide Medicaid beneficiaries cash-like benefits to incentivize the purchase of health foods. Section 1115 waiver demonstrations can provide initial funding for food voucher programs, allowing states such as Texas to try several novel methods. Several state section 1115 waiver demonstrations rely on food insecurity screening and referrals to charitable food organizations, such as food pantries, and partnerships with community-based organizations to subsidize nutritious food intake.[208] Such interventions are shown to increase consumption of healthy foods, at least in the short-term.[209]

In Oregon, coordinated care organizations established under a section 1115 waiver invested in a vegetable prescription program.[210] Coordinated care links healthcare workers, community-based organizations, and other organizations to comprehensively address patients' medical and non-medical needs.[211] After screening for food insecurity during health visits, coordinated care organizations gave eligible patients a $20 food token to spend at food stands or farmers' markets.[212] Several similar programs already exist in Texas, just not supported by Medicaid funds. The Houston Foodbank partners with healthcare providers to give clients a food prescription, known as Food Rx.[213]Clients can receive 30 pounds of free fruits, vegetables, and other items every two weeks when they commit to "programs that improve their health and lives" and are written a prescription by a partner health care provider. A study that offered participants identical food assistance in north Pasadena, Harris County found that 94% of 174 participants reported a decrease in food insecurity[214] and 99% reported consuming all or most of the food. The program cost $12.20 per participant per redemption of a prescription. A program like FoodRx could be expanded to other areas of Texas to see a wider benefit to the state's food insecurity.

More rigorous research confirms that such programs can increase the consumption of healthy and nutritious foods. For example, a large-scale randomized control trial study of vegetable and fruit incentives among SNAP recipients by the USDA found that participants consumed 26% more fruits and vegetables than non-participants when provided financial incentives.[215] These findings are like those of a small-scale randomized control trial that found similar results. That study evaluated a 30% financial incentive for fruits and vegetables with restrictions on sugar-sweetened beverages, candies, or similar sweetened products.[216] It found that treatment participants consumed almost $5 more fruits per week and consumed $.80 less sugar-sweetened

beverages compared to non-treatment participants. Another small, randomized control trial with a sample size of less than 60 found that financial incentives similarly increased daily vegetable intake but did not observe any daily energy or weight outcomes.[217]

It is possible to address food insecurity and nutrition through a variety of interventions. As discussed, subsidizing the consumption of fruits and vegetables is associated with sizable increases in consumption. There is an opportunity to operate such programs as a partnership between health care providers and community-based organizations. Funding through section 1115 waiver demonstrations may provide additional flexibility for MCOs and health care providers to pilot such programs. Interventions that address not only food insecurity or nutrition but a lack of mobility, another important SDOH, may further improve outcomes for those with limited transportation.[218]

Transportation

Patients require proper transportation to access health care. About 1.8% of Americans in 2017 postponed their access to healthcare due to lack of access to transportation.[219] Transportation insecurity can negatively interact with other SDOH-related needs, especially for poor, rural residents.[220]

Transportation in Texas

The combination of suburban living, a decline in senior vehicle access, and lack of access to public transportation in suburbia lead to senior dependence on neighbors for transportation in Texas.[221] Transportation insecurity persists especially among female, ill, poor, and rural elderly.[222] Closure of rural Texas hospitals and lack of transportation also affects rural elderly access to care and the urban/rural health gap.[223] Hispanics, low-income populations, Medicaid enrollees, and people with functional limitations often cite transportation barriers to health care.[224] In Texas, a lack of transportation access influences food security and physical health, especially among Hispanic communities.[225] Latinos with children with complex medical problems may have a higher risk of not having enough access to transportation for needed medical support.[226]

Non-Emergency Transportation

Non-emergency medical transportation (NEMT) is intended to expand patient access to community engagement, social services, and health care.[227] Such programs assist those with disabilities, limited transit choices, or long travel times. In our review of state interventions, NEMT appears to be by far the most common intervention used to address transportation insecurity.

Long-standing regulation allows states to claim NEMT services as an administrative or medical service expense for medically frail individuals.[228] States can choose a payment model for NEMT through fee-for-service, contracting with MCOs, contracting with transportation companies, or a combination of those models.[229] Regulation caps the matching of federal funds at 50% for administrative expenses or up to 74% for medical services.[230] Several section 1115 waivers expand NEMT services to previously uncovered populations. This includes Iowa and Indiana, which use such waivers to expand NEMT services to adults covered under an expansion of Medicaid under the ACA.[231] Arizona, a largely rural state, directly manages NEMT services through managed care contracts.[232]

Research suggests that such transportation services can increase mobility among enrollees with transportation insecurity, especially in rural areas. Several surveys and case studies comparing rural and urban residents in Ontario, Canada, and Tennessee found that rural residents report a higher need for transportation to medical care, which they struggle to find.[233] Data on NEMT expansions in Nevada and New Jersey show that eligible adults use NEMT for over 30% of trips after expansion.[234] When Medicaid enrollees with chronic illnesses have access to NEMT, they are considerably more likely to make the annual recommended amount of appointments.[235] A retrospective analysis of 8,411 Medicaid patients based NEMT claims data in Oklahoma found that NEMT increased the number of doctor visits for diabetic patients by 0.7 visits for every two uses of NEMT.[236] The study found that rural patients visited doctors more than urban patients using NEMT. Nevertheless, the use of NEMT services remained limited. Although the number for requesting NEMT was listed on the back of enrollees' Medicaid enrollment cards, only 9.26% of eligible enrollees in the study used NEMT.[237]

A survey of 14 Texas Health Plans conducted by the Episcopal Health Foundation found that in Texas, Medical Transportation was one of the two most needed SDOH investments.[238] Arizona, Florida, New Mexico, and Oregon have statewide contracts with MCOs to provide NEMT to patients, and Arizona solely provides NEMT through MCOs.[239] It is possible for a state to implement NEMT statewide, and Texas can do so.

NEMT services could benefit Latino children with medical complexities enrolled in Medicaid in Texas. Qualitative data shows that Latino caregivers face transportation difficulties such as the inability to drive, lack of drivers' licenses, and lack of vehicles.[240] Language barriers can also prevent access to transportation services. Many parents were unaware of available NEMT services due to information only in English. Others struggled to schedule transportation. Care coordinators successfully mediate these

barriers by telling parents about these services directly and arranging for an interpreter.[241]

Having NEMT services may mitigate these challenges, but a lack of evidence prevents thorough evaluation of the effectiveness of such transportation services. The Center for Health Care Strategies found that NEMT are successful for regularly scheduled appointments, but inadequate for time-sensitive transportation services.[242] More research linking health outcomes and access to NEMT is needed.[243] Offering subsidized ride-share service is an alternative to NEMT. For example, Fort Bend, Texas partnered with Uber Health to provide medical transportation services.[244] States such as Arizona form partnerships between state Medicaid programs and Transportation Network Companies to transport patients to medical appointments.[245] Advocates for ride-share transportation services for non-medical needs believe it could increase the rate at which patients show up at health care appointments.[246] However, patients may not switch to ride-share services without extensive marketing of ride-share services through several modes of communication.[247]

Emerging Opportunities

There are SDOH beyond housing, food, and transportation important to the needs of Texans. The following interventions in women's health and family planning services and substance use disorder address some of the most well-evidenced interventions in populations who face several SDOH needs. Interventions targeting the health of mothers, infants, and those with substance use disorder are likely to have a long-lasting impact, considerably improving health in vulnerable populations with inefficient health care utilization.

Women's Health & Family Planning Services

Compared to other developed countries, the U.S. ranks low in maternal and infant health outcomes.[248] A 2016 report by the UnitedHealth Foundation finds that Texas ranks as one of the lowest worst states in terms of maternal and child health.[249] As children comprise 75% of Medicaid recipients in Texas, a comparable ratio of interventions should seek to improve child health outcomes.

Programs exist that could address this need to improve child and maternal health during and after pregnancy. The federal Strong Start for Mothers and Newborns initiative, funded under section 1115 waivers, provided expectant mothers access to prenatal services through birth centers, group prenatal care, and maternity care homes in 32 states.[250] A study of over 14,810 participants found that mothers who accessed care at birth centers had lower rates of preterm birth (-2.2%), fewer low-weight births (-

1.5%), and lower rates of cesarean sections (−11.5%). Birth centers lowered the cost of delivery and post-delivery care by $2,010. The study design was observational and not random but controlled for several demographic and medical risk factors. The Episcopal Health Foundation, in partnership with Texas A&M, found that rural women in Texas could benefit from wellness visits and Women's Health non-physician clinics in rural areas to increase health outcomes.[251]

Women's Health in Texas

In Texas, 20% of new mothers are uninsured (McMorrow et al., 2020). Furthermore, among Texas moms who were on Medicaid or CHIP at the time of childbirth, 64% became uninsured 3 months later and stayed uninsured for a year. Of the same cohort, 88% lost their insurance at some point in the year-long study.[252] The Healthy Texas Women 1115 Waiver seeks to increase women's access to health and family planning services to positively impact pregnancy outcomes as well as to prevent unintended pregnancies.[253] The Healthy Texas Woman waiver aims to increase women's access to preventative health care like hypertension screening and treatment as well as to reduce maternal mortality.[254] The program supports eligible low-income women at no cost. Women aged 18 to 44 with income up to 204% of the poverty rate can enroll in the program.[255] Women who have been pregnant within the last year can access additional postpartum support.[256]

Treatment for Substance Use Disorder

One out of every twelve adults in the United States (18.7 million) will struggle with a substance use disorder, which includes alcohol use disorder, opioid use disorder, and illicit drug use disorder.[257] Substance use disorder is linked to an increased risk of teenage pregnancy, STI transmission, suicide, and car accidents.[258] The Substance Use Disorder Prevention that Promotes Opioid Recover and Treatment for Patients and Communities (SUPPORT) Act, signed into law in 2018, requires states to cover medication-assisted treatment expenses between 2020 and 2025 unless they face provider shortages.[259]

Substance Use Disorder in Texas

Substance use disorders disproportionately affect minority populations in Texas, especially Hispanics.[260] In Texas, 1.4 percent of children report experiencing an alcohol use disorder and 2.5 percent report an illicit drug use disorder in the previous year.[261]

Waiver programs may provide additional support to address substance use disorder Several states use section 1115 waivers to expand access to residential and medication-assisted treatment for substance use disorder, including to the formerly incarcerated.[262] Almost 12% of Medicaid beneficiaries over 18 have a SUD.[263] Many states do not cover residential treatment services despite the significant interest and investment in treatment services for OUD and other SUD.[264] The Institutions for Mental Disease (IMD) traditionally prohibit treatment in residential facilities.[265] At the behest of CMS in 2015, several states used section 1115 waiver flexibility to use Medicaid funds to expand access to treatment for nonelderly adults, coverage of MAT, and wave requirements from the IMD.[266] A difference-in-difference analysis of states that received IMD waivers found that Medicaid acceptance at residential treatment facilities increased 34% two years after the waiver's implementation, suggesting that such expansions to Medicaid can increase access to treatment.[267]

There is mixed evidence for residential treatment services and more substantial evidence for medication-assisted treatment. Residential treatment services, a direct intervention that provides structured care in nonhospital facilities, provide patients safe housing and 24-hour medical care during recovery.[268] Individuals with multiple disorders and the homeless may benefit from housing and treatment services.[269] Evidence for residential treatment is mixed.[270] Though several studies were randomized control trials, differences in treatment and control groups limit study power.[271] A more recent peer-reviewed research study between 2013 and 2018 found several methodologically sound randomized control trials and cohort analyses that indicate that best-performing residential treatment facilities provide post-discharge care to ensure continuity of treatment.[272]

Medication-assisted treatment interventions, which combine medication and behavioral therapy to treat SUD, are a generally supported treatment for OUD and other SUD. A meta-analysis of 21 longitudinal cohort studies that directly studied the effect of medication-assisted treatment on mortality found that those receiving treatment had lower all-cause and overdose risk than non-participants.[273] Treatment of OUD with Methadone, including Methadone maintenance treatment, is considered an effective treatment for OUD.[274] The proportion of residential treatment facilities offering medication-assisted treatment services has increased and most commonly occurs among facilities in states that accept Medicaid and have comprehensive coverage of medication-assisted treatment services.[275] It is most common among facilities in states that accept Medicaid and have comprehensive coverage of medication-assisted treatment services.[276] These findings suggest that successful strategies to expand access may require expanding access to residential treatment facilities that offer coverage of comprehensive medication-assisted treatment services.

Conclusion

SDOH are a broad, complex, and interwoven range of needs and environmental influences. Prioritizing a single determinant or intervention is insufficient. The most ingenious programs target several SDOH, combining interventions with modest individual evidence to target several SDOH. This report provides several interventions, payment requirements, and enrollment methods the State of Texas and Texas managed care organizations can use to address SDOH. Texas Medicaid enrollees, 75% of whom are children and 55% of whom are Hispanic, face several challenges, from insufficient housing to transportation insecurity and persistent poverty. Texas has an opportunity to expand non-medical services and the health of Texan Medicaid enrollees by emulating Medicaid innovations in other states. Several promising interventions included in this report can address key Texas SDOH. Such interventions must have sufficient capacity to evaluate program effectiveness and an overwhelming commitment from providers, community-based organizations, and government to set clear goals and ensure these new programs prioritize non-medical needs.

Appendix A. Acronym Dictionary

Acronym	Meaning
SDOH	Social Determinants of Health
MCO	Managed Care Organization
CDC	Centers for Disease Control
CHIP	Children's Health Insurance Program
AAPI	Asian American Pacific Islander
HHS	US Department of Health and Human Services
HCBS	Home and Community Based Services
IQ	Intelligence Quotient
TxHmL	Texas Home Living Program
ID	Intellectual Disability
CMS	Center for Medicare and Medicaid Services
GDP	Gross Domestic Product
LTSS	Long-Term Services and Support
AHCCCS	Arizona Health Care Cost Containment System
CHCS	Center for Health Care Strategies
DSRIP	Delivery System Reform Incentive Payment
SASH	Support and Service at Home
MPBH	Michigan Pathways to Better Health Program
I/DD	Intellectual and Developmental Disabilities
DBMD	Deaf-Blindness and Multiple Disabilities
NEMT	Non-Emergency Medical Transportation
DOC	Department of Corrections

STI	Sexually Transmitted Infection
SUD	Substance Use Disorder
OUD	Opioid Use Disorder
CCHP	Comprehensive Community Health Program
MAT	Medicated-Assisted Therapy
IMD	Institutions for Mental Disease

Appendix B. ACS Demographics in Texas and the US Medicaid Populations

Variable	TX: Medicaid	US: Medicaid	t-test difference	TX	US	t-test difference
Medicaid				16.0%	20.1%	-4.07%***
Age						
Child	61.6%	44.2%	17.39%***	27.0%	23.6%	3.40%***
Adult	26.2%	43.6%	-17.43%***	60.1%	59.9%	0.17%
Elder	12.2%	12.2%	0.04%*	12.9%	16.5%	-3.58%***
Education (18 and Older)						
Below High School	30.8%	23.8%	7.00%***	14.6%	11.0%	3.61%***
High School or GED	34.0%	36.3%	-2.33%***	26.2%	27.4%	-1.16%***
Some College	20.0%	21.8%	-1.76%***	23.3%	22.0%	1.22%***
Associates Degree	5.8%	6.5%	-0.67***	7.4%	8.4%	-1.04%***
Bachelors	6.6%	8.4%	-1.83%***	18.9%	19.6%	-0.73%***
Post Bachelors	2.8%	3.3%	-0.41%***	9.7%	11.6%	-1.90%***
Employment and Income						
Unemployed	4.15%	5.9%	-1.77%***	2.83%	2.9%	-0.04%
Employed	24.46%	34.2%	-9.78%***	62.24%	60.7%	1.51%***
Not in Labor Force	71.39%	59.8%	11.55%***	34.93%	36.4%	-1.47%***
SNAP	46.28%	41.2%	5.14%***	14.13%	12.8%	1.31%***
Mean Percent of Poverty Level	160.4%	171.1%	-10.66%***	299.1%	313.2%	-14.08%***
Mean Household Income	$51,341	$56,022	$(4,681)***	$98,659	$104,926	$(6,267.37)***
Multiple Families	22.4%	21.8%	0.59%	16.5%	15.5%	1.00%***
Race						
White	23.5%	43.0%	-19.51%***	41.1%	60.0%	-18.81%***
Black	16.4%	19.8%	-3.37%***	11.9%	12.4%	-0.50%***
American Indian or Alaska Native	0.16%	1.11%	-0.95%***	0.3%	0.7%	-0.40%***
Asian	2.5%	4.7%	-2.17%***	5.0%	5.7%	-0.75%***
Other Race	0.2%	0.3%	-0.16%***	0.2%	0.3%	-0.11%***
Multi-racial	2.2%	3.5%	-1.31%***	1.8%	2.6%	-0.75%***
Hispanic	55.1%	27.6%	27.49%***	39.8%	18.4%	21.33%***
Home Ownership						
Own Home	46.9%	44.6%		65.1%	66.5%	

Rent	53.2%	55.4%	-2.37%***	34.9%	33.5%	1.44%***
Sex						
Male	46.8%	46.2%		49.6%	49.2%	
Female	53.2%	53.8%	-0.56%*	50.s 4%	50.8%	-0.39%***
Transportation to Work						
Private	93.4%	89.0%	4.35%***	96.5%	93.5%	2.91%***
Public	3.1%	10.2%	-7.09%***	1.6%	5.8%	-4.16%***
Walk or Bike	3.6%	0.8%	2.74%***	2.0%	0.7%	1.25%***

Methods

The data analyzed is from the 2019 American Community Survey (ACS) collected by the US Census.[277] The data was downloaded from the IPUMS USA website. The variables included in this report are Medicaid status, age (grouped), education level, employment, SNAP recipiency, mean percent of poverty level, mean household income, multiple families, or generations in one home, race, home ownership, sex, and transportation to work. Results are available for Texas, the US, and the subpopulation of Medicaid. Total counts have been verified against the PUMS Estimates for User Verification to ensure accuracy. There are known errors in Medicaid recipients in ACS data. Respondents frequently underreport that they are enrolled in Medicaid; the rate of errors varies across different populations, including race, age, income, and fee-for-service vs MCO enrollment. Those misreporting are more likely to report that they have another type of insurance rather than no insurance at all.[278] Children are especially underreported by the ACS when compared to administrative reported data.[279] Because of these reporting errors, the demographic distribution from the ACS is not entirely accurate and differs from the HHS administrative counts. In addition to percent and counts, a means test was conducted to determine the difference between US and Texas. The Texas observations were duplicated with "texasID==1" indicating duplications. A regression was run with the desired variable over "texasID" to find the difference between the means of the US and Texas. The results are the mean of the United States subtracted from the mean of Texas (Texas - United States). The data is reported in a table as percentages to compare Texas to the United States as a whole.

Appendix C. State HCBS Programs

Effective HCBS Practices	
Vermont: Support and Service at Home (SASH)	Collects individual data on low-income seniors and adults with disabilities with community-based services to improve care coordination. This program identifies social risks and works to meet SDOH-related goals set forth by the state of Vermont.[280] SDOH domains include housing, food security, and community safety.[281]
Michigan: Michigan Pathways to Better Health Program (MPBH)	Community health workers make in-home visits and use tablets with online checklists to identify greatest needs of program participants.[282] SDOH-related needs include employment, education, housing needs, and food security. According to Moving Healthcare Upstream, an organization that collaborates with the University of California to improve care delivery, the MPBH program is proven to improve client health with better care at a lower cost by addressing social service needs and supporting linkages to preventive health care services.[283] An evaluation produced by the Department of Health and Human Services found that the MBPH program successfully connected 2,621 clients to primary care, 1,624 to specialty care, 836 to dental care, 778 clients to mental health and 496 clients to vision care.[284]
Kansas: KanCare	HCBS waivers are included in KanCare (Kansas Medicaid) programs.[285] These programs incorporate SDOH into HCBS services. This program conducts health risks assessment to collect data on certain SDOH domains, identified by the State, such as mental illness, substance use disorders and developmental disabilities. Programs report data to state Medicaid agencies, which in turn helps members find appropriate services identified by the health risk assessment.
New York: Home Health Program	The Home Health Program supports individuals with multiple chronic conditions. This program requires functional assessment questionnaires upon enrollment. The program is also responsible for collecting information regarding member homelessness and additional social support. This program works directly with Medicaid claims data and evaluates the utilization and quality of care for members served by this program.[286]

Community Alternatives to Psychiatric Residential Treatment Facilities (PRTF) Demonstration Program	Foster youth are 3% of children on Medicaid but 15% of all children accessing mental health and behavioral health services. Children in foster care frequently receive mental health care in a residential setting. To improve outcomes and reduce costs, the 2005 Deficit Reduction Act authorized nine states to participate in the PRTF Demonstration Program. In 2012, an independent evaluation concluded that the program maintained or improved children's outcomes in school, with substance abuse, and with juvenile justice. The program cost $20,000-$40,000 less than a residential program.[287]
HCBS for Autistic Youth in Colorado, Idaho, Illinois, Massachusetts, Maryland, Maine, Michigan, Montana, North Dakota, South Carolina, and Wisconsin	Parents of autistic children report fewer unmet needs in states with HCBS's (−4.2%). The largest improvement in met needs is for families who would not qualify for Medicaid without the HCBS. These waivers might have a greater impact for families with autistic children than mandated coverage for ASD by private insurance.[288] In states with HCBS for autistic youth, Black autistic children have fewer unmet needs.[289]

Appendix D. Financial Incentives for MCOs to Address SDOH

Altering Payments	
Michigan	Withholds 1% of capitation payments if MCOs don't meet proposed population health intervention plans and Massachusetts includes social risk factors in capitation rates.[290]
New Mexico	Penalizes MCOs at 1.5% of the capitation rate if community health workers serve less than 3% of the total MCO enrollment.[291]
North Carolina	MCOs that voluntarily contribute at least .1% of annual capitation revenue to health-related resources in their region receive auto-assignment preference to promote enrollment in their MCO.[292]
Massachusetts	Adjusts MCO capitation rates based on social risk factors.[293]

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