Accounting for Social Risk in Health Care Payments: Landscape of Measures and Other Approaches

RAND Briefing

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Welcome and Introductions

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Agenda

- Background
- Area-Level Indices of Social Risk
- Administrative Measures of Social Risk
- Payment Models That Incorporate Social Risk Factors
- Conclusions and Discussion

Social risk factors can adversely affect health and health care outcomes

Social Determinants of Health (SDOH)

- Effects of structural inequalities that affect health, such as income or education

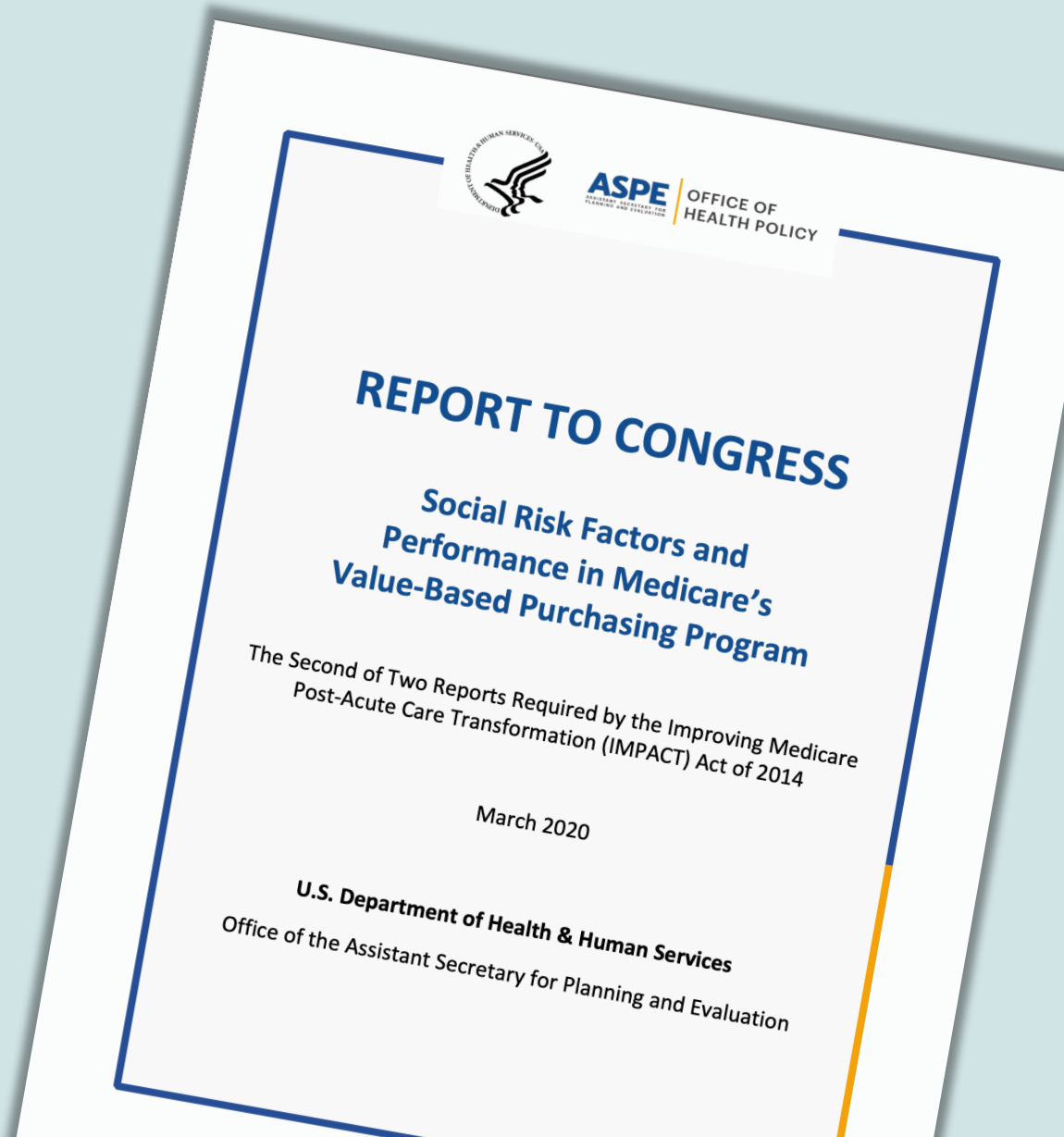
Health-Related Social Needs (HRSN)

- Individual level consequences of SDOH, such as homelessness or food insecurity

Measurement of Social Risk Factors is needed to inform payment policy

Policies that address social risk need to measure that risk

Equitable payments require accurate assessment of patient-, area-, and provider-level risk



We conducted three environmental scans to help support payment policy discussions

1

AREA-LEVEL INDICES

- 21 indices of social risk measures met inclusion criteria

2

ADMINISTRATIVE MEASURES

- Medicare and Medicaid DSH programs
- HPSA and MUA/P designation
- Medicare measures
- Clinical data-derived measures

3

PAYMENT MODELS

- Existing measures used for paying providers or plans

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Our first search examined multiple dimensions of social risk and vulnerability

INCLUSION CRITERIA

- Two or more domains of social risk
- Created for use with U.S. data
- Designed to estimate population-level risk
- Generates estimates for no larger than county level
- Developed for wider use

We found eight indices that use Zip Code areas or smaller

INDEX	DISAGGREGATION	DESCRIPTION
Area Deprivation Index (ADI)	Census block group	17 measures across four domains: Income, education, employment, housing quality.
Census Bureau Community Resilience Estimates	Census tract	10 measures including income to poverty ratio, single/no caregiver, crowding, communication barriers, unemployment, disability, health insurance, over age 65, access to a vehicle, broadband access.
Child Opportunity Index (COI 2.0)	Census tract	29 measures across three domains: education, health and environment, and social and economic.
Distressed Communities Index	Zip code (with 500+ residents)	7 measures related to high school diploma, housing vacancy, unemployment, poverty, median income ratio, change in employment, and change in business establishments.
Neighborhood Deprivation Index	Census tract	10 measures related to wealth and income, education, occupation, and housing conditions.
Neighborhood Socioeconomic Status (NSES)	Census tract	5 measures related to household income, poverty, education, unemployment rate, and children living in “female-headed” households.
Social Deprivation Index (SDI)	County, census tract, ZCTA*, PCSA*	7 measures related to poverty, education, single-parent household, rented housing, overcrowding, access to a vehicle, and unemployment.
Social Vulnerability Index (SVI)	County, census tract	15 measures across four themes: socioeconomic status, household composition and disability, minority status and language, housing type and transportation.

* Zip Code Tabulation Area (ZCTA); Primary Care Services Areas (PCSA)

We found six indices that use county-level data

INDEX	DISAGGREGATION	DESCRIPTION
Baseline Resilience Indicators for Communities (BRIC)	County	48 measures across six categories of resilience: social, economic, community capital, institutional, infrastructural, and environmental.
COVID-19 Vaccine Coverage Index	County	28 measures across five themes: historic undervaccination, sociodemographic barriers, resource-constrained health system, health care accessibility barriers, and irregular care seeking behavior.
Minority Health SVI	County	29 measures across six themes; SES, household composition and disability, minority status and language, housing and transportation, health care infrastructure, and medical vulnerability.
Opportunity Index	County	20 measures across four dimensions: economy, education, health and community.
Social Capital Index	County	32 measures on family unity, family interaction, social support, community health, institutional health, collective efficacy, and philanthropic health.
Social Vulnerability to Environmental Hazards Index (SoVI)	County	29 measures related to race, ethnicity, age, poverty, income and benefits, sex, language, insurance, education, housing, employment, and transportation

We found seven indices that would require additional analysis to generate scores for U.S.

INDEX	DISAGGREGATION	DESCRIPTION
AHRQ SES Index	Census block group	7 measures related to unemployment, poverty, median outcome, property values, low education, high education, and crowding.
Composite Index of SES	Census tract	19 measures related to occupation, employment, poverty, income, education, home value, home ownership, and crowding.
Multidimensional Deprivation Index	Individual	6 measures related to standard of living, education, health, economic security, housing quality, and neighborhood quality.
Multidimensional SDOH Index	Census tract	15 measures of demographic characteristics, economic status, social and neighborhood characteristics, and housing and transportation accessibility and affordability.
Neighborhood Concentrated Disadvantage Index	Census tract	6 measures related to poverty, public assistance, female-headed households, unemployment, age, and race.
Neighborhood Stress Score (NSS7)	Census block group	7 measures related to income, poverty, employment, public assistance, transportation, single-parent households, and education.
Townsend Index (adapted for the United States)	Census tract	4 measures related to transportation access, overcrowding, renter-occupied dwellings, and unemployment.

Considerations for selecting the most promising indices

- Data lag tolerance
- Cost and time constraints
- Ideal level of geographic disaggregation
- Specific social risks required
- Current state of science on social risk
- Modification to fit local context

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Our second search examined programs that administratively identify vulnerable populations

- Medicare and Medicaid DSH
- HPSA and MUA/P designations
- Medicare measures
- Clinical measures

Supplemental programs through DSH come from both Medicare and Medicaid

MEDICARE

- **Disproportionate Patient Percentage (DPP)**: sum of two measures of the *proportion of inpatient days attributable to low-income patients*; above 15% qualifies for DSH
- **Alternate Special Exception Method**: location in an *urban area*, 100+ beds, and 30% of revenue from state and local government sources for indigent care

MEDICAID

- **Medicaid Inpatient Utilization Rate**: *proportion of inpatient days attributable to Medicaid beneficiaries*; 1+ standard deviation above the mean for all hospitals in the state qualifies
- **Low-Income Utilization Rate**: proportion of revenues that derive from public sources and the *proportion of inpatient charges attributed to charity care*; 25%+ qualifies

HRSA designates counties, populations, and facilities in need of extra clinical capacity

HEALTH PROFESSIONAL SHORTAGE AREAS (HPSAs)

- Provider to population ratios
- Percent below FPL
- Infant Health Index
- Travel time to NSC
- Water fluoridation
- Age structure
- SUD Prevalence

MEDICALLY UNDERSERVED AREAS AND POPULATIONS (MUA/Ps)

- Index of Medical Underservice
  - Provider to population ratio
  - Percent below FPL
  - Percent >65 years of age
  - Infant mortality rate

Medicare uses multiple social risk measures

DUAL ELIGIBILITY

- Income and asset limits

LOW-INCOME SUBSIDY ("EXTRA HELP")

- Income and asset limits

STRATIFIED QUALITY REPORTING

- Race and ethnicity
- Gender
- Income
- Rurality

Clinical data from EHRs in the process of care could be analyzed for patient-level social risk factors

ICD-10 Z CODES

- Z-55 to Z-65: social, economic, psychosocial and environmental factors that contribute to the patient's health status

Other EHR-Based Measures

- SDOH screening tools
- NLP analysis of EHR data

Administrative measures tend to be limited, compared to area-level indices

DSH, HPSA, and MUA/P programs have no indicators covering the domains of Race, Ethnicity and Cultural Context, Gender, Social Relationships, or Social Needs

Medicare program uses income, race and ethnicity, rurality, and gender for reporting purposes

Clinical measures provide much more comprehensive coverage of HRSN, but collection of these data has yet to be proven feasible at scale

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Our third search scanned for payment models that use one or more social risk factors

Capitated or fee-for-service payment models that adjust payments based on one or more measures of social risk

Other funding arrangements specifically devoted to building provider capacity to address social needs

We identified seven payment models for inclusion

PAYMENTS TO HEALTH PLANS

- MassHealth payments to MCOs
- Arizona Health Care Cost Containment System (AHCCCS) Complete Care (ACC) payments to MCOs
- Washington State and Hawaii Medicaid agency payments to MCOs

PAYMENTS TO PROVIDERS

- MassHealth payments to ACOs
- Minnesota Integrated Health Partnership Quarterly Population Based Payments
- New York Health Homes Serving Adults
- MaineCare Permanent Supportive Housing Community Care Team

The models vary in the factors included…

	Model (Implementation Date)	Individual-Level Social Risk Measures	Area-Level Social Risk Measures	Other Measures
Payments to Health Plans	**MassHealth payments to MCOs (2016)**	• Housing problems	• Neighborhood stress score • Rural	• Disability • Serious Mental Illness • Opioid Use Disorder
	Arizona Health Care Cost Containment System (AHCCCS) Complete Care (ACC) payments to MCOs (2020)	• Housing problems • Child/parent problems • Family problems • Criminal problems	• Social Vulnerability Index	
	Washington State and Hawaii Medicaid agency payments to MCOs (2020)	• Homelessness		
Payments to Providers	**MassHealth payments to ACOs (2018)**	• Housing problems	• Neighborhood stress score • Rural	• Disability • Serious Mental Illness • Opioid Use Disorder
	Minnesota Integrated Health Partnership Quarterly Population Based Payments (2018)	• Deep poverty (<50% FPL) • Homelessness • Past incarceration		• Serious Mental Illness, Severe and Persistent Mental Illness, or Substance Use Disorder
	New York Health Homes Serving Adults (2016)	• Homelessness • Criminal justice involvement		
	MaineCare Permanent Supportive Housing Community Care Team (2022)	• Homelessness • Abuse or trauma • Legal issues • Social relationships and networks		

… and the data sources included

	Model (Implementation Date)	Claims and Enrollment Data	Other State Administrative Data	Other Data
Payments to Health Plans	**MassHealth payments to MCOs (2016)**	• Z codes & medical diagnosis codes • Addresses	• Department of Mental Health or Developmental Services program participation	• US Census
	Arizona Health Care Cost Containment System (AHCCCS) Complete Care (ACC) payments to MCOs (2020)	• Z codes		• US Census
	Washington State and Hawaii Medicaid agency payments to MCOs (2020)	• Z codes		
Payments to Providers	**MassHealth payments to ACOs (2018)**	• Z codes & medical diagnosis codes • Addresses	• Department of Mental Health or Developmental Services program participation	• US Census
	Minnesota Integrated Health Partnership Quarterly Population Based Payments (2018)	• Medical diagnosis & procedure codes • Addresses	• State Department of Corrections	• Self-report
	New York Health Homes Serving Adults (2016)			• Health Home Tracking System HML Assessment
	MaineCare Permanent Supportive Housing Community Care Team (2022)			• Service Prioritization Decision Assistance Tool (SPDAT)

We also found several funding initiatives to build capacity to address social needs

ACCOUNTABLE HEALTH COMMUNITIES MODEL

- "Bridge organizations" (who may not be providers or health plans) receive up-front funding to screen and refer Medicare beneficiaries
- Could be expanded by the HHS Secretary under ACA authority

NEW YORK STATE DSRIP SDOH PROJECTS

- Providers in value-based care models with MCOs in the state could receive up-front funding to support delivery system improvements that focused on SDOH
- State provided a menu of options for SDOH projects

MEDI-CAL'S WHOLE PERSON CARE INITIATIVE

- Funding to counties to conduct pilot studies that focused on addressing SDOH (e.g., care coordination programs, information sharing initiatives)
- A model for local investment in capacity-building projects

Despite widespread interest, these types of payment adjustments are relatively new

State officials could provide greater insight into the rationale for social risk factor selection, implementation challenges, and perceptions of model effectiveness

Policymakers could draw on examples of targeted funding programs that are designed to build capacity

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Measures identified in the scans differ in domain coverage and use of individual vs community data

1

AREA-LEVEL INDICES

- Good coverage of SDOH domains
- Weak assessment of HRSN
- Community-level measures

2

ADMINISTRATIVE MEASURES

- Narrow coverage of SDOH
- No assessment of HRSN
- Measures of health system characteristics
- Mix of individual- and community-level measures

3

PAYMENT MODELS

- Include both SDOH domains and HRSNs
- Mix of individual- and community-level measures

Areas for further research

- Developing new indices
  - Machine learning methods show promise but are opaque
  - Better balance of SDOH and HRSN domains
- Comparing individual-level and area-level indicators for measuring social risk
- Interviewing state Medicaid officials, health plan representatives, and providers to understand payment model implementation
- Evaluating payment model impacts on quality, utilization, and spending

Area Deprivation Indices for Policies Addressing SDOH and HRSNs: A Preliminary Evaluation

Steven Sheingold, PhD

September 22, 2022

U.S. Department of Health and Human Services

Overview

Rand's comprehensive analyses provided the input to compare and contrast all of the relevant indices

We used the information and selected criteria to narrow the list to the most relevant indices for short run use

We considered issues of using these indices for funding/policies related to addressing SDOH and HRSNs

Description or Relevant Terminology

- Relevant terminology is evolving and often used interchangeably but some distinctions are important
  - Social drivers of health
  - Social determinants of health
  - Health related social needs
  - Social risk factors
  - Social deprivation
- Especially important to consider overlap and distinctions for thinking about deprivation indices and their uses

Criteria – short run use

- the index was calculated using data from a recent year
- the index is or can be updated frequently
- the data are nationally available
- the area for which the index is calculated (i.e., county, ZIP code, etc.) is appropriate for the program or policy
- the index is constructed from a substantial number of factors related to social risk, SDOH, and HRSN
- there are no significant proprietary concerns or other obstacles to accessing the index and data by policy making organizations

Four Indices Met All Of The Criteria

- **Area Deprivation Index (ADI),**
- **Social Deprivation Index (SDI)**
- **Social Vulnerability Index (SVI)**
- **Community Resilience Index (CRE)**

Other considerations

- We eliminated the CRE because it is represented by categories rather than continuous values that make finer distinctions among communities
- The SVI has many advantages but directly measures race/ethnicity which may be problematic for payment purposes
- Conceptually, the ADI and SDI capture similar concepts, although the ADI employs a much more detailed set of risk factors.
- On the other hand, the RAND report notes that the SDI is updated regularly while ADI's schedule is less certain.

Policy Considerations and Cautions

- One objective for polices related to health equity is that funding be well targeted
- Some policies being considered focus on HRSNs such as housing stability, food insecurity and transportation.
- The selected indices are heavily weighted to social risk factors such as income, education and employment.
- The effectiveness of targeting funds would depend on the correlation between these social risk factors and HRSNs of interest
- A recent study suggests typically used social risk factors may not capture many individuals with HRSNs

Upcoming Research for Further Evaluation

- MCBS analysis of HRSNs vs. administrative measures of social risk
- Comparing community rankings between the key indices
- Sensitivity and specificity of areas indices vs provider level measures