Next Generation of Medicaid Risk Adjustment: Updating the CDPS Model & Exploring SDOH Data

Institute for Medicaid Innovation & University of California, San Diego

Webinar

April 13th, 2023

IMI Strategic Priorities

Access, Coverage, and Outcomes

Community and Equity

Data and Quality

Sustainability

INSTITUTE FOR MEDICAID INNOVATION

Emerging Topics

Women and Gender Health

Behavioral & Mental Health

Convening Meetings

Policy Analysis

Qualitative and Quantitative Research

Dissemination of Evidence and Best Practices

Collaborative Learning

Best Practices

Knowledge Development

IMI Strategic Priorities

Multi-Stakeholder Engagement

Annual Survey

Facilitate Collaboration & Partnerships

Toolkits

Technical Assistance

Highlight Innovative Solutions

Child & Adolescent Health

State Facts

Disparities & Equity

It's not the statistics that make Medicaid real.
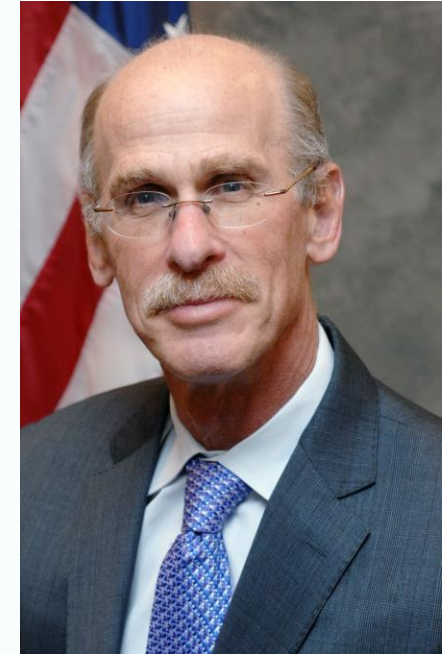
It's when you love one of the numbers.

Presenters

Jennifer E. Moore, Ph.D., RN, FAAN (she/her)
Institute for Medicaid Innovation

Todd P. Gilmer, Ph.D. (he/him)
University of California, San Diego

Rick Kronick, Ph.D. (he/him)
University of California, San Diego

Webinar Overview

o Information on the process we deployed to update the CDPS and CDPS+Rx risk adjustment model.

o Outline the major changes as part of the release of CDPS and CDPS+Rx version 7.0.

o Highlight the outcomes from exploratory work to incorporate social determinants of health data, including social deprivation indices.

o Identify the policy implications for this groundbreaking work.

Overview of the CDPS Project

What is Risk Adjustment?

Risk adjustment…

- o Statistical method that seeks **to predict a person's likely use and costs of health care services**.

- o Used in Medicaid to **adjust the capitated payments**, a set amount per member per month, to cover expected medical costs of members.

- o **Modifies payments to all health plans** based on an expectation of what the individual's care will cost.

Why is Risk Adjustment Important?

Risk adjustment supports **efficiency in care delivery, ensures adequate financing of health care, and encourages innovation.**

Risk adjustment in Medicaid has three primary goals:

I.   Provide a budget-neutral (zero-sum) mechanism to allocate capitated payments between contracted managed care organizations, while considering health status of enrolled members.

II. Minimize the incentives for health plans and providers from selectively covering healthier members.

III. Provide adequate financing for those who treat individuals with higher-than-average health needs.

Chronic Illness and Disability Payment System (CDPS)

o The Chronic Illness and Disability Payment System (CDPS) is a diagnostic-based risk adjustment model used to adjust capitated payments for Medicaid health plans.

o Medicaid Rx (MRX) is a pharmacy-based risk adjustment model.

o CDPS+Rx is a combined diagnosis and pharmacy-based model that employs both ICD and NDC codes.

o All states with managed care use a risk adjustment model for their Medicaid program.

o Currently, **32 Medicaid agencies, including D.C. and Puerto Rico, utilize the CDPS risk adjustment model** to inform actuarially sound payments to insurers.

Why is an Update Needed?

o The most recent update of the CDPS model used **fee-for-service data** from calendar years **2010 and 2011**.

o Neither the experience of managed care over the past 10 years nor the changes in the Medicaid program broadly (e.g., Medicaid expansion and the introduction of more complex populations into managed care, etc.) have been accounted for in the model.

The Next Generation of the CDPS Risk Adjustment Model

Project Phases:

- o **Phase I:** Updating the CDPS model weights.
- o **Phase II:** Updating the assignment of diagnoses for six CDPS major categories.
- o **Phase III:** Conducting an exploratory analysis to determine if weights can be established for social determinants of health (SDOH).
- o **Phase IV** *(current phase):* Further testing and possible refinement.

An updated final model referred to as **CDPS+Rx version 7.0** was released in 2022 using **ICD-10 native data** from national **Medicaid managed care organizations** from **2017-2019**.

Model Improvements

Improvements to the CDPS model:

- o To the extent that new treatments and technology have changed how patients are treated, there is increased accuracy in relative cost.

- o To the extent that patients are treated differently in fee-for-service (FFS) vs. managed care, the new regression weights better estimate patterns of care in managed care organizations.

- o Significant updates to six diagnostic categories including psychiatric, pulmonary, renal, cancer, infectious disease, and hematologic.

Findings from Updating CDPS

Data Used to Update CDPS

- Data were provided by three national Medicaid MCOs.

- The data covered three years, 2017-2019, and eight states: FL, IL, KS, KY, LA, MI, NJ, WA.

- The data were limited to Medicaid beneficiaries with full benefits and without dual eligibility under Medicare.

- The data included disabled beneficiaries and non-disabled child (age<19) and adult (age>=19) beneficiaries, including those covered under Medicaid expansions.

- Eligibility data included demographics (age and gender), aid category, and months enrolled during the year.

- Claims/encounter data included the year of service, procedure, ICD and NDC codes, and the amounts paid by the organizations to providers for their services.

- The resulting data include just over 17M person year observations: 1.4M disabled beneficiaries, 9.2M children, and 6.4M adults.

Methods Used to Estimate CDPS Weights

- The CDPS model has 58 CDPS categories within 19 major categories.
  - CDPS categories are hierarchical within major category.

- Regression analysis was used to associate health care expenditures with CDPS categories.

- In the concurrent model, at least six months of enrollment is required to establish stable CDPS profiles. The prospective model additionally requires at least one month of enrollment in the following year.

- The dependent variable is the ratio of monthly health care expenditures to average expenditures by category of enrollment.

- Regressions are weighted by months of enrollment.

Methods Used to Update CDPS

- An initial run of the CDPS model showed that some hierarchies could be improved.

- Stage 1 groups were recreated for each of the affected major categories.
  - Stage 1 groups are groups of ICD codes, typically at the three-digit level.

- Regression analyses were conducted for each major category after replacing the respective CDPS categories with stage 1 groups.

- These regression results were reviewed to determine which stage 1 groups should be reordered to improve the hierarchy while maintaining clinical coherence.

- Six CDPS major categories were revised: Psychiatric, Pulmonary, Renal, Cancer, Infectious Disease, and Hematological.

Methods Used to Update Medicaid Rx

- An initial run of the MRX model showed that the model was relatively stable over time.

- Some MRX categories with very low or negative coefficients were dropped.
  - Others restricted to classes of medications appropriate for the most serious manifestations of disease in that category.

- Several MRX categories related to infectious disease were incorporated into a hierarchy.

- A new category was created for Rare Diseases.
  - This category includes medications that are used in patients with a prevalence of fewer than 20,000 in the United States and in which the drug cost is $150,000 or more for the average weight and dosing.

Results from Updating CDPS

- The revised CDPS models and regression weights incorporate a number of notable improvements over the earlier versions, but the new models result in very similar predictions to the earlier versions.

- Three models are provided for disabled, non-disabled children (<19), and adults (including expansion populations)
  - Specific weights for all acute, BH-carveout, RX-Carveout, pregnancy carveout
  - Each are available as concurrent and prospective weights

- For the CDPS model, the correlation coefficient between the prediction with the most recent 2000 model and the prediction with the 2020 model ranges from 0.98-0.99 by aid category for concurrent and prospective models.

- Correlation coefficients between the most recent and revised MRX models are lower 0.78-0.87, likely as a result of the continuous introduction of new drugs.
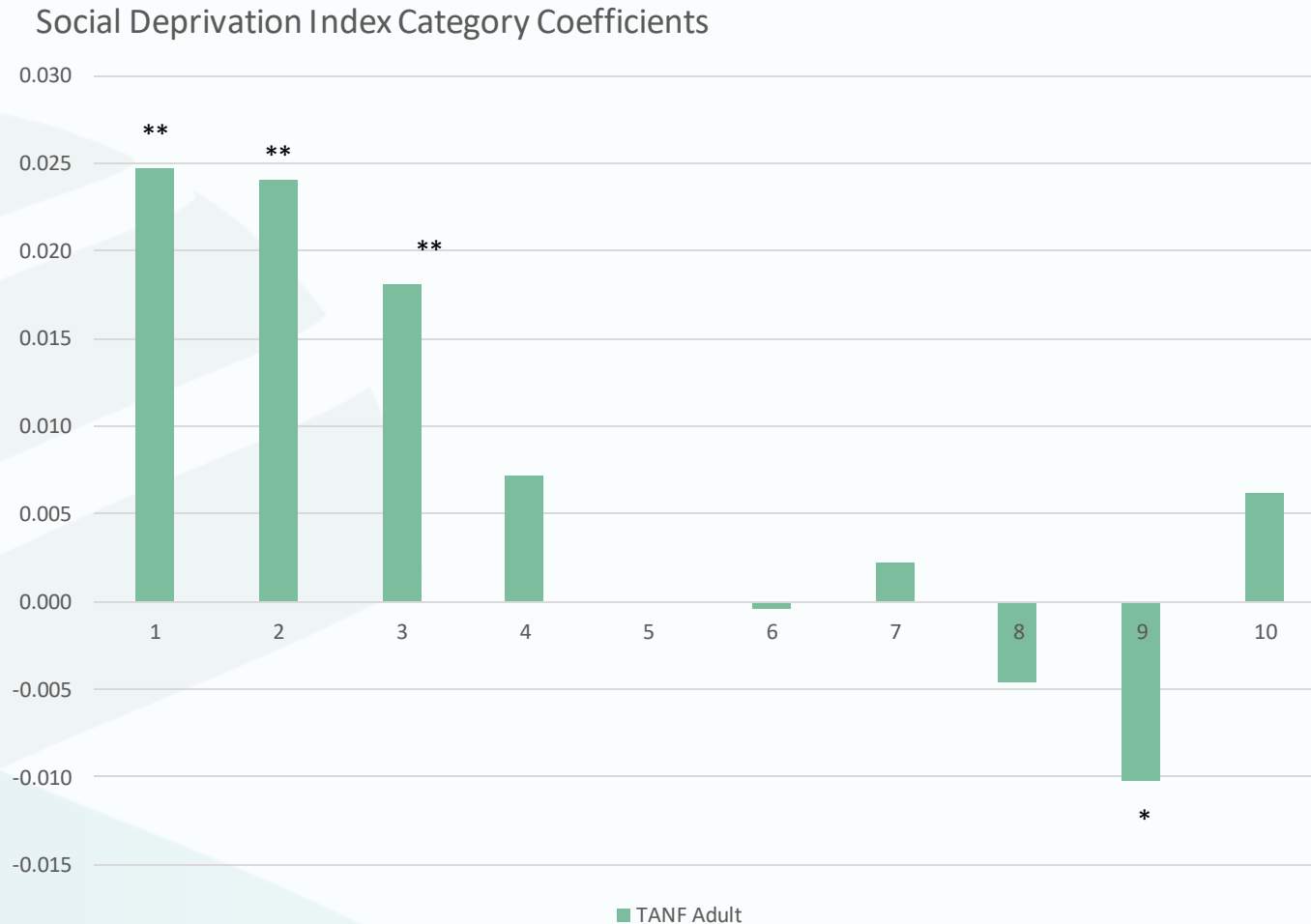
Social Deprivation Index

- Indicators based on the Social Deprivation Index (SDI) were used to examine whether spending on Medicaid beneficiaries living in economically and socially deprived communities is greater than spending on similar beneficiaries in less deprived communities

- The SDI is a composite measure of disparity that uses place-based data on education, employment, income, density, car and home ownership, and family structure to assign an index value to a geographic area.

- We used the five-digit zip code of residence to assign each beneficiary an SDI value and included these values as a set of 10 categorical indicators into the CDPS regression analysis.

- We considered using information on beneficiary race and ethnicity, and using Z-codes to identify unhoused beneficiaries, but concerns from our MCO partners, which we shared, about incomplete and inconsistent coding caused us to use area characteristics as a measure of disadvantage.

- This approach follows the recommendations of a committee report from the National Academy of Medicine.
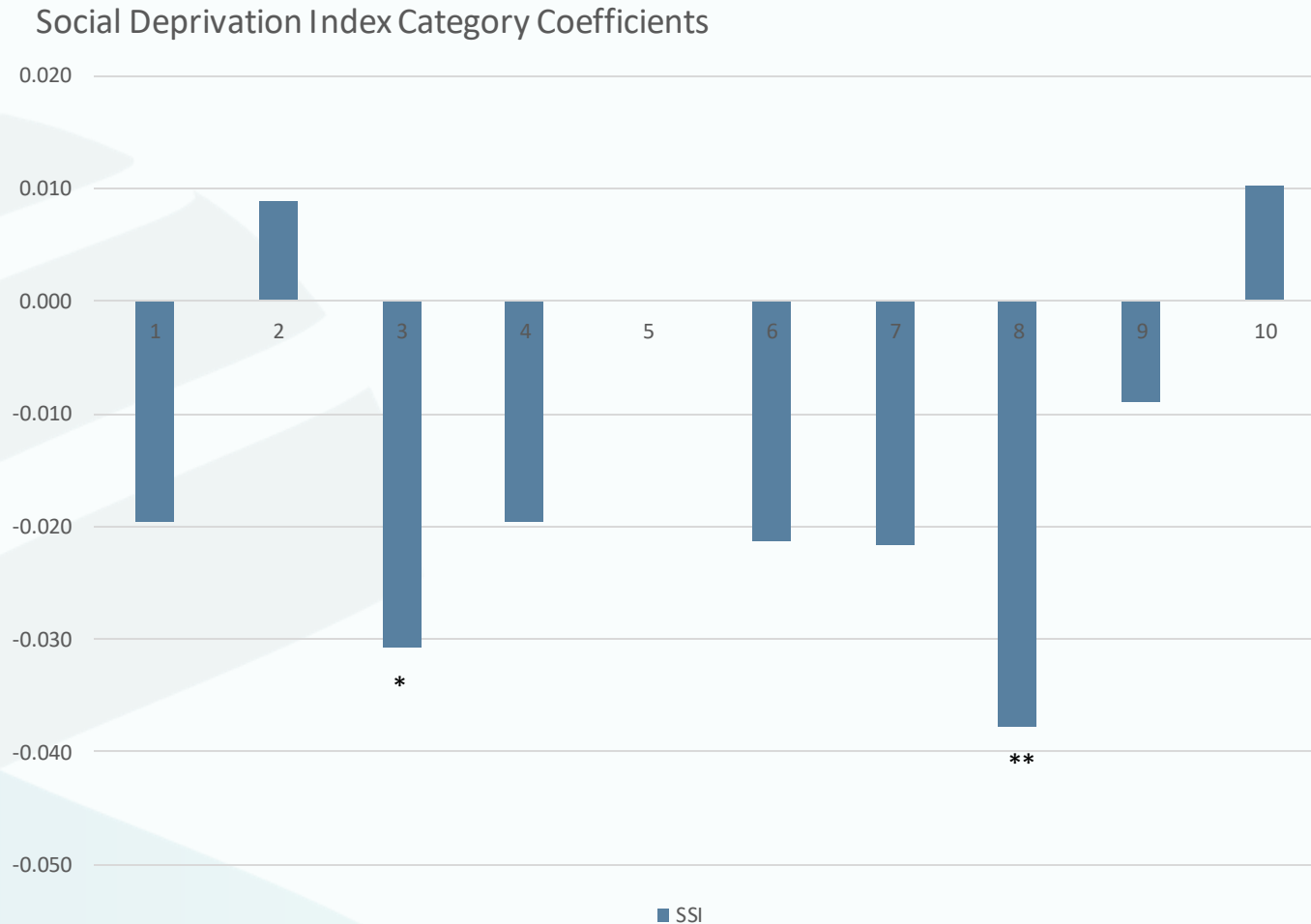
Results from Including SDI in CDPS - Children

Social Deprivation Index Category Coefficients

*P<.05
**P<.01
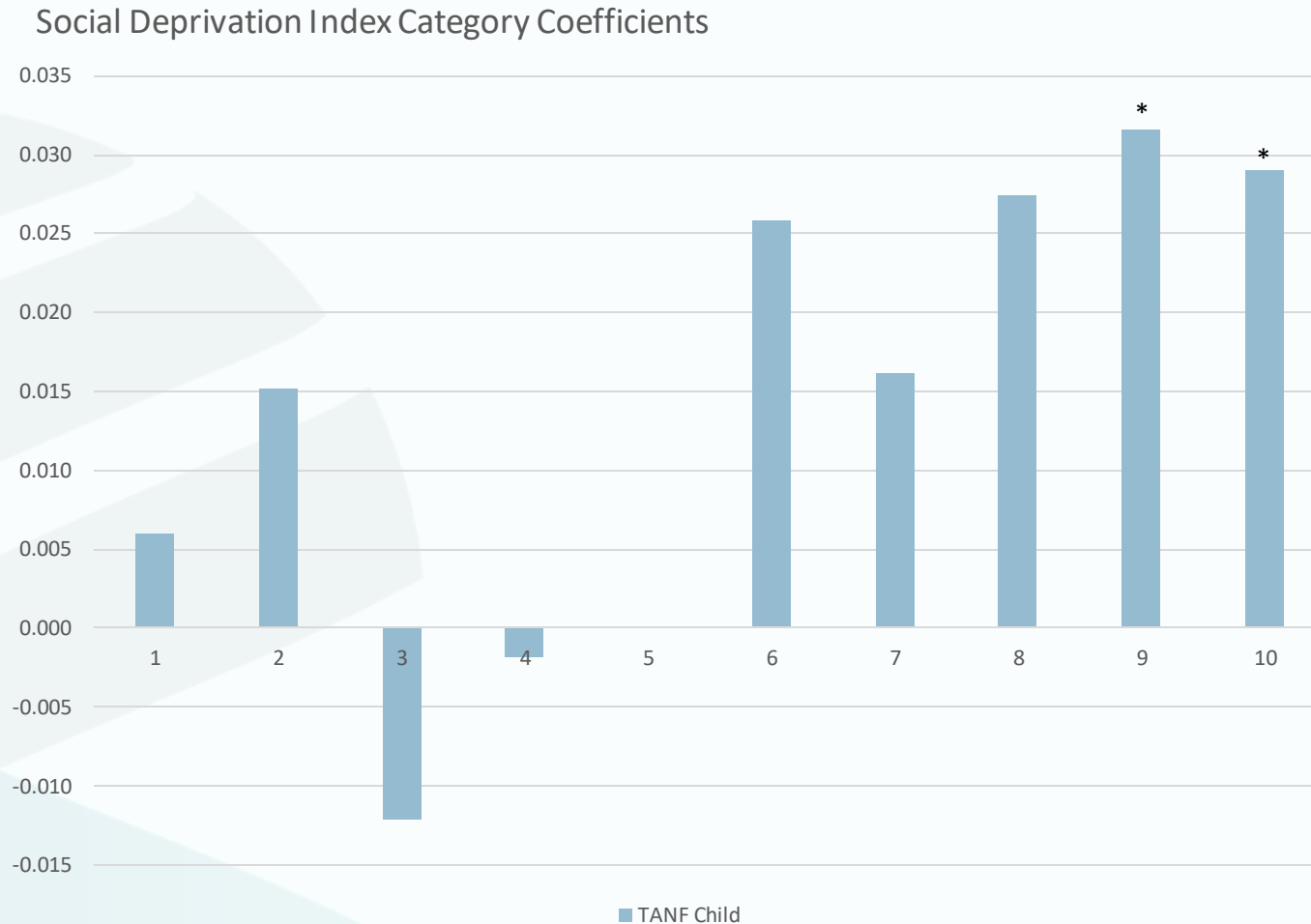
Results from Including SDI in CDPS - Adults

Social Deprivation Index Category Coefficients

*P<.05
**P<.01

Results from Including SDI in CDPS - Disabled

Social Deprivation Index Category Coefficients

*P<.05
**P<.01

Results from Including SDI in CDPS

Social Deprivation Index Category Coefficients

*P<.05
**P<.01
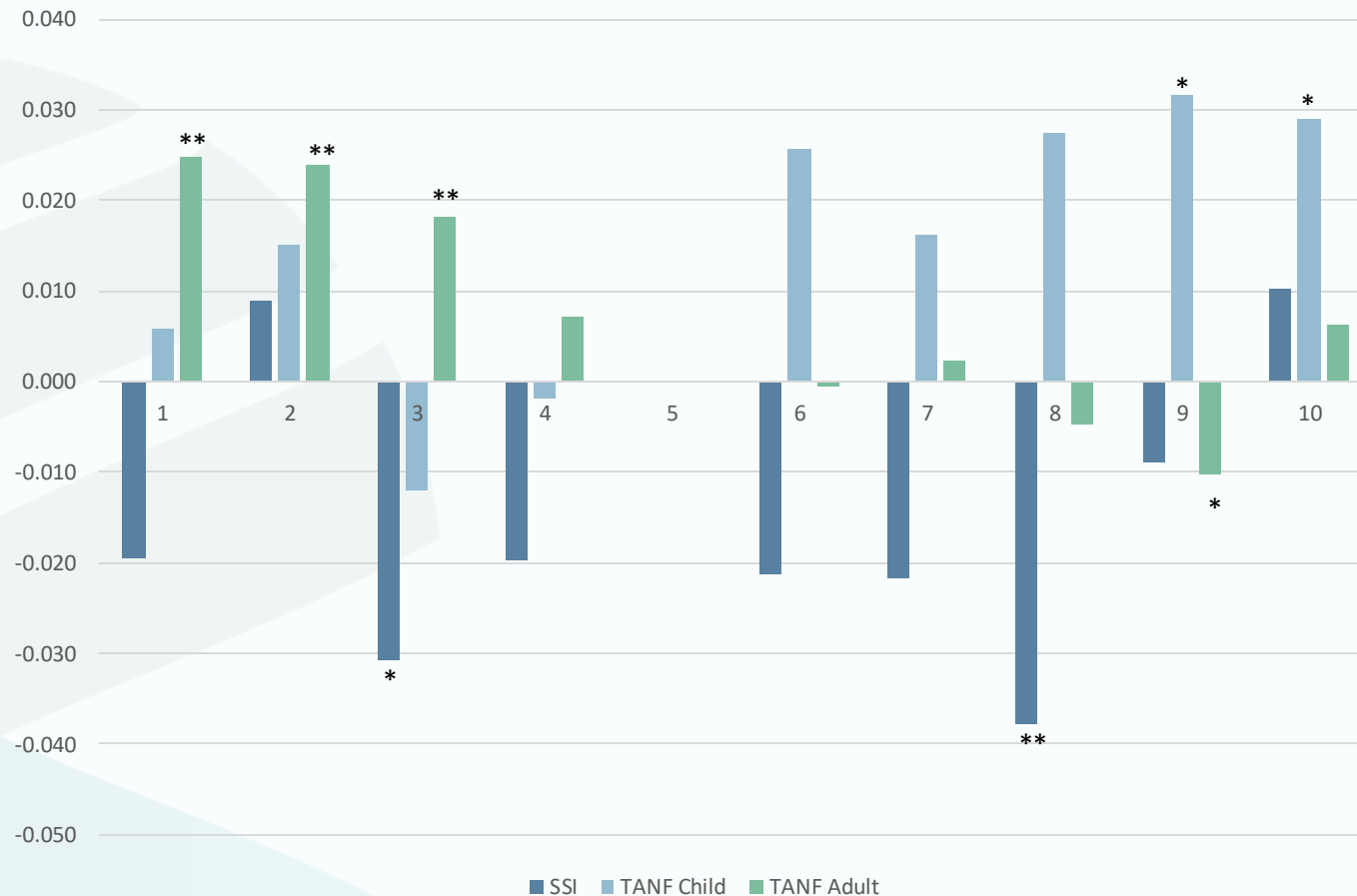
Results from Including SDI in CDPS

- Medicaid beneficiaries living in zip codes with high levels of deprivation as measured by the SDI did not have consistently higher spending than beneficiaries living in zip codes with lower levels of deprivation.

- The lack of systematic relationship between spending and area deprivation held across multiple model specifications: concurrent vs. prospective; with and without state indicators; and in CDPS, MRX, and CDPS+RX.

- Results were similar in regressions restricted to beneficiaries from a single state; in none of the states in our analytic sample were expenditures consistently higher for beneficiaries in more deprived zip codes.

- Further, even in regression models without CDPS indicators as explanatory variables (i.e., with demographic and state indicators only), there is little indication that spending is higher on beneficiaries living in more deprived zip codes.

- Zip codes are relatively large geographic units, often with substantial heterogeneity within zip codes. A more refined measure of area deprivation (e.g., at the zip + 4 level) might produce different results.

What are the Policy Implications for the Updated CDPS Risk Adjustment Model?

- As the Medicaid population grows and becomes more complex, risk adjustment is a vital tool to ensuring the sustainability of Medicaid managed care.

- The updates made to the CDPS risk adjustment model allow states to use the model with more confidence that it will equitably and efficiently allocate resources among competing managed care organizations.

- Place-based measures of disadvantage at the five-digit zip code level are not predictive of health care expenditures within a population of Medicaid beneficiaries.

Thank You!
Q & A Opportunity

Learn more about IMI

Download resources at www.MedicaidInnovation.org

Follow us on social media

Follow us on **Twitter at @Innov8Medicaid** and on **Facebook** and **LinkedIn**

Subscribe to our newsletter

Subscribe on our website at www.MedicaidInnovation.org/news/newsletters