Seniors and Persons with Disabilities Program Evaluation

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A. Executive Summary

Introduction

This is an evaluation of the 1115 Medicaid waiver for mandatory Medicaid managed care plan enrollment of beneficiaries with eligibility as Seniors and Persons with Disabilities (SPDs) in California. This evaluation covers the current years of the waiver (2016 to 2020) and extends to a description of the movement of individuals into managed care covering the prior five year period (2011 to 2015). During the initial Section 1115 "Bridge to Reform" waiver, the transition of the SPD population occurred in two waves with urban counties transitioning in 2011/2012 and rural counties following in 2013. Data collection and standardization were incorporated at the end of 2014 with the introduction of the Post Adjudicated Claims & Encounters System (PACES) system. Mandatory enrollment of SPDs in managed care was continued under the State's Section 1115 Medicaid Waiver renewal, "Medi-Cal 2020", which was authorized in December 2015 for the demonstration period January 2016 through December 2020.

Under the 2020 Special Terms and Conditions, the state of California is required to provide ongoing assessment of the impact of mandatory managed care on the SPD population compared to an established baseline prior to mandatory enrollment through quarterly, annual, and overall summary reports. This evaluation examines the impact of the transition on beneficiary experience and the impact of the State's administration of the program overall using measures describing three specific content areas: (1) access to care; (2) quality of care; and (3) costs of coverage (care).

Approach

The evaluation plan leverages existing patient-level and supplemental data collected by the state to assess care delivery (access, quality, and cost) for the SPD population in the period surrounding the transition and the maintenance of performance in the post-transition period. In addition to preexisting data, the evaluation team has surveyed managed care plan representatives to better understand challenges around the transition that might be reflected in the analysis. These results expand upon findings presented in the Interim Report (December 2019). Note, that although the descriptive trend analyses (including those that are regression-adjusted) provide some insight into implementation progress, beneficiary experiences, and changes in access and service use, they do not show whether changes in outcomes over time are statistically significant. Thus, these findings do not yield causal impact estimates of the demonstration. Further, the findings from this evaluation are limited by data comparability, uniformity, consistency, and quality, the absence of clinical data, the lack of a control group, and the inability to link self-reported beneficiary data on managed care experience to patient-level data.

Principal Results

Overall evaluation questions and hypotheses and associated findings are summarized below. Of note, The vast majority of SPDs across California were in managed care by 2016. By 2019, 93% of SPDs were in managed care. Sensitivity analyses undertaken to evaluate managed care data quality show improvements in completeness and accuracy, especially after data collection and standardization were incorporated at the end of 2014 with the introduction of the PACES system. However, lower than expected numbers of providers and certain types of care, suggests that further improvement is needed.

Summary of Research Questions/Hypotheses and Related Findings

RESEARCH QUESTION	HYPOTHESIS	FINDINGS	CHANGE
ACCESS TO CARE			
1. Do SPDs have access to primary and specialty providers and/or other service providers in the network after the transition to a managed care plan?	SPDs will be less likely to see high volume providers in the period directly after the transition; however, they will have timely access to care and access to physically accessible providers, supported by continuity of care, which allows SPDs to continue their course of treatment when they move into a managed care plan in the post-transition period.	- Surveys showed access was unchanged between 2013 and 2019. - Network adequacy as measured by travel distances and patient volume per provider improved. - Emergency Department and specialty care visits per patient steadily increased. - HEDIS measures assessing use of primary care and of ambulatory care visits have improved over the decade.	- Access was unchanged - ED and specialty care visits increased - Network adequacy and HEDIS measures improved
2. Do SPDs have awareness of the plan's services to assist with care coordination and member services?	SPDs will be more likely to better navigate the plan based on communication and materials provided by the plan.	- Plans confirmed outreach - Plan ratings (from CAHPS) improved slightly between 2013 to 2019	- Small improvement in plan rating. No direct measure of patient knowledge of plan outreach services
QUALITY OF CARE			
3. Do SPDs receive appropriate care for routine ambulatory medical conditions (diabetes, hypertension, hyperlipidemia, thyroid disease) as measured by expert consensus processes of care?	SPDs are more likely to receive appropriate care for routine medical conditions after the transition.	- There were general improvements in the use of preventive services. - Self-reported receipt of the annual flu was 69%.	- Use of preventive services improved
4. Do SPDs have improved rates of preventable hospitalizations / ambulatory care sensitive conditions after the transition?	Risk-adjusted rates of preventable hospitalizations will decrease after the SPD transition	- Preventable hospitalizations were a relatively fixed during the evaluation period.	- No change
5. Do SPDs have lower readmission rates after the transition?	Rates of readmission after acute hospitalization will decrease after the SPD transition.	- 30-day readmission rates after an acute hospitalization were stable across the evaluation period.	- No change
6. Do SPDs have lower all-cause and cause-specific mortality rates after the transition?	Risk-adjusted all-cause and cause-specific mortality will be lower after the SPD transition.	- Risk-adjusted all-cause and cause-specific mortality rates were stable across the evaluation period.	- No change
7. Do SPDs have better compliance rates with medication adherence after the transition?	SPDs are more likely to have higher compliance rates with medication adherence after the transition.	- There were general improvements in medication compliance and avoidance of harmful prescriptions.	- Improvements in medication compliance observed
COSTS OF CARE			
8. After accounting for inflation, do overall costs of care to Medi-Cal (as measured by paid claims versus negotiated capitation rates for covered care) decrease after the transition?	Inflation-adjusted overall costs of care will be lower after the SPD transition.	- Unadjusted monthly costs (excluding nursing home care) increased over the decade. Costs accounting for inflation were lower in 2019 than in 2009.	- Measured monthly costs decreased accounting for inflation

Conclusions

The evaluation team can conclude that:

1. Medi-Cal has successfully moved most non-dual SPDs into managed care across California.

2. Even in difficult to reach rural areas, Medi-Cal has implemented two different models of managed care delivery.

3. Overall mortality appears to be stable in the population. Mortality rates did increase in the managed care population reflecting adverse selection for fee-for-service (FFS) beneficiaries, with healthier patients opting for optional managed care enrollment prior to the transition period.

4. Quality of care as measured by process and risk-adjusted outcomes have improved, while inflation-adjusted costs per beneficiary have remained constant.

5. Data quality and consistency appear to have substantially improved since the introduction of PACES. This makes evaluation since the waiver extension more robust. Even if the evaluation cannot reliably measure earlier years, these data can be used to robustly assess plans managing care during the "Medi-Cal 2020" 1115 Waiver period.

Recommendations

The expansion of managed care to special populations with multiple complex conditions, such as the SPD population, is feasible, but requires additional monitoring, data standards, and arrangements to ensure adequate access and provision of services. Although states now have significant experience with using Medicaid managed care plan arrangements, the particular vulnerabilities of the SPD population require greater oversight and transparency. The following recommendations are aimed at ensuring continuous high quality oversight and data quality for monitoring and for ensuring that plans do not avoid necessary, but high cost care.

(1) Put a fully formed reporting system and data standards into place before implementation

(2) Expand ability to assess patient experience, including increasing the size of the CAHPS survey so that it is adequately powered to assess experience outside of the largest urban areas.

(3) Conduct baseline assessment of patient health and health history to improve longitudinal care

(4) Routinely link in gold standard information for audits and enriching available measures

(5) Improve network adequacy standards and monitoring

(6) Expand measures beyond typical core primary care measures to include specialty measures that may be significantly impacted in a vulnerable population

(7) Expand qualified data for monitoring quality to include lab and imaging results with the possibility of expanding to other clinical data

(8) Routinely collect patient preferences on intensity of care

(9) Build in adequate lead in time for contingency planning

(10) Ensure that public quality reporting focuses on populations of interest, including stratification / standardization to ensure interpretability

(11) Consider carve-out benefits from managed care for special populations – i.e. long term care, substance abuse, mental health, and other at-risk populations (HIV/AIDS, hepatitis C, and certain cancer treatments) to ensure plan participation and patient access to certain high-cost but necessary life-sustaining treatments.

These suggestions should not be considered all inclusive, but reflect the experience of efforts and improvement within California DHCS and other state health agencies.

B. General Background Information

In November 2010, the Centers for Medicare and Medicaid Services (CMS) approved California's five-year section 1115 "Bridge to Reform" waiver, through which the state received authority and federal funds to invest in its health delivery system to prepare for national health care reform that took effect in January 2014. One of the four primary initiatives from the waiver was to improve care coordination for vulnerable populations and implement programs that promote healthcare access and quality, while driving down costs. Under this authority, California transitioned its Seniors and Persons with Disabilities (SPD) population from the Medi-Cal fee-for-service (FFS) delivery system into the managed care delivery system. The goals of DHCS for the transition of SPDs to an organized system of care were to: (1) broaden access, increase care coordination, (2) ensure that beneficiaries receive appropriate and medically necessary care in the most suitable setting, (3) achieve better health outcomes for beneficiaries, and (4) realize cost efficiencies.

Some evidence suggests that managed care may improve care coordination and access, and is associated with reductions in hospitalizations for ambulatory sensitive conditions compared with FFS. However, numerous challenges are associated with the SPD population, who have high levels of healthcare utilization, disability, and multiple chronic conditions, and are thus vulnerable to care disruptions. Managed care allows DHCS to provide beneficiaries with supports necessary to enable SPDs to live in their community instead of in institutional care settings, reduces costly and avoidable emergency department visits, as well as prevents duplication of services. DHCS anticipated savings of approximately $2.1 billion over five years from the SPD transition. [1]

Medicaid eligible SPDs are aged, blind, and/or disabled and have incomes below the federal poverty level. Beneficiaries enrolled in both Medicare and Medi-Cal (i.e. dual eligibles) were exempt from this mandate, as were foster children, individuals in long-term care, and those required to pay a monthly share of cost. Currently, SPDs comprise 15% (roughly two million) of total Medi-Cal enrollment, but half of total Medi-Cal expenditures. Seniors and persons with disabilities account for the highest spending per beneficiary at $14,134 and $20,669, respectively. [2-3] The majority of SPDs are enrolled in Medicare as well. SPDs transition from Medi-Cal as the primary payer to Medicare when they become Medicare-eligible.

California has a unique county-by-county model for managed care implementation. At the time of the initial transition, counties were assigned to four basic models for managed care implementation:
1. County Organized Health Systems (COHS) – mandatory enrollment of all Medi-Cal enrollees into county-operated health plans.
2. Two Plan Model (TPM) – two healthcare plans with one commercial plan and one plan with local governance. SPD enrollees had voluntary enrollment into plans.

3. Geographic Managed Care (GMC) – Multiple commercial healthcare plans in each of two counties. SPD enrollees had voluntary enrollment into plans.
4. Fee-for-service (FFS) – rural counties with no managed care plans.

TPM and GMC counties have over three quarters of all Medi-Cal beneficiaries.

In the months leading up to the transition, DHCS reached out to beneficiaries to inform them of the forthcoming transition. SPDs and their caregivers in the 16 TPM and GMC counties were invited to attend DHCS-sponsored in-person presentations and/or informational webinars held in March and April 2011 to educate beneficiaries about the transition and facilitate enrollment into a managed care plan. SPDs received an informational packet on the transition 90 days prior to the transition and an enrollment packet 60 days in advance. Starting June 2011, the 16 counties began a 12-month period in which approximately 380,000 SPDs falling under specific aid codes were transitioned from FFS into managed care plans in the TPM and GMC counties according to their birth month. Approximately 141,000 of these SPDs voluntarily enrolled in managed care prior to the transition, and about 240,000 SPDs were mandatorily enrolled into managed care between June 2011 and May 2012. [1] Before transitioning SPDs to managed care, DHCS ensured that the managed care plans in a geographic area met certain readiness and network adequacy requirements and required plans to ensure sufficient access, quality of care, and care coordination for beneficiaries.

The rural transition was authorized in 2012 and in late 2013, Medicaid managed care was expanded to 28 rural counties in California to better serve residents, including SPDs. The goals of the rural expansion were to deliver: (1) quality care while managing costs, (2) care that is medically necessary and appropriate, and (3) care by the most appropriate provider in the least restrictive setting. For the rural expansion, the state offered two commercial plan options to serve as the Regional Model. Four health plans were selected to serve Medi-Cal beneficiaries in the 28 rural expansion counties. Nineteen counties have adopted the Regional Model, eight are served by a COHS, and in one county beneficiaries have the option of a private health plan or FFS Medi-Cal.[4]

With these changes, the current county-by-county implementation of managed care in California consists of six models (**Figure 1)**:

1. County Organized Health Systems (COHS) – mandatory enrollment of all Medicaid enrollees into county-operated health plans. Expansion of COHS to include rural counties in Northern California.
2. Two Plan Model (TPM) – two non-profit commercial healthcare plans. SPD enrollees had voluntary enrollment into plans.
3. Geographic Managed Care (GMC) – multiple commercial healthcare plans in each of two counties. SPD enrollees had voluntary enrollment into plans.
4. Regional Model – two commercial plan serving 18 rural counties.
5. San Benito—one commercial plan serving one county.
6. Imperial— two commercial plans serving one county.

Figure 1.

Managed Care Models, by County, December 2018

- **County Organized Health Systems (COHS)**
  2.1 million beneficiaries served by six health plans in 22 counties.
- **Geographic Managed Care (GMC)**
  Eight commercial plans serve 1.1 million beneficiaries in 2 counties.
- **Two-Plan***
  6.8 million beneficiaries in 14 counties
- **Regional**
  Two commercial plans serve about 294,000 beneficiaries in 18 counties.
- **San Benito**
  One commercial plan serves about 8,000 beneficiaries.
- **Imperial**
  Two commercial plans serve about 76,000 beneficiaries.

*Nine local initiatives (county-organized) serve 5.2 million beneficiaries, and three commercial plans serve 1.6 million beneficiaries. While Tulare is a two-plan model county, there is no local initiative and instead, beneficiaries choose between two commercial plans.
Sources: Medi-Cal Managed Care Program Fact Sheet – Managed Care Models, California Dept. of Health Care Services (DHCS), n.d., www.dhcs.ca.gov (PDF); and Medi-Cal Managed Care Enrollment Report – December 2018, DHCS, January 2, 2019, www.dhcs.ca.gov (PDF).

CALIFORNIA HEALTH CARE FOUNDATION

With the expansion of managed care in Medi-Cal, new regulations were adopted to improve the completeness and quality of data submitted to the state. A new uniform data collection system – the Post Adjudicated Claims & Encounters System (PACES) was instituted in October 2014. From the DHCS website: (https://www.dhcs.ca.gov/formsandpubs/laws/hipaa/Pages/1.16-PACES.aspx):

> PACES plays a vital role in the collection of encounter and provider network data from Medi-Cal's numerous managed care plans. PACES accepts encounter transactions from both medical and dental managed care plans and accepts encounter-related pharmacy transactions. The information PACES gathers is stored in the DHCS data warehouse (MIS/DSS), where it can be used by many downstream applications within the State.

> PACES extracts, transforms, and reformats encounter data that has been submitted in ASC X12 837 and NCPDP formats. The system currently supports the ASC X12 837I, 837P, and 837D claim/encounter transactions as well as the NCPDP 2.2 & 4.2 pharmacy transactions.

> PACES replaces the long-standing DHCS Paid Claims and Encounters (PCES) system. The new system is designed to ensure that all available claim and encounter data is retained and available for downstream analysis. The PACES system stores and distributes a richer, more complete data set than was possible using PCES. The goal of PACES is to enforce DHCS's data quality requirements while also abiding by federal HIPAA transaction standards.

Other relevant programmatic changes that have occurred during this period include the California Coordinated Care Initiative (CCI), which wrapped coordination of Long Term Services and Supports (LTSS) into managed care for dually enrolled SPDs beginning in April 2014 in

seven counties: Los Angeles, Orange, Riverside, San Diego, San Bernardino, San Mateo, and Santa Clara.

In December 2015, the "Bridge to Reform" 1115 Medical Waiver was extended to 2020 (demonstration period January 2016 through December 2020).

As stated in the waiver:

> To ensure the successful implementation of the Section 1115 Medicaid Waiver, the Special Terms and Conditions (STCs) require:
>
> 1. Information and communication strategies addressing the unique needs of SPDs are used
>
> 2. Approaches to assignment and opportunities for changes in managed care plans (MCPs)
>
> 3. Participant rights, safeguards and contractual provisions regarding care coordination and linkages to other service delivery systems
>
> 4. Person-centered approaches to service planning and delivery, and physical and geographic accessibility of service providers.

In order to evaluate the success of the Bridge to Reform, the 2020 STCs require the State to provide:

> (1) Ongoing assessment of the impact of mandatory managed care on the SPD population compared to an established baseline prior to mandatory enrollment through quarterly, annual, and overall summary reports. (**Appendix A**)
>
> (2) Evaluation of the impact of the initiative on beneficiary experience and the impact of the State's administration of the program overall using measures describing three specific content areas: access to care; quality of care; and costs of coverage (care).
>
> (3) Focused evaluation on specific health care needs of SPDs and their specific care needs due to diagnosis and the existence of, at times, multiple complex conditions.

In early 2018, DHCS conducted a competitive bidding process for a qualified external evaluator to conduct a comprehensive statewide evaluation of the mandatory transition of SPDs to Medicaid managed care plans. DHCS selected David Zingmond, MD, PhD, an internist and health services researcher, and his team in the Division of General Internal Medicine at the David Geffen School of Medicine at UCLA. DHCS entered into a contract with UCLA in October 2018 to conduct the evaluation of the transition and the impact of the initiative on member experience and the impact of DHCS' administration of the program. The evaluation addresses the impact of the initiative on the beneficiary experience and the impact of the program overall, with a focus on three specific content areas: access to care, quality of care, and cost of care.

The final evaluation plan leveraged existing patient-level and supplemental data collected primarily by the state and federal government to assess care delivery (access, quality, and cost) for the SPD population in the period surrounding the transition and the maintenance of performance in the post-transition period. In addition to utilizing preexisting data, the evaluation team surveyed and interviewed managed care plan representatives to better understand challenges surrounding care and data quality during the transition and afterwards.

C. Evaluation Questions and Hypotheses

Demonstration Goals

Per the "Bridge to Reform" 1115 Waiver:

> The waiver's goals include:
>
> 1. Improving access and coordination of the most appropriate, cost effective care for SPDs in order to improve health outcomes and contain costs;
> 2. Providing SPDs with a choice of organized systems of care through which to receive these services;
> 3. Supporting and strengthening the local safety net and its integration into organized systems of care through payment reform and outpatient managed care models; and
> 4. Aligning financial incentives to support providers in delivering the most appropriate care and containing costs.

Targets for Improvement

In order to translate these goals into quantifiable targets for improvement, the state worked within the existing managed care plan structure with additional elements included to ensure programmatic success. The main overarching mechanism was mandatory managed care enrollment for SPDs (operationalized by a tiered approach with mandatory enrollment into existing managed care plans for urban beneficiaries followed by enrollment into new managed care options in rural counties) with reliance upon existing state managed care requirements supplemented by additional elements to ensure quality of care for the SPD population. As stated in the original 1115 Waiver:

> Participating managed health care plans and County Alternative organizations must comply with standards related to key elements as set forth in ABx4 6. Compliance with all existing regulations under Knox-Keene contracting provisions will be required for existing managed care plans. County Alternative Options, depending on their structure, may be required to obtain and maintain Knox-Keene licensure as well. To the extent applicable, all models will require compliance with all DHCS Medi-Cal contracting provisions. Additionally, both models must fully address the following key elements that will provide additional consumer protections for their enrollees beyond the array of consumer protections currently applicable to Medi-Cal managed care plans. These elements will apply to both existing managed care plans and alternative options.

Additionally, the "Bridge to Reform" 1115 waiver identified a number of supplemental modifications to address access, transition, care management, and alternative delivery systems for public health systems. These included:

(1) Access

- *Network Adequacy* – defining network adequacy and feeding back to health plans. More specific definitions were defined in 2017 (referenced in the previous section).

- *Access to Information* – requirements for information accessibility for disabled individuals.

- *Physical Accessibility* –enhanced facility site review (FSR) tool (survey) for larger contracted healthcare facilities.

(2) Transition from FFS to Managed Care

- *Outreach and Education* – mailed education materials prior to the transition.

- *Phased-In Transition*

- *Access to Existing Providers* – limited accessibility to minimize care disruption plus opt-out for ill patients.

- *Assignment* – plan assignment to optimize continuity with previously seen providers.

(3) Care Management and Coordination

- *Enhanced Definitions of Care Management and Coordination*

- *Early Identification of a Member's Health Care Needs* **–** sharing of FFS utilization data at the time of enrollment

- *Care Management Assessment* **–** use of mandated care assessment and utilization data to identify high-risk patients.

- *Cultural Competency Training* **–** statewide education initiative from DHCS.

- *Behavioral Health Coordination*

- *Coordination of Other Services* **–** All delivery models will be required to provide specific protocols and strategies to demonstrate that care provided by the plan is coordinated with other services that a beneficiary receives from other delivery systems.

(4) Performance Monitoring and Improvement

- *Expand Required Performance Measures*

- *Augmented Audit Effort*

- *New HEDIS measures*

- *SPD Representation*

- *Enhanced Member Satisfaction Survey* – DHCS will enhance the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey

- *Quality Improvement Projects*

- *Complaint and Grievance Procedures*

(5) Development of County Alternative Option

(6) Outpatient Managed Care Model—Transitioning the Public Hospital System to Managed Care

In order to assess the impact of the "Bridge to Reform" 1115 Waiver, language was included in the current, "California 2020" 1115 Waiver:

SPD Managed Care: State shall include an assessment, using pre-mandatory enrollment as a baseline, of the impact on mandatory managed care on the SPD

population, including all significant and notable findings based on all of the data accumulated through the quarterly progress report.

     a. Access to care
     b. Quality of care
     c. Cost of coverage

Evaluation Questions, Hypotheses, and Alignment with Goals and Targets of the Waiver

In order to relate the stated goals of the original waiver, the implied benefits of managed care assignment (through existing networks), and the supplemental changes initiated to ensure success, the current evaluation follows the structure of the "California 2020" waiver proscription and focuses on the measurable impact of these changes on enrollee care – access, quality, and cost – using the most expansive data available. This patient-centered approach makes the most sense as it focuses primarily on measurable agreed upon patient-level metrics of care and outcomes across the entire enrollee population longitudinally across the two waiver periods. As described above, the original "Bridge to Reform" waiver described goals and quantifiable targets for improvement so that the performance in achieving these targets could be measured. These goals and targets from the original waiver were related to the evaluation domains described in the current waiver ("California 2020") and how these relate to the questions and hypotheses below.

Access to Care

1. **Question:** Do SPDs have access to primary and specialty providers and/or other service providers in the network after the transition to a managed care plan (MCP)?

   Hypothesis: SPDs will be less likely to see high volume providers in the period directly after the transition; however, they will have timely access to care and access to physically accessible providers, supported by continuity of care, which allows SPDs to continue their course of treatment when they move into an MCP in the post-transition period.

   Relation to Waiver Goals and Programmatic Changes: *Improve access and coordination of care --- measure of access to specialty care and operational definitions of network adequacy, consistent with recent DHCS final rule.*

2. **Question:** Do SPDs have awareness of the plan's services to assist with care coordination and member services?

   Hypothesis: SPDs will be more likely to better navigate the plan based on communication and materials provided by the plan.

   Relation to Waiver Goals and Programmatic Changes: *Improve access and coordination of care --- indirect measure of ease of communication and making appointments using cross-sectional CAHPS data across time periods.*

Quality of Care

1. **Question:** Do SPDs receive appropriate care for routine ambulatory medical conditions (diabetes, hypertension, hyperlipidemia, thyroid disease) as measured by expert consensus processes of care?

Hypothesis: SPDs are more likely to receive appropriate care for routine medical conditions after the transition.

Relation to Waiver Goals and Programmatic Changes: *Improvement of cost effective appropriate care assessed with expert consensus quality measures.*

2. **Question:** Do SPDs have improved rates of preventable hospitalizations / ambulatory care sensitive conditions after the transition?

   Hypothesis: Risk-adjusted rates of preventable hospitalizations will decrease after the SPD transition.

   Relation to Waiver Goals and Programmatic Changes: *Improvement of cost effective appropriate care assessed with expert consensus quality measures.*

3. **Question:** Do SPDs have lower readmission rates after the transition?

   Hypothesis: Rates of readmission after acute hospitalization will decrease after the SPD transition.

   Relation to Waiver Goals and Programmatic Changes: *Improvement of cost effective appropriate care assessed with expert consensus quality measures.*

4. **Question:** Do SPDs have lower all-cause and cause-specific mortality rates after the transition?

   Hypothesis: Risk-adjusted all-cause and cause-specific mortality will be lower after the SPD transition.

   Relation to Waiver Goals and Programmatic Changes: *Improvement of cost effective appropriate care assessed with expert consensus quality measures.*

5. **Question:** Do SPDs have better compliance rates with medication adherence after the transition?

   Hypothesis: SPDs are more likely to have higher compliance rates with medication adherence after the transition.

   Relation to Waiver Goals and Programmatic Changes: *Improvement of cost effective appropriate care assessed with expert consensus quality measures.*

Costs of Care

1. **Question:** After accounting for inflation, do overall costs of care to Medi-Cal (as measured by paid claims versus negotiated capitation rates for covered care) decrease after the transition?

   Hypothesis: Inflation-adjusted overall costs of care will be lower after the SPD transition.

   Relation to Waiver Goals and Programmatic Changes: *Improvement of cost effective appropriate care assessed with expert consensus quality measures.*

Relationship of Hypotheses to Underlying Mechanisms

Under the Medicaid FFS model, the state pays providers directly for each covered service received by a beneficiary. Under managed care, the state pays a fee to a managed care plan for each person enrolled in the plan. Managed care plans are incentivized to implement initiatives to improve healthcare access and quality of care in order to drive down costs. This is especially true in a high resource using population, such as SPDs.

In the driver diagram (**Figure 2**), underlying mechanisms associated with key aspects of the managed care adoption are shown on the right most column of drivers, such as "Assignment of Patients to PCPs", which feeds into the center

Figure 2: Driver Diagram of Managed Care Impact

(intermediate) column of drivers, such as "Reliable Access to Physicians", which feeds into the final global outcome, "Improved Access to Care". Taken as a whole, these relationships directed the team's research design, questions, hypotheses, and interpretation of results.
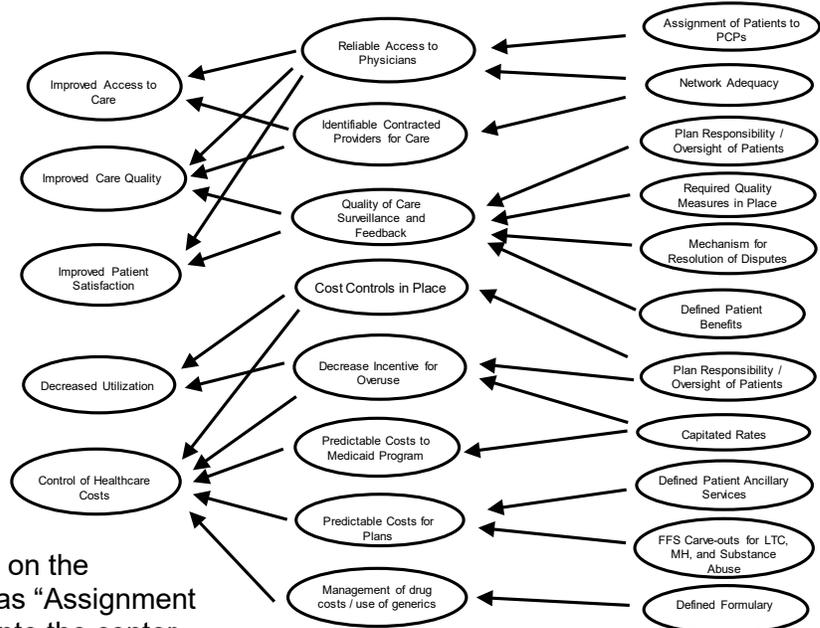
Evaluation Relevance to Title XIX and Title XXI

In particular, the evaluation goals address the objectives of Title XIX, which mandates the Medicaid program and defines the benefits for the program. The evaluation questions align with the provision and maintenance of services that are mandated by the program. The evaluation specifically explores a full range of provider services and care delivery, including medical, surgical, psychiatric, neurologic, and gynecologic care using accepted measures from the HEDIS evaluation set supplemented by cancer care outcomes. Obstetrical and newborn care is uncommon in the SPD population and was not a major focus of the evaluation.

Furthermore, the Waiver has specific language regarding budget neutrality (accounting for permissible annual increases) for allowed services under Title XIX. Evaluation of costs are a major part of the evaluation. Budget neutrality was explored through a comprehensive tabulation of capitated and non-capitated costs across the SPD population during the evaluation time frame. Both nominal dollar costs for SPD enrollees and costs adjusted to 2009 dollars were examined.

The SPD population is not covered by Title XXI.

D. Methodology

Overview

The evaluation employs comprehensive routinely collected state data sources to assess care access, quality, utilization, and costs before and after the transition of SPDs from FFS to managed care in 2011-2012 to 2019, the most recent year with complete Medicaid data. The

evaluation centers on Medicaid enrollment, Medicaid FFS claims, and managed care submitted encounter data, supplemented by data from multiple state data silos. Prospective data included all-payer hospitalization and emergency department discharge data, Minimum Data Set for Long Term Care (nursing homes), In-Home Supportive Services Data, and the state Cancer Registry. Taken together, these data are granular in nature, available across multiple years, and have sufficient numbers of observations to answer relevant questions with sufficient statistical power. Certain events are measurable consistently with a single non-Medicaid data source across the entire evaluation period (e.g. hospitalization), allowing the team to validate and improve measures constructed longitudinally from a mixture of FFS and managed care data from different healthcare plans across the evaluation period. Measure development is focused primarily on the inclusion of measures explicitly proposed in the evaluation protocol and was supplemented by existing expert consensus quality measures that can be implemented using routinely collected data. Supplemental qualitative information has been solicited from each plan to provide additional depth to interpretation of results and for the evaluation to be better informed regarding known data issues and plan-specific challenges.

Study Population
The overall study population consists of SPD-eligible, non-dually enrolled Medicaid beneficiaries.

Target Population
The target population is Medicaid managed care enrollees living in non-COHS counties between 2009 and 2019. This period covers the two years prior to when mandatory managed care enrollment was expanded (2011 to 2014) to non-COHS counties through the most complete year of Medicaid data available prior to the COVID Pandemic (2019).

Comparison Groups
The three potential comparison groups were: (1) Medicaid FFS enrollees in non-COHS counties before mandatory managed care was imposed; (2) Medicaid FFS enrollees in non-COHS counties after mandatory managed care was imposed; and (3) Medicaid managed care enrollees in COHS counties, where no changes were imposed due to existing managed care enrollment in county health plans. Other comparison groups within Medicaid are unsuitable as there are issues with comparability to the SPD population or because Medicaid is not the primary payer of services (duals). During the course of the investigation, it became clear that the number of overlapping changes across the entire Medicaid population made these originally conceived comparison groups untenable. Therefore, the evaluators were forced to rely upon an uncontrolled observational design for the target population – patients with SPD enrollment – with outcomes by geographic area and by plan.

Identification of the overall baseline populations for comparison was drawn from the Medi-Cal enrollment files for the two years before the transition and the subsequent period after the transition, and from the 16 urban counties and 28 rural counties where the transition occurred as well as from the counties where the transition did not occur (counties with existing stable mandatory managed care through the COHS model).

Subset analyses for quality measures for the final report were performed on targeted populations of interest (e.g. hospitalized patients), at-risk patients with conditions of interest (e.g. patients with significant mental health disease), or so-called complex patients (e.g. those with multiple complicated illnesses, such as complicated diabetes, rheumatologic illnesses, cancer, and end-organ failure) using consensus quality measures targeted at specific conditions. Prior research suggests that it can take up to two years for beneficiaries to adjust to a change in delivery system. [5] Therefore, the final evaluation assessed the experience of SPDs in FFS at least 24 months prior to the transition and throughout the post transition period.

Assessment of care delivery after the transition period focuses on all elements of care with greater concentration on cross-county and plan comparisons.

Evaluation Measures and Targets

The goal of the evaluation is to use the most granular data whenever possible to assess care access, quality, utilization, and cost for the SPD population before and after implementation of mandatory managed care enrollment across California by county and by plan. Within the approved protocol, the evaluation team identified 63 measures covering access, quality, utilization, and cost proposed for the report (**Supplementary Table S.1**). Derived measures cover structural measures (e.g. travel distance, derived supply of physicians seeing patients), process of care measures (e.g. recommended care based upon expert recommendations on clinical practice), and outcomes of care measures (e.g. risk-adjusted mortality, all-cause and preventable hospitalizations, and readmission).

Utilization measures were created from the Medicaid claims and encounters as well. The evaluation team implemented the CDPS+Rx model (developed at UC San Diego) to assist in creating comparable metrics for overall resource utilization across the full time period being studied. However, these risk groups were used sparingly for risk adjustment for clinical modeling due to concerns regarding selection bias and their development as risk adjustment for Medicaid FFS costs and not for clinical outcomes or risk adjustment for managed care expenditures, which are capitated but with much smaller supplemental FFS costs for carve-out benefits and patients not in managed care. DHCS provided monthly capitation rates by plan by year allowing for calculation of average managed care costs to Medi-Cal by year (**Appendix B**).

Post-transition, supplemental data are used to assess: (1) beneficiary satisfaction through Ombudsman (**Appendix C**), call center, grievances and appeals, and beneficiary surveys; (2) MCP administrative functions via beneficiary surveys; and (3) plan-level measures of care using HEDIS data. These measures are provided by DHCS, but DHCS does not independently create these particular measures. These measures are available only for the post-transition period.

Measure targets are available. For example, mean standards for performance are available for HEDIS and for the AHRQ hospital quality measures. However, the SPD population generally has had lower performance and in order to make realistic comparisons across multiple measures, the evaluation team assessed performance within the SPD population as compared to the baseline year (2009) as well as assessment of trend. A major challenge encountered in this evaluation is both the lack of an adequate comparison group by region within the state and the difference between the SPD population and the general Medicaid population. This approach has stayed firmly within the bounds of the available data and the number of statistical comparisons have been limited to avoid problems with multiple comparisons.

Existing Expert Consensus Quality Measures for Use with Administrative Data

The original explicit set of measures detailed in the approved protocol lack granularity for exploring care within disease-specific vulnerable populations in the SPD population. These populations are more challenging to care for and including more targeted expert consensus measures is useful and appropriate. The investigating team explored existing measure sets in the public domain from DHCS, NCQA (HEDIS), CMS, AHRQ, and NQF:

- **DHCS External Assessment Set (EAS) Measures** – a limited set of 22 HEDIS process of care quality measures
- **CMS Adult Core Measures for Medicaid** – consensus set of measures for adult enrollees that include HEDIS measures and outcome measures

- **CMS Child Core Measures for Medicaid** – consensus set of measures for child enrollees that include HEDIS measures and outcome measures
- **HEDIS Measures**
- **AHRQ Quality Measure Sets** – hospital-based outcome measures
- **CMS Consensus Quality Improvement measures** – expert consensus measures identified for inclusion in CMS programmatic initiatives (ongoing QI efforts)

In addition, the team searched for all measures identified as using claims in the following quality measure databases:

- **CMS Quality Measure Clearinghouse** (for CMS-related efforts)
- **NQF Quality Measure Database**

For completeness, the evaluation team included measures that were enumerated in the evaluation protocol, but which may not necessarily correspond to preexisting expert consensus metrics.

Once the measure set was compiled, each quality measure was classified according to:
- Contract Domain (Access, Quality, Cost/Utilization),
- Measure Type (Structure, Process, Outcome, Cost/Resource),
- Measure Category (General Categories of Care, Outcome, or Resource Measurement),
- Specific Measure Category (General Categories of Care, Outcome, or Resource Measurement),
- Medical Specialty
- Clinical Conditions
- Care Setting
- Targeted Ages for the Measure
- Quality Measure Sets (listed above)
- Measure Steward
- ID – (HEDIS ID, Contract Measure, or Other Organizational ID)
- NQF Number (if the measure was in the NQF database)
- Need for Chart or EMR data to complete the measure
- Data source needed to complete measure

Measures that require chart or EMR data, which are not available, were excluded from further consideration. Given the large number of potential measures, summaries of the remaining measures (by measure type and specific measure category) were distributed to the Technical Advisory Panel (TAP) to prioritize by importance. Results are presented in Section F.

Priority for inclusion of metrics within the final report include: (1) explicit mention in the evaluation protocol approved by CMS, (2) topic or measure type prioritized by the TAP, (3) availability of up-to-date measure specifications that can be applied across the study period, (4) availability of historic measure specifications that can be updated to be used across the study period, and (5) sufficient time to implement additional measures. Up-to-date measure specifications with annual revisions are available for DHCS EAS, CMS Core measures, HEDIS, and AHRQ.

Access to Care

The original **Access measures** were divided between (1) access to providers (as measured by plan composition and use) and (2) enrollee knowledge / use of member services. No extant list

of network providers exists across the entire evaluation period. Thus, the available measures focus on patterns of use and estimated travel distance, based upon (1) distance to closest ambulatory care provider seen by a patient and (2) distance to closest ambulatory care provider among patients in the same healthcare plan. Distances are estimated using calculated distance between patient and provider zip code centroids. Network panel data were obtained from DHCS (2017 to 2019). Provider data from Medi-Cal was supplemented by current and archival provider NPI data from CMS.

Measures:

1. Mean travel distance to closest primary care provider (PCP) and closest panel PCP
2. Mean travel distance to closest specialist by type and to closest panel PCP
3. Number of patients per PCP and specialist – calculated by managed care plan (including fee-for-service) and year

DHCS published its network adequacy standards in response to the Medicaid Managed Care Final Rule in March 2018:

https://www.dhcs.ca.gov/formsandpubs/Documents/FinalRuleNAStandards3-26-18.pdf

Travel distance was estimated based on distance between zip code centroids. Beneficiary zip codes were identified from the monthly eligibility and enrollment file. Provider zip codes were obtained from the national provider index (NPI) database and the plan network database. Because providers may have multiple entries in the NPI, the most contemporaneous database was used as well as the closest provider location if multiple entries were available. Ambulatory care visits for all patients were identified. Patient-provider dyads were tabulated. For each dyad, the provider NPI was linked to the NPI database to obtain their zip code. Then the provider classification code was linked to the DHCS classification derived from the National Uniform Committee Classification (NUCC) database. Each zip code in the patient-provider dyad was linked to the zip code coordinates for the zip code centroid and calculated the distance using the "great circle" formula. Patients were then sorted to identify the closest provider that they saw within that classification (e.g. closest cardiologist). This is the closest provider of that type seen by this particular patient. The mean, median, and 75th percentile distance to the closest provider across all patients were calculated. This is the most conservative measure comparison. Measures were calculated overall and by plan (including FFS enrollees).

Network panel make-up was examined in an analogous fashion. For each provider listed within a managed care plan, a list of all possible pairings between provider zip codes within the plan and zip codes of plan members was created. The zip code centroid distances for each pairing was then calculated. For each member zip code, the distance to the closest listed provider by specialty was selected. These data were then weighted by the actual number of members in each zip code. Mean, median, and 75% percentile distance by provider type – overall and by plan (including FFS enrollees) were calculated. This metric is conservative since it cannot account for the quality and capacity of the closest provider.

For trending, the evaluation team examined observed travel to closest provider type by patients by year for managed care and for FFS patients. Beginning with data from 2017 when provider network reports began, the estimated distance to the closest network provider versus the closest observed provider was compared, using the network makeup reported in December of that year (2017, 2018, and 2019). The more granular provider classification that includes physician specialty was used. The team did not exclude provider classifications that may reflect a billing NPI for a facility (e.g. hospital, pharmacy, or imaging center) rather than the individual provider, nor were specific provider specialties filtered out from these analyses. In the final

results, there are some extreme travel distances, which reflect a combination of relatively small numbers and likely out-of-state visits. These few extreme measures stand out.

Of note, the evaluation team does not have information on plan assigned PCP for individual patients. Managed care plans in their panels can present both generalists and specialists as being able to PCPs. Thus, this distinction was not made.

Assessment of enrollee knowledge and use of member services is only available from the CAHPS assessment of managed care enrollees in 2010, 2013, and 2016. These cross sectional assessments include markers for SPD enrollees. Questions of interest include – use of ambulatory care services (office-based and emergency medical services) and ability to make appointments when needed. HEDIS defines two composite measures on access to care – "Getting needed care" and "Getting care quickly". For consistency, these measures are presented with the other HEDIS measures.

Quality of Care:

As described above, the evaluation team identified claims-based expert-consensus quality measures (structure, process, and outcomes measures) covering a number of domains. The evaluation team first prioritized the DHCS EAS measures for initial implementation (**Appendix D**) as they were explicitly described in the approved CMS protocol. These were supplemented by claims-based and survey-based HEDIS measures, which contained both detailed specifications and annually updated value sets for operationalizing measures. These measures fill in gaps, especially with regards to mental health care and to key subsets of care that affect many patients. The focus on HEDIS produced 32 quality measures and 10 broadly defined utilization measures (including rates of hospitalization, readmission, and common procedures. A few potentially feasible measures were excluded due to the small number of eligible patients from the SPD population that would trigger these measures. Finally, four end-of-life measures were adapted from the Dartmouth Atlas of Health and applied to Medicaid conditions that have been mandated for eligibility for palliative care (CHF, COPD, ESLD, and cancer).

Explicit measures from the approved protocol include hospitalizations (cause-specific rates of hospitalization, cause-specific readmissions), mortality rates, ambulatory care visits (overall and specific), emergency department visits (overall and specific), cancer care (stage at diagnosis; time from diagnosis to treatment by cancer type; type of treatment; rate of routine screening for common cancers); maintenance of function, and medication usage (adherence to common medications and changes in medication management). Versions of the hospital-based measures exist in the HEDIS set (all-cause hospitalization, 30-day readmission, and preventable hospitalizations).

In this report, the evaluation team is providing the measures described below including process of care measures, unadjusted utilization rates, adjusted utilization rates, and unadjusted and adjusted clinical outcomes. Utilization measures and clinical outcomes are presented by county and plan by year. Quality metrics are reported statewide by year. Presentation of quality of care metrics mirror those according to HEDIS, including measures stratified by specific population definitions. Measures were not normalized to national HEDIS benchmarks since the SPD population as a group is non-representative of a typical Medicaid managed care population. Within quality metrics, the evaluators calculated relative change versus the baseline quality year (2010).

As specified in the Final Evaluation Design, existing data on SPD Specific Complaints (/10,000 beneficiaries) are included from Quarterly MCP grievances and appeals data; State Fair

Hearings; Independent Medical Reviews; and quarterly progress report data and are included in the final report appendices.

Costs of Care:

Costs of Care are calculated based upon patient assignment (FFS versus managed care) and upon whether services are reported as having been paid for by DHCS (claims) or not (encounters). This report includes:

1. Average monthly costs for Medi-Cal covered health services per beneficiary including average monthly costs for inpatient care, ambulatory care, pharmacy costs, and chronic mental health costs.
2. Avoidable institutionalization costs
    a. Ratio per 10,000 beneficiaries of and average cost per beneficiary for length of stays greater than ten days in an acute care hospital
    b. Ratio per 10,000 beneficiaries of and average cost per beneficiary stay for length of stays less than 60 days in a Skilled Nursing Facility (SNF) <u>was not performed due to unreliability of complete SNF data</u>
    c. Ratio per 10,000 beneficiaries of and average cost per beneficiary stay for length of stays less than 90 days in an acute hospital stay plus SNF <u>was not performed due to unreliability of complete SNF data</u>
3. Average annual pharmacy costs per beneficiary – restricted to FFS costs only

Certain measures – emergency department costs for necessary and unnecessary care and similar measures for DME could not be performed due to (1) lack of standards for necessary and unnecessary care and (2) lack of cost data for many of these items.

Costs are presented as estimated managed care costs (monthly capitation rates), FFS costs (for managed care patients), and FFS costs (for non-managed care patients). Costs are presented for the entire state by year. The evaluators accounted for inflation using CPI, but also examined GDP and fixed rates (1% and 2%). CPI and GDP were very close to the 2% rate. Risk adjustment approaches have been validated for FFS costs, but are less suitable for managed care cost estimates, where much of the costs are fixed.

Measurement Development

The evaluation team reviewed all explicitly identified measures from the approved evaluation protocol and then reviewed existing expert consensus quality metrics that were either part of complete quality metric sets (i.e. HEDIS) or indexed as claims based metrics from quality measure database warehouses (i.e. NQF and CMS). After consolidating measures that repeated across measure sets, the team identified 729 total measures, including 50 measures explicitly described in the contract, 22 measures from the DHCS EAS set, and remaining candidate measures identified from the review of quality metrics. Among the 729 measures identified, the team flagged 273 measures that required more information than is present in the claims data and thus cannot be implemented across all years of the evaluation. Among the remaining 456 measures, 46 measures are explicitly mentioned in the contract and nine measures are implied (as existing in the DHCS EAS measure set). Among the remaining 401 identified measures for consideration, 29 come from the CMS Medicaid Core Measure Sets, 77 from AHRQ HCUP quality measures, 39 from HEDIS, and 256 from CMS and NQF consensus measures or quality measure databases.

In order to prioritize measure selection and production for the final report, each TAP member was asked to rank order the domains and conditions. These rankings were attached to the underlying measures. Priority scores were applied for measures with routinely updated specifications – EAS measures, CMS Core measures, HEDIS, and AHRQ. Summary scores were linked back to the claims-based measure set. Composite scores that combine the Domain and Clinical Condition scores were created. Applying a cutoff on composite scores corresponding to an average of 2.0 on individual scores identified 146 candidate measures. Of these, 44 are existing HEDIS or AHRQ hospital-based outcome measures, which are routinely updated yearly. The remaining 102 measures were drawn from the other reviewed expert consensus quality measures. A review of these measures showed a large degree of overlap with existing routinely updated measures or measures applied to a very small number of patients. Due to the degree of overlap and the large number of available routinely updated measures, it was decided to focus on these measures (from HEDIS). Measure development was outside the scope of this evaluation.

Of note, the TAP reached general agreement on the scope and scale of the SPD assessment needs, principally that vulnerable sub-populations require explicit evaluation in the context of their unique needs. The TAP recommended focused metrics and identification of specific populations. Furthermore, concerns were expressed that technical (objective) quality success by the retrospective secondary data approach would not capture all aspects of care success.

TAP members pointed to concerns regarding access to specialty and tertiary care. Managed care networks may exclude tertiary care providers and avoid out-of-network referrals due to cost. Other related issues included increased travel time and greater difficulty coordinating care to multiple providers. Where a patient may have seen multiple centrally located specialty providers on a single day, the managed care arrangement could lead to multiple appointments at different locations and on different days. For disabled and elderly individuals, this represents a significant barrier, which would be extremely difficult to assess.

In summary, the UCLA team prioritized the use of expert consensus measures with updated measure specifications. The HEDIS measure set was used extensively. HEDIS measure sets are well defined, updated regularly, and the specifications are available from NCQA. Even during periods when current measures were not yet defined, these measures provide a useful lookback for baseline comparisons prior to formal implementation by HEDIS. For the purposes of our evaluation, these implement measures provide a better lookback than the existing HEDIS patient-level data sets for Medicaid, which are restricted to managed care plans and do not extend earlier than 2017. See **Appendix E** for more details on the measure selection process.

Data Sources

This evaluation leverages existing patient-level DHCS core data (enrollment and claims/encounters) for the study period (2009-2019) supplemented by other patient-level data within DHCS and with other state agencies (**Table 1**). Much of these data are either already within DHCS or are already shared with DHCS by other state agencies. In addition, the evaluation team used other non-patient level data: existing data from the managed care quality dashboard, plan capitation rates from DHCS, and provider data from DHCS and from the public domain (CMS and the Bureau of Economic Research) (**Table 2**).

Measure and Data Validation

UCLA employed convergent validation and face validity and agreement to ensure that evaluation results based upon the routinely collected data are valid. Findings from the data validation assist in identifying populations where there may be data issues that affect the accuracy and conclusions of the SPD transition evaluation.

The following approaches have been taken to verify measures:

1. Acute institutional stays – comparison of algorithm identified acute care stays with all-payer hospital data from the HCAI patient discharge database (PDD)
2. Dates of death from the eligibility and enrollment file can be compared to the state Death Statistical Master File
3. Comparison of death data reported in the eligibility data with death data reported among cancer patients from the California Cancer Registry

It was theoretically possible to examine home care visits and nursing home stays with corresponding data from the federal OASIS and MDS data sets, but there were too many administrative barriers to obtaining these data. Specifically, DHCS did not have a data use agreement in place with CMS to link OASIS and MDS data with Medi-Cal data. The evaluation team had access to the MDS data from a separate, federally funded study, and requested CMS to re-use its data for the SPD evaluation. CMS did grant permission for the data re-use but DHCS did not have data in place to create the crosswalk to link the UCLA research copy of the MDS data to the evaluation data.

DHCS introduced PACES at the end of 2014, which created two periods of data reporting in addition to inherent differences in data reporting between direct FFS claims to Medi-Cal and data submitted by MCPs to Medi-Cal. PACES did create more consistent reporting requirements across MCPs. The analyses have been extended to include the urban transition (2011-2012) and the rural transition (2013) to mandatory managed care. Results of sensitivity analyses with the HCAI data support the use of the DHCS data with some caveats regarding hospital length of stay.

Table 1 - Patient Level Source Data Sets

Originally Proposed Data Set	Description	Population Subset	Years Available	Source Agency	Comments
Medi-Cal Eligibility and Enrollment File	monthly eligibility and plan enrollment data	all individuals in Medi-Cal	2009-2019	DHCS	received
Medi-Cal Fee-for-Service Claims	fee-for service claims for all services, including managed care carve-out services	patients not enrolled in MCPs or receiving carve-out FFS services	2009-2019	DHCS	received
Medi-Cal Managed Care Encounters	managed care services submitted by plans	patients enrolled in MCPs	2009-2019	DHCS	received
Patient Discharge Database	all-payer database of discharges from all non-federal, non-correctional hospitals in the state	all individuals hospitalized in non-federal, non-prison hospitals	2009-2019	OSHPD	received
Emergency Department Database	all-payer database of emergency department visits not-resulting in hospitalizations at that hospital	all individuals seen in EDs	2009-2019	OSHPD	received
Death Statistical Master File	state death registry	all deaths in CA or of CA residents dying out of state	2009-2019	DPH, Office of Vital Stats	received probabilistic linkage file (2014 to 2019)
Short-Doyle Mental Health Claims	state fee-for service mental health claims	Medi-Cal enrollees	2009-2019	DHCS, Mental Health Services	received
IHSS Monthly Hours and Annual Functional Evaluations	monthly IHSS data	IHSS recipients	2009-2019	DSS	received
HEDIS data	person-level data used to create plan-specific summary HEDIS measures	managed care recipients by plan	2017-2019	DHCS	received
CAHPS data	subset of CAHPS responses by plan with flag for SPD recipients	subset of plan members that receive the CAHPS survey	2010, 2013, 2016, 2019	DHCS	received
Minimum Data Set of Long Term Care (including the California Section S)	required evaluation of all nursing home residents	nursing home residents (short-stay and long-stay)	2009-2019	DPH, Office of Quality	Not available – no overarching data use agreement.

Beneficiary Satisfaction Surveys	panel surveys of small subset of Medi-Cal beneficiaries	survey respondents	-	-	Not available - proprietary research data.
California Cancer Registry (CCR)	state cancer registry	individuals diagnosed with reportable cancers in California	2009-2019	DPH	received
OASIS Data (home healthcare)	required evaluation of all home healthcare patients	home healthcare recipients	2009-2019	CMS	Not available
HIV/AIDS Surveillance database	state HIV and AIDS surveillance database	patients diagnosed or treated for HIV in California	2009-2019	DPH, Office on AIDS	Special approval required. Not available.

CMS - Centers for Medicare and Medicaid Services; **DHCS -** California Department of Health Care Services; **DPH -** California Department of Public Health; **DSS -** California Department of Social Services; **OSHPD –** California Office of Statewide Health Planning and Development

Table 2: Other Data Sources Used for the Report

Originally Proposed Data Set	Description	Years Available	Source Agency
Ombudsman Reports	Summary of complaints to state ombudsman	2015 to 2019	DHCS
State Fair Hearing Reports	Results from appeal processes for providers and individuals dissatisfied with DHCS' actions	2015 to 2019	DHCS
Independent Medical Review	Results from patient complaints regarding receipt of healthcare services to managed care plans	2015 to 2019	DHCS
Grievance Reports	Patient medical grievances to plans	2015 to 2019	DHCS
Plan Capitation Rates	Estimated annual capitation rates (high, mid, low estimates) by plan	2009 to 2019	DHCS
Medi-Cal Provider File	Hierarchical provider file, nesting individual providers by site	2017 to 2019	DHCS
Historical Medi-Cal Managed Care Provider File	Provider file of managed care Medi-Cal providers	2011 to 2016	DHCS
Historical Medi-Cal FFS Provider File	Provider file of FFS Medi-Cal providers	2011 to 2016	DHCS
Current CMS NPI Provider File	Current national NPI file for individual and institutional providers in the U.S.	2019	CMS
Historical CMS NPI Provider File	Historical (2011) national NPI file for individual and institutional providers in the U.S.	2011	BER
Survey of Managed Care Plans on SPD Transition	Small questionnaire to plan representatives regarding data quality and enrollment issues	2019	UCLA
MCP Network Data	Provider lists by MCP	-	-

BER – Bureau of Economic Research; **CMS -** Centers for Medicare and Medicaid Services;
DHCS - California Department of Health Care Services; **UCLA** – University of California, Los Angeles

Plan Survey

Due to the retrospective nature of the evaluation and potential challenges in interpreting some findings, the evaluation team administered a short online survey of managed care plan representatives (**Appendix F**). DHCS shared a list of MCP representatives (primarily regulatory affairs and compliance personnel as well as senior leadership) and sent an introductory letter. Plan representatives confirmed receipt and the appropriate personnel to respond to the short survey. The online survey specifically asked about challenges encountered during the transition pertaining to contacting enrollees, assigning primary care providers, disenrollment, known strengths and weaknesses of data collected by their plans, and details on remediation. Plan representatives were also allowed to answer the survey questions by phone. Finally, follow-up phone conversations with select MCP representatives were scheduled to further discuss how plans worked through the challenges arising from the transition and managing SPD patients (as compared to other types of Medi-Cal populations).

Data Cleaning and Completeness Assessment

Enrollment File

For each enrollee, the evaluation team completed an initial assessment of the enrollment data (including reported date of death) and associated claims and encounters. For the enrollment data, a number of steps were performed, including:

- Removal of duplicate records
- Adjudication of multiple non-duplicate records per month per enrollee, where plan code assignments differ
- Adjudication of date of death with identification and removal of dates of death that appear to be wrong (due to ongoing enrollment with claims/encounters) and flagging enrollment data that appear to be incorrect (due to ongoing enrollment without claims/encounters after a reported death)

Claims / Encounters

In addition to tabulating claims by program type and claim type by patient, the team also assessed (1) the ability to reliably identify and tabulate acute care hospitalizations algorithmically using different claim types before and after the PACES implementation, (2) the use of different identifying information within the claims (place of service, revenue codes, institution classification merging with the NPI databases), and (3) by filtering hospital episodes using the statewide hospital discharge database.

Non-DHCS Patient-Level Data

The evaluation team obtained external data: California state hospital discharge and emergency department records, state vital statistics data, cancer registry records, In-home Supportive Services records, and patient-level HEDIS data (2017, 2018, 2019). CAHPS data (2010, 2013, 2016, and 2019) for patient care and satisfaction are de-identified and thus cannot be linked to DHCS data. The 2010 data do not have an indicator for SPD enrollees.

Other Data

DHCS provider-level data are of varying completeness. The evaluation team supplemented these data with two versions of the national NPI database (2011 and 2019). Linkage to physician claims is complete. Inconsistencies appear to arise when Californians are treated out of state or when physicians who once practiced in California move out of state.

Analytic Methods

In the final evaluation results, overall results across multiple dimensions are presented. The large number of potential comparisons and varying sizes of enrollment by county and by plan made within and across made selective use of comparisons necessary. Selective use of risk adjustment was focused on utilization and clinical outcomes, including overall assessment of trend during the observation period.

With regards to quality of care measures, process of care measures are by definition not supposed to be risk-adjusted and are to be presented as rates. Due to the limited number of cases, cancer care measures (stage at diagnosis, treatment, time to treatment, and one-year mortality) were stratified by cancer type and by cancer stage for the entire SPD population.

Risk adjustment strategies were used for HEDIS-defined measures – number of hospitalizations, cumulative hospitalizations, ambulatory visits, emergency department visits not resulting in hospitalization, and preventive hospitalizations.

For Length of Stay (LOS), number of discharges, ED and ambulatory (AMBV) visits, the evaluation team used the Zero-Inflated two-part modeling approach to analyze the clinical outcomes. This approach is a two-part model that accounts for both structural zeroes and skewness in the outcome distribution via a logistic regression for zero responses and a Poisson regression for nonzero responses. Importantly, both components are allowed to incorporate covariates. The same set of covariates (age, gender, and race/ethnicity) were included in each of the model components. Each year was analyzed separately. For county-level analyses, Alpine County was excluded because the sample size was too small (fewer than 50 observations).

For acute, chronic, and overall preventable hospitalizations, the evaluators used the multivariable regression modeling approach to analyze the rate of preventable hospitalizations. The rate was calculated as the percentage of preventable over total hospitalizations. The same set of covariates (age, gender, and race/ethnicity) were included in the regression model. Each year was analyzed separately. Some counties had no available information or had sizes too small for estimation. Sensitivity analyses were performed by including the participant's total hospitalizations in the multivariable regression as an additional covariate. Main results (without the hospitalization covariate) are presented in the report.

For the CAHPS survey measures, survey weights were calculated for the responses, using the survey respondent counts and corresponding plan enrollment counts. Weighted results should be more reflective of the underlying population. Survey responses for 2016 and 2019 were powered for managed care plan comparisons, but not for county/regional comparisons except for populous counties. For ease of interpretation, results were coded both according to the original four-level rating scale for many measures ("never", "sometimes", "most of the time, "always") to a binary measure ("never / sometimes", "most of the time / always"), which can be presented as simple rate.

As mentioned previously, risk-adjusted cost estimates were deemed unnecessary due to the small proportion of FFS costs for overall costs in managed care patients and the diminished explanatory power of risk adjustment for managed care enrollees whose care is mostly capitated.

Technical Advisory Panel

As described in the Interim Report, the Technical Advisory Panel (TAP) comprised of Medicaid policy experts, DHCS representatives, safety net clinicians, and researchers was formed to identify critical issues and discuss the evaluation design (proposed measures, data, and analytic methods). The TAP was tasked with reviewing criteria for existing measures in order to prioritize the large set of candidate measures. The TAP was also asked to identify important gaps and potential candidate measures that were not identified, but which can be derived from the available data. UCLA used feedback from the TAP to prioritize the evaluation measure set (**Appendix G and Appendix H**).

E. Methodological Limitations

The current evaluation leverages the large amount of routinely collected data within DHCS (enrollment and claims/encounters) supplemented by other existing data sets available through state health agencies. There are a number of known and potential limitations:

1. Data comparability, uniformity, consistency, and quality vary across the evaluation period and across the state – prior to PACES implementation, there was less consistency in data submission between MCPs. Certain plans may have different internal data standards, leading to greater heterogeneity in the final pooled data from DHCS, especially in the pre-PACES period.

2. Certain types of care or providers may have less consistent data due to a lack of financial incentives (e.g. capitated providers); providers that receive Medicaid block grants (e.g. LA County), or providers that are recipients of foundation support (e.g. free clinics) that may have incomplete billing. The proliferation of capitated agreements between plans and hospitals can affect detailed reporting from contracted hospitals.

3. Linkage to the state Death Statistical Master File changed over time. Prior to 2014, the precise methodology used to link records to the monthly eligibility and enrollment file is unknown. Starting with data from January 2014, DHCS has employed a multi-step probabilistic linkage algorithm. Without a consistent and repeated data linkage, these linkages are susceptible to inaccurate, inconsistent, and multiple linkages. Overmatches and under-matches are certain. Nevertheless, most matches are likely correct.

4. Absence of comprehensive managed care network profiles – instead of knowledge of available providers, the evaluation can only identify providers who actually saw Medi-Cal patients. This limits the power of the evaluating team to understand the degree to which patient access is impacted by plan network composition. The current DHCS provider file is adequate for such determinations. For the full observation period, it was possible to assess observed travel distance to closest providers by provider type by year.

5. Absence of comprehensive clinical data for all patients – many types of care and outcomes are not ascertainable using administrative data.

6. The CAHPS data touch upon patient satisfaction, knowledge, and access to care, but cover a minute fraction of enrolled patients at three-year intervals and are not linkable to the full patient-level data. Data from 2010, prior to mandatory managed care enrollment represent a different sample of SPD patients than those in 2013 and 2016. SPD respondents in 2010 are enrollees who more likely chose to be in managed care, introducing significant selection bias to the pre- and post-comparisons. As mentioned, the sample sizes for the 2016 and 2019 are much smaller than the 2013 sample, making county/region assessments limited.

7. Lack of a fully comparable contiguous control group – all potential comparison groups differ substantially from the SPD population either due to case-mix differences or due to policy specific issues (duals). The best available comparisons are by county-based populations from the stable mandatory managed care SPD populations in the COHS counties. Even here, changing policies over the decade, regional differences, and especially data quality issues from managed care plans make comparisons challenging and diminishes the value and validity of these comparisons.

Despite these limitations, the full evaluation design leverages existing data from across the healthcare agencies within the state, which provide additional information regarding care and outcomes as well as consistent independent data collection across this period of change within the state Medi-Cal program. By focusing the care and outcomes of <u>all</u> SPDs during this period, we can have greater comfort regarding the overall care, outcomes, and costs for this population regardless of the shifting populations between fee-for-service and managed care. Note, although the descriptive trend analyses (including those that are regression-adjusted) provide some insight into implementation progress, beneficiary experiences, and changes in access and service use, they do not yield causal impact estimates of the demonstration.

F. Results

In this section, the results regarding qualitative results from health plans, review of plan enrollment, utilization, and high-level outcomes are presented. Detailed results by plan and county are presented in the Appendices.

F1. Health Plan Survey Results

The evaluation team contacted all current participating plans regarding their experiences and conclusions regarding the mandatory managed care implementation. Fifteen of the twenty-nine invited plans participated in the survey. Of the respondents, one chose to schedule a phone call to verbally transmit their answers. The remainder did the online survey (**Appendix I**). The responses from the plans were illustrative.

- When patient contact information was incorrect, plans attempted to acquire the correct information from the patient directly or from other sources such as DHCS or the patient's physician, a hospital or emergency department (if the patient recently received care), a pharmacy, or service provider (e.g. transportation provider). Contact information was corrected in the plan's system.
- Of the managed care plans that tracked the percentage of patients who could not be contacted, plans reported that between 7% and 35% of patients lacked sufficient contact information.
- Plans employed various strategies to ensure orderly transition of patients to new care, and adhered to continuity of care guidelines from DHCS. Plans strived to keep members with their existing care providers, if possible. Plans worked with DHCS to share member data, communicate, and resolve disputes and grievances.
- Mostly all plans allowed patients to receive care from previous providers up to 12 months after the transition, per DHCS' mandate. Extensions beyond 12 months were made depending on a member's condition, treatment, and services needed.
- Plans allowed patients to renew existing medications between 30 days and one year after the transition. Extensions were made depending on the patient's condition and continuity of care needs. One plan reported no time limit, although prior authorization was needed.
- Plans reported that continuity of care requirements were honored to ensure patients received appropriate specialty care. Some plans enforced time limits on these visits, while others did not.
- Special consideration (e.g. care coordination and case management) was made for patients with multiple chronic conditions by most all plans, who cited continuity of care policies that apply to these patients. One plan placed patients with multiple chronic conditions into a high-risk category.
- Most plans did not report any noteworthy changes in care patterns. One plan stated that their urgent care network was expanded to support the SPD population and provide alternates to the ED.
- Most plans did not report any data quality issues surrounding the transition. One plan reported that data from previous care including FFS Medi-Cal can be delayed or be missing and another plan noted that data from DHCS is not always complete.
- Plans did not report any difficulties with data completeness and accuracy with contracted providers. In general, plans were confident that claims data accurately and completely reflected all types of care, services, medications, and equipment provided.
- Plans noted in closing that many SPDs had incorrect contact information at enrollment, making completion of health risk assessments and timely outreach more challenging.

The plans generally relied upon guidance from standing guidelines for the transition and for ensuring patient care and care coordination. The existing infrastructure and regulatory environment for Medi-Cal managed care plans created the framework to ensure adequacy of care for the SPDs.

F2. Enrollment

California's initial SPD enrollment to managed care raised managed care enrollment to 80% by 2012. (**Figure 3**). By 2019, 93% of SPDs in the state were enrolled in managed care. Overall enrollment patterns by managed care enrollment by county, by year, by plan enrollment by year, and by demographics by year were reviewed (**Figures 4A-4C**). The changing demographics of the

Figure 3: Mean Annual SPD enrollment

SPD population reflect the changing demographics of the state as a whole, with White non-Hispanics representing a decreasing proportion of enrollees and Hispanic individuals an increasing proportion of enrollees and higher proportion of older patients in the mix of SPDs (See detailed results in **Supplementary Tables S.6 to S.12**).
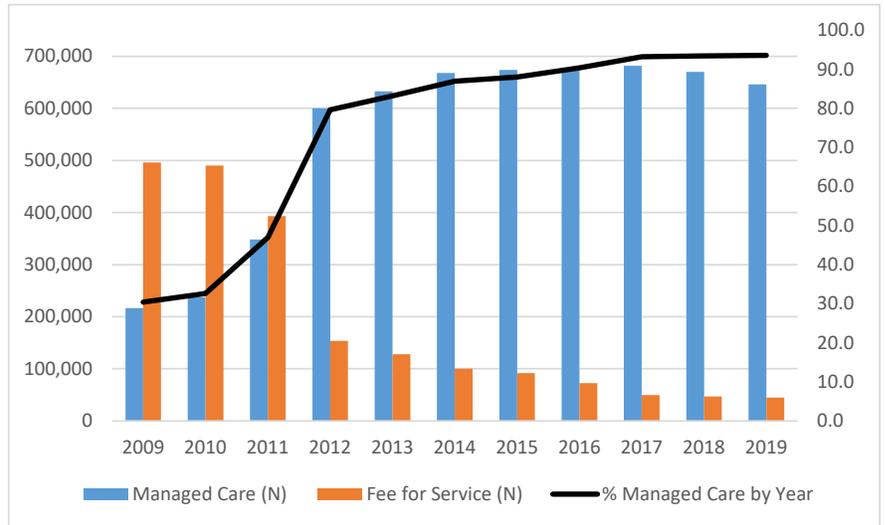
Figure 4A: Managed Care Age Distribution 2009 to 2019
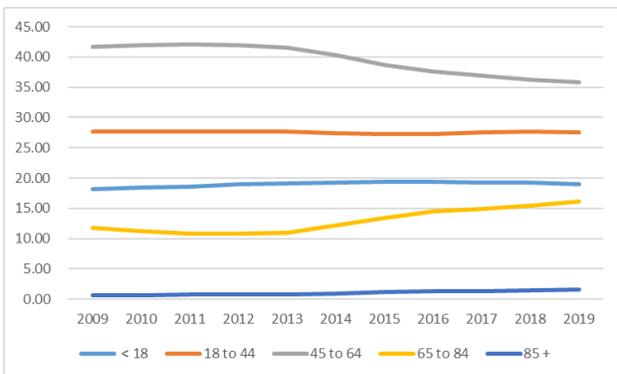
Figure 4B: Managed Care Gender Distribution 2009 to 2019
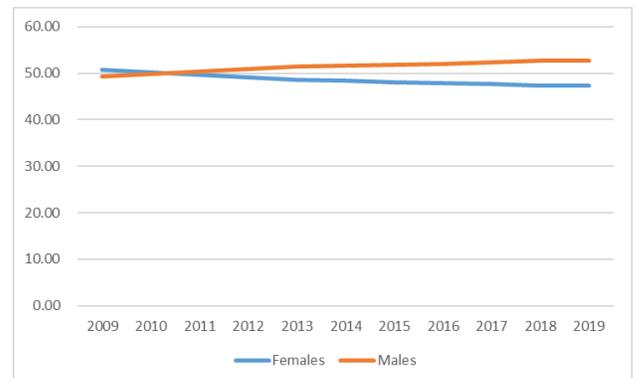
Figure 4C: Managed Care Race/Ethnicity Distribution 2009 to 2019
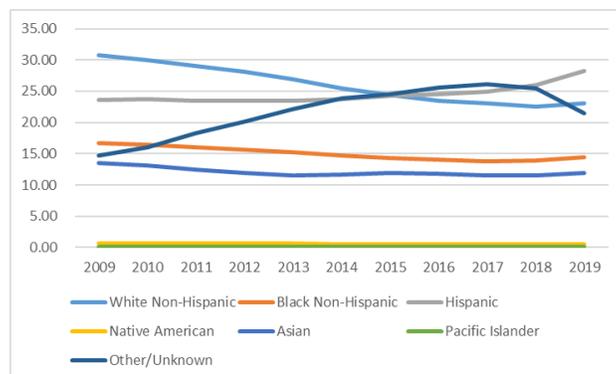
F3. Access to Care

F3.1. Self-Reported Access to Care

Findings from the cross sectional assessments of CAHPS responses by managed care plan by year and by county/region by year are presented (**Table 3**). These represent the SPD responses for the CAHPS survey for 2013, 2016, and 2019 with sampling weights. Here, the focus is on the bottom-line, statewide patterns. Questions regarding access to PCPs – "General Medicine Visit in Past 6 Months", "General Medicine Visit--Got Visit Right Away", and "Have a Personal Doctor" were essentially unchanged from 2013 to 2019.

Table 3: CAHPS Results, SPD Enrollees in Medicaid Managed Care Plans in California, 2013, 2016, 2019

	2013	2016	2019
General Medicine Visit in Past 6 Months	79%	80%	79%
General Medicine Visit--Got Visit Right Away	76%	78%	76%
Have a Personal Doctor	84%	87%	85%
How Many Trips to PersonalDoctor in Last Year	2.55	2.47	2.32
Need to See Specialist	48%	53%	53%
How Often Easy to See Specialist	73%	79%	78%
How Many Times Saw a Specialist in Last Year	1.85	1.95	1.91
Need ED	43%	41%	39%
Need ED - How Often Got Care Right Away	77%	78%	80%

For each measure, mean response rates were 0.75 to 0.80. There was a trend towards fewer self-reported visits to the doctor ("How Many Trips to Personal Doctor in Last Year"), but the relative percent change was small. In contrast, there was a trend towards greater need for specialists (increasing from 0.48 to 0.53) and an increased ease seeing a specialist (compared to 2013). The number of self-reported trips to specialists was essentially unchanged. Finally, there was a trend towards decreased self-reported need for emergency services (decreasing from 0.43 to 0.39) with essentially unchanged ease of receiving timely care (0.80).

Taken as a whole, access to PCPs was unchanged, and there was a trend towards fewer visits to the PCP while change in use of specialty care was mixed and reported use of the ED decreased. These findings suggest improved access to necessary care. We cannot discern whether this was due to a sampling effects and the small numbers do not support making strong conclusions. Furthermore, these survey results are not qualitatively consistent with service use based on analysis of claims and encounters (see Figure 7 and accompanying text below). For detailed survey results by plan, see **Supplementary Tables S.13 to S.15**. For detailed results by county, see **Supplementary Tables S.16 to S.18**.

F3.2. Patient Travel to Providers Using patient travel distance, improved access to care would be reflected by a decrease in patient travel distance to providers. The data do not support this hypothesis (**Table 4**). Between 2009 and 2019, overall travel distance by SPD enrollees tended to increase. Among the 37 listed categories, 29 had greater median travel distances in 2019 compared to 2009. Although there was a consistent increase in travel distance in 2013/2014 that subsequently decreased, this likely reflects a data quality issue (see also **Supplementary Tables S.19 to S.21** and **Appendices J-K**) since many managed care encounters during this period lack valid provider IDs (NPIs), leaving the overall sample weighted towards rural fee-for-service enrollees. Looking at 2015, after more consistent managed care encounter reporting was adopted,

Table 4: Median Observed Travel Distance to Outpatient Visits by Provider Type, California, 2009 to 2019											
Managed Care Classification	Year of Visit										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cardiology/Interventional Cardiology	6.8	6.8	6.7	7.8	7.7	7.1	7.1	7.3	7.3	7.3	7.4
Certified Nurse Midwife	7.3	48.7	46.2	17.5	12.6	18.4	20.0	11.7	11.7	14.2	4.8
Dermatology	7.7	8.2	8.9	13.5	14.8	11.1	11.5	13.8	14.6	15.0	16.1
ENT/Otolaryngology	7.7	8.4	8.5	9.3	9.4	9.2	9.0	9.1	9.0	8.6	8.5
Endocrinology	9.0	8.7	8.7	10.9	11.1	10.4	10.4	10.4	9.3	9.6	10.3
Family Medicine	4.5	5.0	5.1	6.5	6.6	5.9	5.6	6.6	7.3	6.9	6.5
Gastroenterology	6.8	7.2	7.3	8.2	8.3	8.3	8.2	8.8	8.7	8.8	9.1
General Surgery	9.9	11.5	11.5	12.3	12.1	11.2	11.0	11.5	11.5	11.6	11.8
Geriatric Medicine	5.6	4.5	4.8	5.0	5.7	4.4	4.5	6.1	6.9	6.5	6.3
Hematology	8.8	8.8	8.8	10.4	10.6	10.0	10.2	10.2	10.4	10.4	10.3
Hospitals	7.7	7.9	8.5	9.7	8.4	6.1	6.1	6.8	6.6	6.7	6.5
Infectious Disease	8.0	7.1	7.1	7.2	7.7	7.9	7.8	8.8	9.9	9.9	10.1
Internal Medicine	0.0	2.2	4.8	4.1	4.3	9.0	3.8	5.7	8.8	1772.7	1744.3
Licensed Clinical Social Worker	5.2	5.2	5.0	5.2	4.5	4.5	4.1	5.0	4.9	5.0	5.6
Licensed Marriage and Family Therapist	8.0	8.5	7.9	7.8	12.2	6.9	6.5	6.9	7.7	7.6	8.4
Licensed Midwife	4.2	7.2	3.2	3.6	3.7	11.4	1721.2	898.2	798.8	37.7	22.4
MRI Provider	10.8	11.5	11.8	9.0	13.5	16.1	16.1	12.5	12.9	13.9	16.1
Mammography Provider, MRI Provider	11.9	14.3	12.2	10.0	10.8	11.2	14.5	1849.8	14.1	12.6	37.4
Nephrology	6.9	7.5	7.4	7.8	7.3	7.2	7.5	7.7	8.0	7.8	8.1
Neurology	9.4	9.7	9.9	10.9	10.1	9.2	9.4	9.5	9.4	9.3	9.2
Nurse Practitioner	3.8	9.9	10.4	10.4	6.9	7.7	8.0	7.7	8.5	9.4	11.1
Obstetrics & Gynecology	5.9	6.1	6.0	6.3	6.6	6.4	6.1	6.1	6.1	6.1	6.1
Oncology	8.6	8.8	8.8	10.1	10.2	9.8	9.9	9.9	10.2	10.1	10.1
Ophthalmology	7.0	7.4	7.2	7.9	7.9	7.4	7.1	7.1	7.3	7.3	7.5
Orthopedic Surgery	10.2	11.1	11.1	11.1	10.5	9.5	9.4	9.6	9.1	8.4	8.4
Other	4.9	5.3	5.1	5.5	5.2	4.5	4.4	4.6	4.6	4.0	3.9
Other Specialist	5.5	5.5	5.3	5.9	6.2	5.9	6.2	6.6	7.0	6.8	6.8
Pediatrics	7.9	7.8	7.7	7.6	7.4	7.0	7.3	7.9	8.5	8.7	9.0
Pharmacies	6.7	3.0	362.6	11.5	11.8	6.4	6.4	8.8	7.3	8.6	7.7
Physical Medicine & Rehabilitation	12.4	13.9	14.6	17.5	18.4	17.4	18.8	19.2	19.8	21.9	20.7
Physical Therapist	3.7	0.0	2.3	6.9	19.4	16.4	14.6	15.9	10.8	9.6	9.9
Physician Assistant	62.5	85.3	62.5	10.9	8.7	10.5	5.7	6.5	9.8	10.8	17.4
Preventive Medicine	3.8	4.0	4.2	7.0	7.5	5.8	5.4	5.9	6.4	6.1	6.4
Psychiatry	7.5	7.8	7.9	7.0	11.3	8.0	7.3	7.3	8.1	9.0	9.7
Psychologist	10.3	10.5	10.5	9.5	9.1	12.8	12.4	12.9	13.8	14.6	14.7
Pulmonology	9.7	11.2	10.6	11.7	11.2	11.1	10.4	9.2	9.7	9.6	9.2

25 out of the 37 categories show greater travel distance in 2019 versus 2015. A similar pattern appears regardless of whether one uses mean or 75th percentile measures.

Comparing observed estimated distance to closest providers versus distance to closest network provider (2017 to 2019), we see consistently greater observed travel distances (**Table 5**). Difference between observed closest travel distance and closest network provider did increase somewhat. The differences are somewhat greater for 2018 compared to 2019 than for 2017 versus 2018 (or 2019). Given the small number of observations, one cannot make strong conclusions regarding trends. Finally,

travel distances to certain types of providers tend to be much farther than the closest network provider. These tend to be specialty providers (psychologists and dermatologists). However, there is not a consistent story here --- the provider types with the least difference between observed and panel providers are also specialists (ENT surgeons, nephrologists, and one type of primary care provider – geriatricians). One category in particular – internal medicine – had few encounters and extreme travel distances. For greater detail, see **Supplementary Tables S.22-S.23 and Appendix L).**

Table 5: Overall Managed Care SPD Enrollees - Median Distance to Closest Provider versus Median Observed Travel Distance for Outpatient Care, 2017 to 2019

Managed_Care_Classification	2017		2018		2019	
	Panel	Observed	Panel	Observed	Panel	Observed
Cardiology/Interventional Cardiology	2.7	7.2	2.8	7.1	2.7	7.3
Certified Nurse Midwife	3.6	11.1	4.2	18.3	4.0	4.8
Dermatology	6.1	14.6	5.7	15.0	4.0	16.1
ENT/Otolaryngology	4.8	8.5	5.3	8.2	5.0	8.3
Endocrinology	4.2	8.9	4.0	9.0	3.8	9.8
Family Medicine	0.0	7.2	0.0	6.9	0.0	6.4
Gastroenterology	3.3	8.3	3.4	8.6	3.4	8.8
General Surgery	3.7	11.1	3.5	11.3	3.2	11.5
Geriatric Medicine	4.0	7.0	4.0	6.7	3.7	6.6
Hematology	4.2	10.3	4.7	10.2	4.6	10.1
Hospitals	4.8	6.6	4.7	6.7	4.3	6.4
Infectious Disease	3.8	9.9	4.2	9.8	4.2	9.9
Internal Medicine	8.4	8.8	15.1	1,772.7	7.7	1,744.3
Licensed Clinical Social Worker	0.0	4.9	0.0	5.0	0.0	5.5
Licensed Marriage and Family Therapist	1.8	7.7	0.0	7.6	0.0	8.4
Licensed Midwife	10.0	798.8	7.3	37.7	32.9	22.4
MRI Provider	4.1	13.4	6.3	12.4	5.5	16.1
Mammography Provider, MRI Provider	2.0	14.3	2.0	13.5	2.0	39.6
Nephrology	4.1	7.8	4.3	7.8	4.1	7.9
Neurology	3.8	9.2	3.3	9.2	3.2	9.1
Nurse Practitioner	0.0	8.4	0.0	9.4	0.0	11.2
Obstetrics & Gynecology	0.0	6.1	0.0	6.1	0.0	6.0
Oncology	4.3	9.9	4.7	9.9	4.5	9.9
Ophthalmology	0.7	7.1	1.6	7.1	3.3	7.3
Orthopedic Surgery	3.8	8.9	4.3	8.3	3.7	8.4
Other	0.0	4.6	0.0	3.9	0.0	3.8
Other Specialist	0.0	6.9	0.0	6.8	0.0	6.7
Pediatrics	0.0	8.3	0.0	8.5	0.0	8.7
Pharmacies		7.3	15.2	8.6	13.0	7.7
Physical Medicine & Rehabilitation	4.1	20.6	4.1	22.5	4.2	20.9
Physical Therapist	2.7	10.8	2.5	9.6	2.3	9.9
Physician Assistant	0.0	9.8	0.0	10.8	0.0	17.4
Preventive Medicine	0.0	6.4	0.0	6.1	0.0	6.4
Psychiatry	2.3	8.0	2.0	9.0	2.1	9.6
Psychologist	0.0	13.8	0.0	14.6	0.0	14.7
Pulmonology	4.5	9.1	4.4	9.1	4.2	8.9

F3.3. Physician Patient Volume – A Proxy for Panel Size?

Based upon unique patient-physician visit counts using the patient-physician dyads described for the travel distance analysis, we calculated the number of unique patients and total visits for each provider, by provider category between 2009 and 2019 (**Table 6; Supplementary Table S.24**). The total number of patients and visits per provider dropped between 2009 and 2015 and increased again towards 2019. In general, we see the total number of unique providers by specialty increase comparing 2009 to 2019, while the average number of patients and visits decreased. The middle years – 2012 to 2014 – again show the results of poor data quality during this period of rapid managed care expansion. The most valid comparisons are between the baseline years and after 2014, when data quality improved. In general, there are more providers who are providing care to a smaller number of patients per provider. This may reflect greater access to care. Furthermore, the mean results do not capture the range of results. Based on numbers of unique patients, some providers see large numbers of SPD enrollees. Finally, an examination of provider volume by plan (**Appendix M**), shows that some plans have many fewer providers and visits than would be expected from their annual enrollment, suggesting that reporting of ambulatory encounters are incomplete (versus not occurring at all). This is apparent even in the most recent years of data, suggesting that this is not simply a problem with the transition to managed care and standardization of reporting.

Table 6: Overall Provider Unique Number of Patients Seen and Ambulatory Care Visits Per Year

Provider Type	Number of Unique Providers by Year											Mean Number of Patients Per Provider										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cardiology/Interventional Cardiology	1,110	1,226	1,759	1,936	1,861	2,185	2,019	2,027	1,875	1,911	1,912	29.7	26.7	18.4	11.8	12.7	15.5	17.8	18.4	20.4	21.1	23.
Certified Nurse Midwife	10	8	4	8	9	9	7	5	14	8	4	4.1	3.0	3.0	2.0	3.3	4.7	1.4	2.4	1.6	1.9	2.
Dermatology	297	335	465	638	626	814	816	841	852	891	918	33.5	38.8	27.7	18.4	22.2	29.0	34.3	33.9	35.4	36.0	39.
ENT/Otolaryngology	430	464	582	698	690	787	693	732	682	673	656	35.2	29.4	22.7	14.5	16.0	17.3	19.8	19.7	19.9	20.5	24.
Endocrinology	229	233	346	385	378	430	405	414	403	414	394	35.8	25.1	18.2	13.6	14.9	17.0	19.3	19.2	17.6	16.1	20.
Family Medicine	3,211	3,944	5,569	6,393	6,555	6,904	6,196	6,372	6,535	6,653	6,185	32.0	28.5	21.5	17.2	18.7	23.0	22.8	24.4	25.2	24.0	26.
Gastroenterology	702	772	1,057	1,185	1,171	1,278	1,202	1,230	1,198	1,155	1,210	28.4	25.1	19.6	13.4	15.1	18.4	20.8	21.4	21.6	22.3	24.
General Surgery	1,622	1,873	2,468	2,828	3,035	3,605	3,462	3,423	3,268	3,346	3,337	20.0	16.9	12.6	9.1	9.2	10.1	11.4	11.3	11.8	12.4	14.
Geriatric Medicine	153	113	184	198	190	228	225	267	250	242	217	26.2	24.1	16.0	12.8	13.7	16.0	20.2	18.8	21.0	19.0	21.
Hematology	389	468	665	837	881	942	849	866	854	839	683	23.1	22.3	17.3	12.5	13.1	14.4	16.2	16.0	15.3	16.3	20.
Hospitals	1,138	1,190	1,460	1,927	2,415	5,036	6,299	6,486	6,648	6,545	6,308	54.6	51.9	42.0	23.8	21.6	23.3	25.3	25.2	26.8	26.7	29.
Infectious Disease	177	191	248	314	333	378	340	325	324	329	323	9.6	7.8	7.1	5.4	5.7	7.2	7.3	6.6	8.0	8.3	9.
Internal Medicine	4	4	6	5	2	5	8	8	9	12	10	33.3	25.3	3.2	4.6	8.5	3.4	2.5	4.9	4.3	9.2	9.
Licensed Clinical Social Worker	20	22	28	41	69	341	404	514	652	740	771	36.3	43.2	34.9	24.8	19.6	8.2	8.2	10.4	10.8	8.5	9.
Licensed Marriage and Family Therapist	15	29	27	11	20	558	932	1,248	1,520	1,714	1,738	5.4	11.7	12.0	3.5	1.9	1.9	2.5	2.8	3.0	3.2	3.
Licensed Midwife	1	4	1	3	4	8	2	1	2	3	4	1.0	2.3	1.0	1.7	4.3	2.3	1.0	1.0	1.0	1.0	1.
MRI Provider	21	28	39	54	62	52	38	38	27	29	36	17.2	13.8	10.2	5.8	3.9	4.1	4.8	7.1	9.2	7.4	13.
Mammography Provider, MRI Provider	83	78	113	137	201	232	183	210	197	200	174	20.0	13.9	9.8	5.1	5.3	5.0	4.2	23.8	4.4	5.2	5.
Nephrology	368	437	709	824	844	994	877	875	836	899	848	20.0	17.3	11.0	6.7	7.3	9.1	10.1	10.3	10.2	10.3	12.
Neurology	483	531	758	868	894	1,067	1,007	1,007	984	998	977	26.8	22.5	18.2	14.6	16.0	19.1	22.2	23.6	23.9	23.9	25.
Nurse Practitioner	190	176	215	384	550	553	311	409	728	694	299	35.8	10.6	8.1	6.9	9.0	9.2	9.0	6.2	4.8	5.6	10.
Obstetrics & Gynecology	1,141	1,244	1,707	1,789	1,827	2,126	1,837	1,742	1,548	1,518	1,539	15.0	12.8	9.3	6.1	7.9	9.7	10.4	10.4	10.8	11.0	12.
Oncology	42	43	57	78	72	86	70	74	82	57	45	14.8	12.9	13.9	9.2	11.0	11.8	12.5	11.1	6.8	8.7	10.
Ophthalmology	1,416	1,516	2,182	2,498	2,373	2,668	2,538	2,520	2,457	2,403	2,310	40.4	35.7	25.7	16.7	18.5	21.2	23.5	23.5	22.7	23.8	27.
Orthopedic Surgery	689	815	1,052	1,157	1,210	1,392	1,267	1,358	1,337	1,386	1,375	22.5	19.0	15.4	13.4	13.5	16.0	19.0	19.5	22.1	24.7	27.
Other	14,835	16,934	23,417	30,809	33,158	40,955	42,569	46,375	50,418	51,518	48,378	39.6	42.0	33.8	26.0	24.7	27.2	28.6	27.0	27.5	28.8	30.
Other Specialist	3,373	3,800	5,565	6,335	6,443	7,018	6,381	6,517	6,479	6,570	6,238	28.8	23.6	16.4	11.1	12.2	15.9	17.0	16.6	17.2	17.5	18.
Pediatrics	2,085	2,288	2,899	3,578	3,776	3,946	3,326	3,371	3,435	3,370	3,048	19.6	17.1	15.3	12.6	13.5	16.8	20.0	20.0	19.7	20.2	24.
Pharmacies	16	4	4	11	18	35	33	28	29	37	28	17.3	53.0	1.3	2.9	2.1	14.3	29.9	39.9	32.0	40.5	36.
Physical Medicine & Rehabilitation	221	257	334	384	350	461	438	438	440	464	473	21.7	21.6	17.0	12.2	13.3	13.0	17.7	19.3	20.1	22.5	24.
Physical Therapist	17	13	14	34	86	70	59	79	99	94	99	19.5	5.1	6.3	6.0	6.4	10.7	10.9	8.8	7.9	9.0	11.
Physician Assistant	129	112	177	372	584	499	148	187	305	241	126	72.4	24.2	10.6	5.5	10.0	11.0	6.0	3.5	5.1	6.2	5.
Preventive Medicine	689	631	947	1,063	1,049	1,167	1,109	1,138	1,124	1,188	1,156	41.3	40.9	27.1	17.9	20.2	25.7	26.4	25.2	28.0	30.8	33.
Psychiatry	134	154	171	178	314	710	772	859	1,047	1,062	1,058	18.1	21.6	16.6	11.3	9.9	8.5	12.5	13.0	13.8	14.4	16.
Psychologist	90	80	97	128	163	773	1,004	1,176	1,372	1,441	1,368	64.2	34.9	26.8	16.2	16.0	10.0	11.3	10.7	11.0	12.2	15.
Pulmonology	330	338	450	516	529	577	539	508	514	512	496	22.8	18.3	14.4	10.8	11.7	12.9	13.6	13.5	14.2	14.6	16.

F4. Quality of Care

A number of process of care measures were implemented using available administrative data (36 measures) and CAHPS responses (two measures regarding flu vaccination and one measure regarding smoking cessation). CAHPS measures also included four composite measures regarding experience of care. Process of care measures show general improvement measure by measure for the SPD population, thought the overall performance is lower than seen in a baseline national Medicaid comparison populations. We see general improvements in use of preventive services, adherence to certain types of care (asthma and COPD inhaler management, beta blockers after acute heart attack) and avoidance of potentially harmful care (such as potentially harmful prescriptions for older adults – DDE) (**Table 7 below and Supplementary Table S.25**). Measures of timely treatment after being seen in the hospital or ED for mental health related conditions (FUM, FUH, FUA) improved between 2010 and 2019.

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
LSC	Lead Screening in Children	0.19	0.21	0.22	0.22	0.23	0.23	0.26	0.33	0.49	0.50
AMR	Asthma Medication Ratio										
	Overall	0.46	0.52	0.67	0.63	0.57	0.57	0.58	0.58	0.56	0.84
	5-11 years	0.65	0.74	0.83	0.77	0.74	0.75	0.78	0.77	0.77	0.91
	12-18 years	0.56	0.63	0.76	0.73	0.70	0.72	0.74	0.73	0.73	0.90
	19-50 years	0.39	0.45	0.59	0.56	0.50	0.51	0.53	0.53	0.53	0.81
	51-64 years	0.48	0.52	0.68	0.62	0.55	0.54	0.55	0.54	0.52	0.83
MMA	Medication Management for People With Asthma										
	50% Adherence	0.67	0.72	0.80	0.77	0.76	0.73	0.73	0.75	0.76	0.79
	75% Adherence	0.41	0.45	0.51	0.53	0.50	0.48	0.49	0.50	0.53	0.57
PCE	Pharmacotherapy Management of COPD Exacerbation										
	Bronchodilators	0.67	0.69	0.65	0.74	0.80	0.80	0.80	0.78	0.80	0.72
	Systemic Corticosteroids	0.21	0.23	0.26	0.38	0.43	0.45	0.47	0.45	0.49	0.49
PBH	Persistence of Beta-Blocker Treatment After a Heart Attack	0.13	0.12	0.08	0.06	0.12	0.21	0.17	0.10	0.17	0.19
SPC	Statin therapy for people with cardiovascular disease										
	Any use	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Adherence	0.60	0.58	0.51	0.58	0.57	0.55	0.58	0.57	0.60	0.51
	Any use, Males, Age 21 to 75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Adherence, Males, Age 21 to 75	0.62	0.60	0.51	0.59	0.59	0.56	0.59	0.58	0.60	0.50
	Any use, Females, Age 40 to 75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Adherence, Females, Age 40 to 75	0.57	0.56	0.51	0.57	0.55	0.53	0.56	0.56	0.60	0.51
CDC	Comprehensive Diabetes Care										
	Routine Hemoglobin A1C Checks	0.48	0.49	0.46	0.48	0.51	0.55	0.62	0.65	0.65	0.68
	Annual Eye Exam	0.90	0.91	0.93	0.92	0.93	0.94	0.95	0.96	0.96	0.97
SPD	Statin therapy for people with diabetes	0.56	0.59	0.59	0.60	0.62	0.63	0.64	0.65	0.67	0.69
OMW	Osteoporosis Management in Women Who Had a Fracture	0.17	0.14	0.16	0.19	0.19	0.18	0.15	0.16	0.15	0.19
ADD	Follow-Up Care for Children Prescribed ADHD Medication										
	Induction Phase	0.29	0.52	0.53	0.54	0.54	0.54	0.57	0.58	0.60	0.61
	Continuation and Maintenance Phase	0.90	0.92	0.91	0.91	0.91	0.91	0.92	0.93	0.93	0.94

Table 7: Process of Care Measures for All SPD Enrollees by Year

Table 7: Process of Care Measures for All SPD Enrollees by Year (continued)

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AMM	**Antidepressant Medication Management**										
	Effective Acute Phase Treatment (12 weeks)	0.73	0.77	0.77	0.75	0.77	0.75	0.73	0.74	0.75	0.77
	Effective Acute Phase Treatment (6 months)	0.73	0.77	0.76	0.74	0.76	0.72	0.71	0.72	0.72	0.73
APM	**Metabolic Monitoring for Children and Adolescents on Antipsychotics**										
	Overall	0.27	0.27	0.25	0.26	0.28	0.32	0.35	0.38	0.37	0.39
	1-5 years	0.17	0.13	0.14	0.14	0.20	0.15	0.28	0.21	0.19	0.15
	6-11 years	0.22	0.23	0.21	0.22	0.24	0.28	0.30	0.33	0.30	0.32
	12-17 years	0.31	0.31	0.28	0.29	0.30	0.34	0.38	0.40	0.41	0.43
FUH	**Follow-Up After Hospitalization for Mental Illness**										
	7 days	0.50	0.59	0.64	0.64	0.60	0.60	0.61	0.60	0.63	0.61
	30 days	0.64	0.72	0.75	0.75	0.72	0.73	0.74	0.73	0.75	0.74
FUM	**Follow-Up After ED Visit for Mental Illness**										
	7 days	0.44	0.49	0.51	0.53	0.52	0.51	0.51	0.51	0.52	0.53
	30 days	0.58	0.62	0.63	0.65	0.64	0.64	0.65	0.66	0.67	0.68
FUA	**Follow-Up After Emergency Department Visit for Alcohol and Substance Abuse**										
	7 days (Overall)						0.08	0.07	0.07	0.07	0.07
	7 days: 13-17 years						0.04	0.02	0.01	0.01	0.03
	7 days: 18+ years						0.08	0.07	0.07	0.07	0.07
	30 days (Overall)						0.12	0.11	0.11	0.12	0.11
	30 days: 13-17 years						0.07	0.02	0.04	0.03	0.04
	30 days: 18+ years						0.12	0.11	0.11	0.12	0.12
SAA	**Adherence to Antipsychotic Medications for Individuals With Schizophrenia**	0.69	0.70	0.70	0.70	0.71	0.67	0.67	0.62	0.72	0.67
SMC	**Cardiovascular Monitoring for People With Cardiovascular Disease and Schizophrenia**	0.82	0.85	0.73	0.72	0.80	0.77	0.80	0.77	0.79	0.85
SMD	**Diabetes Monitoring for People With Diabetes and Schizophrenia**	0.67	0.67	0.58	0.62	0.65	0.68	0.72	0.74	0.75	0.76
SSD	**Diabetes Screening for People With Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications**	0.72	0.71	0.65	0.65	0.66	0.69	0.73	0.75	0.75	0.76
MPM	**Annual Monitoring for Patients on Persistent Medications**										
	ACE/ARB medications	0.81	0.81	0.75	0.75	0.76	0.79	0.83	0.87	0.85	0.86
	Diuretic Medications	0.81	0.81	0.76	0.76	0.76	0.79	0.84	0.87	0.86	0.87
AAB	**Avoidance of Antibiotic Treatment in Adults With Acute Bronchitis**	0.17	0.14	0.19	0.20	0.24	0.30	0.32	0.27	0.24	0.21

Table 7: Process of Care Measures for All SPD Enrollees by Year (continued)

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
APC	**Use of Multiple Concurrent Antipsychotics in Children and Adolescents**										
	Overall	0.07	0.07	0.07	0.07	0.07	0.06	0.05	0.05	0.04	0.04
	1-5 years	0.02	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.00
	6-11 years	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.02	0.02
	12-17 years	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.05	0.05
DAE	**Use of High-Risk Medications in the Elderly**										
	at least one dispensing event	0.26	0.25	0.25	0.24	0.20	0.18	0.18	0.17	0.17	0.18
	at least two dispensing event	0.14	0.14	0.14	0.13	0.11	0.10	0.10	0.09	0.09	0.10
DDE	**Potentially Harmful Drug-Disease Interactions in the Elderly**										
	Oveall	0.49	0.48	0.47	0.46	0.43	0.40	0.38	0.40	0.39	0.39
	History of Falls and Anticonvulsants …	0.46	0.44	0.44	0.45	0.44	0.40	0.40	0.40	0.41	0.40
	Dementia and ADntipsychotics …	0.70	0.67	0.65	0.64	0.60	0.58	0.56	0.55	0.54	0.52
	Chronic Kidney Disease and NSAIDs	0.17	0.19	0.21	0.19	0.17	0.17	0.28	0.34	0.31	0.31
LBP	**Potentially Inappropriate Use of Imaging Studies for Low Back Pain**	0.16	0.16	0.14	0.14	0.15	0.16	0.20	0.20	0.20	0.21
PSA	**Non-recommended PSA screening in older men**	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05
AAP	**Adults' Access to Preventive/Ambulatory Health Services**										
	Overall	0.62	0.65	0.66	0.66	0.67	0.66	0.69	0.68	0.71	0.79
	20-44 years	0.54	0.56	0.57	0.57	0.58	0.57	0.59	0.57	0.58	0.69
	45-64 years	0.65	0.69	0.70	0.69	0.71	0.71	0.76	0.73	0.79	0.85
	65+ years	0.70	0.73	0.74	0.75	0.70	0.66	0.71	0.72	0.74	0.81
CAP	**Children and Adolescents' Access to Primary Care Practitioners**										
	Overall	0.59	0.62	0.65	0.67	0.70	0.72	0.74	0.72	0.75	0.82
	12-24 months	0.37	0.40	0.41	0.43	0.44	0.48	0.57	0.52	0.83	0.80
	25 months - 5 years	0.52	0.56	0.58	0.60	0.63	0.66	0.70	0.69	0.80	0.82
	5-11 years	0.64	0.68	0.70	0.72	0.74	0.76	0.77	0.75	0.77	0.84
	12-17 years	0.63	0.67	0.70	0.72	0.74	0.76	0.77	0.75	0.74	0.83
IET	**Initiation and Engagement of Alcohol and Other Drug Dependence Treatment**										
	Initation	0.59	0.59	0.56	0.57	0.58	0.59	0.61	0.61	0.62	0.62
	Initation; 13-17 years	0.73	0.77	0.77	0.73	0.67	0.65	0.62	0.61	0.69	0.64
	Initation; 18+ years	0.58	0.58	0.56	0.57	0.58	0.58	0.61	0.61	0.62	0.62
	Engagement	0.26	0.26	0.26	0.23	0.20	0.18	0.17	0.16	0.16	0.17
	Engagement; 13-17 years	0.48	0.52	0.53	0.47	0.35	0.34	0.32	0.32	0.31	0.30
	Engagement; 18+ years	0.25	0.25	0.25	0.22	0.20	0.18	0.17	0.16	0.16	0.16
EOL	**End of Life Care for Individuals with severe chronic medical conditions**										
	Death in the Hospital						0.45	0.42	0.43	0.44	0.46
	Prolonged mechanical ventilation during terminal hospitalization						0.04	0.04	0.04	0.05	0.05
	ICU Use in the last 30 days of life						0.60	0.51	0.52	0.55	0.57
	Days ICU stay in the last 30 days of life						2.01	1.92	1.86	2.15	2.23

CAHPS-based HEDIS measures among plan members show small changes among some measures. Measures for flu vaccination showed a self-reported rate of 69% (**Table 8 below and Supplementary Tables S.26A-S.26T**). Smoking cessation interventions were reported in the smoking cohort. However, the questions do not dive into success of interventions or attempts at stopping smoking. CAHPS measures for access to care and plan satisfaction were essentially unchanged over the three waves of surveys. Overall composite ratings of care, physicians, and plans did show small increases. Of note, there are no national benchmarks for SPD Medicaid enrollees.

Table 8: CAHPS Patient Care Quality Measures						
	2013		**2016**		**2019**	
	n	**mean**	**n**	**mean**	**n**	**mean**
Vaccination						
Annual Flu Vaccination (respondents 18-64 years)	-	-	1,260	0.56	1,218	0.54
Annual Flu Vaccination (respondents 65 years and older)	-	-	1,203	0.67	944	0.67
Smoking Cessation (among current smokers)						
How often advised in last 6 months by plan / providers to stop smoking / tobacco use?	1,021	0.55	460	0.57	430	0.55
How often in the last 6 months was medication offered to stop smoking / tobacco use?	1,024	0.29	457	0.24	424	0.31
How often in the last 6 months were strategies discussed to stop smoking / tobacco use?	1,020	0.22	460	0.21	424	0.26
Access to Care*						
Easy for Respondent to get Necessary Care, Tests, or Treatment	3,996	3.19	1,991	3.29	1,709	3.27
Respondent Got Appointment with Specialists as soon as Needed	2,434	3.11	1,271	3.25	1,118	3.22
Respondent got Care for Illness/Injury as soon as Needed	1,950	3.27	929	3.26	769	3.38
Respondent got Non-Urgent Appointment as soon as Needed	3,758	3.23	1,818	3.24	1,601	3.24
Satisfaction*						
Doctor Explained things in a way that was easy to understand	3,595	3.41	1,830	3.55	1,557	3.53
Doctor listened carefully to enrollee	3,601	3.47	1,831	3.6	1,559	3.62
Doctor showed respect for what enrollee had to say	3,588	3.57	1,829	3.67	1,562	3.67
Doctor spent enough time with enrollee	3,581	3.32	1,825	3.46	1,563	3.46
Overall Patient Ratings (Health care, doctors, plans)						
Rating of all health care	3,990	7.86	1,970	8.06	1,707	8.10
Rating of personal doctor	4,080	8.44	2,072	8.59	1,799	8.60
Rating of Specialist	2,290	8.40	1,186	8.58	1,044	8.60
Rating of Health Plan	4,982	7.80	2,525	8.11	2,216	8.25
* Measured on four point scale (never, sometimes, often, always)						

Access to preventive care services and unadjusted utilization measures for outpatient visits have generally increased over time (**Table 9**). For example, the proportion of infants with well-child visits (**QI W15**) has increased, while the proportion of infants without any visits has diminished. The proportion of well-child visits for young children (**QI W34**) and for adolescents (**QI AWC**) also increased during this period. Total outpatient visits in office settings and in the emergency department increased during the decade.

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
W15	Well-Child Visits in the First 15 Months of Life (proportion by # visits)										
	No visits	0.66	0.62	0.59	0.56	0.52	0.46	0.29	0.29	0.12	0.13
	1 visit	0.09	0.09	0.09	0.09	0.10	0.12	0.15	0.13	0.12	0.09
	2 visits	0.07	0.07	0.07	0.08	0.08	0.10	0.13	0.12	0.13	0.11
	3 visits	0.06	0.06	0.07	0.07	0.08	0.09	0.12	0.12	0.14	0.13
	4 visits	0.05	0.05	0.06	0.06	0.07	0.08	0.11	0.11	0.15	0.15
	5 visits	0.04	0.04	0.05	0.05	0.06	0.06	0.08	0.09	0.14	0.15
	6+ visits	0.05	0.06	0.07	0.08	0.09	0.09	0.12	0.14	0.21	0.24
W34	Well-Child Visits in the Third, Fourth, Fifth and Sixth Years of Life	0.40	0.43	0.46	0.50	0.51	0.52	0.56	0.55	0.62	0.68
AWC	Adolescent Well-Care Visits	0.22	0.27	0.29	0.32	0.33	0.33	0.34	0.33	0.33	0.41
AMB	**Ambulatory Care Outpatient Visits***										
	Age 1-9 years	228	258	266	292	288	300	306	315	398	434
	Age 10-19 years	158	183	190	206	201	210	215	224	259	315
	Age 20-44 years	211	221	218	229	226	224	232	244	298	351
	Age 45-64 years	376	389	382	401	421	443	493	524	681	745
	Age 65-74 years	367	371	357	375	343	333	365	431	531	583
	Age 75-84 years	378	377	359	379	352	344	380	445	515	565
	Age 85+ years	354	348	328	348	328	313	340	407	459	522
	Ambulatory Care ED Visits*										
	Age 1-9 years	32	34	34	37	39	47	48	46	49	52
	Age 10-19 years	25	26	26	27	29	32	32	31	28	34
	Age 20-44 years	62	66	67	67	69	71	69	64	61	73
	Age 45-64 years	58	65	70	70	74	80	86	83	87	95
	Age 65-74 years	20	23	26	28	25	26	28	30	30	32
	Age 75-84 years	21	24	29	31	28	28	29	31	30	31
	Age 85+ years	26	31	40	41	36	33	36	37	35	37

Table 9: Utilization of Care Measures for All SPD Enrollees by Year

* per 1000 patient-months

Mental health utilization (**QI MPT**) was less frequently reported towards the end of the managed care transition period (2019) compared to the intermediate years for certain portions of care. Given the variation in reporting, this suggests that plans may not be capturing / reporting the mental health visits of their enrollees, especially if certain services are assigned to a capitated delegated mental health service provider. Mental health reporting bears greater scrutiny going forward. Although overall there are no overall gender differences in use of mental health services, there were some marginal differences within age-gender strata (see **Supplementary Table S.27**).

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
MPT	**Mental Health Utilization - Any**										
	Overall	0.06	0.07	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09
	Female	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09
	Male	0.06	0.07	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09
	0-12 years	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.13	0.13	0.10
	3-17 years	0.08	0.10	0.11	0.12	0.13	0.13	0.13	0.12	0.12	0.10
	18-64 years	0.07	0.08	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.11
	65+ years	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
	Mental Health Utilization (inpatient)										
	Overall	0.06	0.08	0.11	0.12	0.10	0.09	0.09	0.09	0.10	0.08
	Female	0.06	0.07	0.09	0.10	0.08	0.07	0.07	0.07	0.08	0.07
	Male	0.07	0.08	0.13	0.14	0.12	0.10	0.10	0.11	0.11	0.09
	0-12 years	0.01	0.05	0.18	0.23	0.16	0.10	0.11	0.13	0.11	0.01
	3-17 years	0.04	0.08	0.25	0.31	0.20	0.11	0.10	0.10	0.09	0.04
	18-64 years	0.09	0.09	0.10	0.10	0.09	0.10	0.10	0.10	0.12	0.12
	65+ years	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02
	Mental Health Utilization (intensive outpatient)										
	Overall	0.19	0.18	0.16	0.14	0.11	0.09	0.08	0.08	0.10	0.10
	Female	0.12	0.12	0.11	0.10	0.09	0.07	0.06	0.06	0.07	0.07
	Male	0.25	0.24	0.22	0.18	0.14	0.10	0.09	0.09	0.12	0.12
	0-12 years	0.25	0.23	0.23	0.18	0.10	0.06	0.06	0.10	0.23	0.26
	3-17 years	1.01	1.05	0.90	0.68	0.41	0.24	0.22	0.18	0.19	0.18
	18-64 years	0.12	0.11	0.10	0.11	0.11	0.09	0.08	0.08	0.09	0.08
	65+ years	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mental Health Utilization (outpatient)										
	Overall	0.05	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08
	Female	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08
	Male	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.08
	0-12 years	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.11	0.12	0.10
	3-17 years	0.07	0.08	0.08	0.09	0.10	0.10	0.10	0.10	0.10	0.09
	18-64 years	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09
	65+ years	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03

Table 9: Utilization of Care Measures for All SPD Enrollees by Year (continued)

Antibiotic usage – overall use, days per prescription, prescriptions of concern, and the proportion of prescriptions of concern – do not show substantial changes from 2009 to 2019. Unadjusted measures of antibiotic use (ABX) – days of prescribed antibiotics per member increased, noticeably in 2018 and 2019. In contrast, the proportion of concerning antibiotics prescribed out of all antibiotics prescribed was unchanged. In general, women were prescribed antibiotics more than men were. These differences were consistent across age strata (See detailed **Supplementary Table S.27**). Antibiotics of concern remained relatively constant as a proportion of prescribed antibiotics. Older patients tend to have higher

rates of prescribed antibiotics of concern relative to younger patients. There are no consistent gender differences.

Table 9: Utilization of Care Measures for All SPD Enrollees by Year (continued)

| QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
ABX	**Antibiotic Utilization**										
	Prescriptions Per Member Per Year										
	Overall	0.97	1.07	1.04	0.99	0.96	0.91	0.90	0.86	0.84	0.94
	Female	1.14	1.26	1.23	1.17	1.13	1.08	1.08	1.03	1.01	1.13
	Male	0.81	0.90	0.86	0.83	0.80	0.75	0.74	0.70	0.68	0.77
	1-9 years	0.93	1.11	1.07	1.09	0.95	0.90	0.87	0.81	0.83	0.92
	10-17 years	0.63	0.71	0.69	0.71	0.65	0.60	0.58	0.55	0.55	0.62
	18-34 years	0.85	0.92	0.87	0.84	0.80	0.74	0.71	0.66	0.63	0.75
	35-49 years	1.11	1.21	1.19	1.15	1.19	1.14	1.14	1.06	1.00	1.15
	50 to 64 years	1.18	1.29	1.25	1.15	1.15	1.13	1.19	1.14	1.14	1.30
	65 to 74 years	0.67	0.72	0.67	0.63	0.59	0.55	0.55	0.58	0.59	0.61
	75 to 84 years	0.72	0.76	0.71	0.68	0.61	0.57	0.58	0.62	0.61	0.62
	85+ years	0.85	0.92	0.84	0.78	0.71	0.65	0.64	0.70	0.67	0.72
	Days Per Prescription										
	Overall	10.8	11.0	11.9	11.4	11.0	10.5	10.4	13.0	19.0	19.8
	Female	10.1	10.3	11.3	10.6	10.2	9.8	9.7	12.8	19.7	20.5
	Male	11.8	11.9	12.8	12.3	11.9	11.4	11.3	13.4	18.0	18.8
	1-9 years	12.0	11.8	12.8	13.1	13.0	12.4	12.6	14.7	20.0	20.5
	10-17 years	12.5	12.9	13.8	14.0	13.9	13.1	13.5	15.1	20.7	20.9
	18-34 years	11.4	11.7	12.2	12.3	11.8	11.4	11.3	14.7	21.7	22.1
	35-49 years	11.0	11.1	11.7	11.0	10.8	10.4	10.3	13.3	20.1	21.6
	50 to 64 years	10.2	10.3	11.4	10.4	10.0	9.6	9.5	12.1	17.6	18.6
	65 to 74 years	9.4	9.7	11.6	9.7	9.4	8.9	9.1	11.4	17.4	16.1
	75 to 84 years	9.1	9.4	10.7	9.4	9.0	8.6	8.6	10.3	15.5	15.4
	85+ years	8.8	9.1	9.7	8.7	8.6	8.5	8.5	10.5	16.2	15.2
	Prescriptions of Concern Per Member Per Year										
	Overall	0.35	0.39	0.39	0.38	0.37	0.37	0.37	0.34	0.33	0.36
	Female	0.42	0.46	0.47	0.46	0.45	0.45	0.45	0.42	0.40	0.43
	Male	0.28	0.32	0.32	0.31	0.30	0.30	0.29	0.28	0.27	0.29
	1-9 years	0.28	0.37	0.35	0.34	0.29	0.28	0.26	0.25	0.24	0.27
	10-17 years	0.17	0.20	0.20	0.22	0.21	0.21	0.19	0.18	0.19	0.20
	18-34 years	0.26	0.29	0.30	0.29	0.28	0.27	0.25	0.23	0.22	0.25
	35-49 years	0.39	0.43	0.45	0.44	0.45	0.46	0.46	0.42	0.38	0.43
	50 to 64 years	0.46	0.51	0.52	0.49	0.48	0.50	0.53	0.50	0.49	0.54
	65 to 74 years	0.29	0.32	0.30	0.30	0.27	0.26	0.25	0.26	0.26	0.26
	75 to 84 years	0.35	0.36	0.34	0.35	0.30	0.29	0.29	0.31	0.28	0.29
	85+ years	0.46	0.48	0.43	0.42	0.38	0.36	0.34	0.37	0.34	0.35
	Proportion of Concerning Prescriptions										
	Overall	0.36	0.36	0.38	0.39	0.39	0.41	0.41	0.40	0.39	0.38
	Female	0.37	0.37	0.39	0.40	0.40	0.42	0.41	0.41	0.40	0.38
	Male	0.34	0.36	0.37	0.37	0.37	0.39	0.39	0.40	0.39	0.38
	1-9 years	0.31	0.34	0.33	0.32	0.31	0.32	0.30	0.30	0.29	0.29
	10-17 years	0.26	0.28	0.30	0.31	0.32	0.35	0.33	0.34	0.34	0.33
	18-34 years	0.31	0.32	0.34	0.34	0.34	0.36	0.36	0.36	0.35	0.34
	35-49 years	0.35	0.36	0.38	0.39	0.38	0.40	0.40	0.39	0.38	0.37
	50 to 64 years	0.39	0.40	0.41	0.43	0.42	0.44	0.44	0.44	0.43	0.42
	65 to 74 years	0.44	0.44	0.45	0.47	0.45	0.47	0.46	0.46	0.44	0.43
	75 to 84 years	0.49	0.48	0.48	0.51	0.50	0.51	0.50	0.50	0.47	0.46
	85+ years	0.54	0.52	0.52	0.54	0.53	0.55	0.53	0.53	0.50	0.49

F4.1 Utilization – Ambulatory Care

Total outpatient visits increased in the SPD population with the greatest increase in 2019 (**Figure 5**). Total visits shifted over the evaluation period. Granular analyses (primary care versus specialty care shows relatively constant proportions of visits since 2016. In the most recent years, roughly 15% of visits are to generalists, 15% are to core specialists, 9% are to other specialists, and 50% are to other non-physician providers. Prior to 2016, claims for managed care patients had large numbers of missing NPI, making classification of these visits by provider specialty impossible. This classification issue worsened between 2012 and 2014, when the urban and rural transitions occurred (**Figure 6**). Detailed findings are shown in **Supplementary Table S.28.**

Figure 5: Overall Outpatient Visits
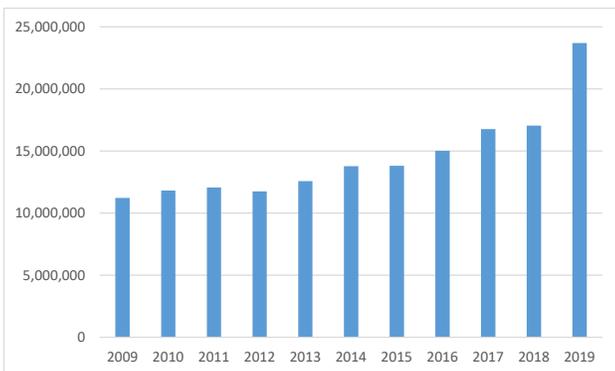
Figure 6: Outpatient Visits by Specialty Type by Year
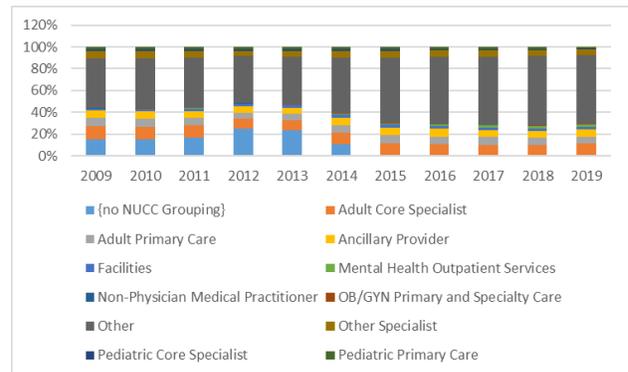

Overall, all-cause emergency department visits not resulting in hospitalization increased marginally over the transition period (2011 to 2012) from 0.86 to 0.97 visits per patient-year, but have remained remarkably stable since 2012 (**Figure 7**). Of note, unlike hospitalizations, ED visits for fee-for-service enrollees decreased after transition. Because of the enrollment policies of Medi-Cal, patients often gain eligibility at the time of hospitalization. Such an individual's later ED visits are likely captured as a managed care enrollee as they are transitioned to the appropriate plans of the county of residence. Non-ED visits occurred at a much higher level and have increased during between 2009 and 2019.

Detailed descriptions by plan and county are shown in **Supplementary Tables S.29 to S.36**.

Finally, common procedures (QI FEM) are presented below in Table 10. As defined by HEDIS, these 16 procedures cover one common pediatric procedure (tonsillectomy), three cardiac procedures (PCI, diagnostic cardiac catheterization, CABG), bariatric weight loss surgery, hysterectomy (abdominal and transvaginal), cholecystectomy (open and laparoscopic), back surgery/procedures, joint replacement (hip and knee), prostatectomy, carotid endarterectomy, and breast procedures (mastectomy and lumpectomy). Measures are stratified by age category. Where age strata are excluded, there were no procedures observed across all years for those particular age strata within procedure.

Figure 7: Mean Annual ED Visits not Resulting in Hospitalization
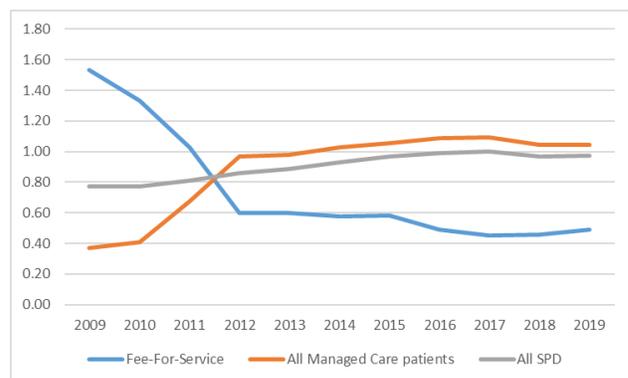
Overall, we see general increases in many procedures with decreases in some procedures (notably diagnostic cardiac catheterization). Taken together, hysterectomies have decreased overall. There has been a large increase in knee replacement procedures. A major challenge with evaluating receipt of procedures is appropriateness, which is tethered to professional criteria at the time of the procedure as well as cohort characteristics, which would make an individual eligible for a procedure. Nevertheless, on face, it does appear that SPDs are benefiting from receipt of these common procedures. Within these results we do not see a pattern that is outside of expectations or general trends in care delivery.

Table 10: Utilization of Care Measures for All SPD Enrollees by Year

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
FEM	**Procedures (/1000 patient years)**										
	Tonsilectomy										
	0 TO 17 years	2.70	3.20	3.44	3.36	3.34	4.05	4.09	4.15	4.55	5.04
	18 TO 44 years	0.26	0.25	0.24	0.24	0.28	0.35	0.30	0.32	0.34	0.36
	45 TO 64 years	0.09	0.08	0.06	0.08	0.08	0.09	0.11	0.12	0.13	0.08
	65 TO 84 years					0.03		0.03			0.04
	Percutaneous Cardiac Intervention										
	0 TO 17 years	0.07	0.02	0.02	0.04	0.04					
	18 TO 44 years	0.16	0.16	0.18	0.13	0.20	0.17	0.21	0.22	0.23	0.21
	45 TO 64 years	2.22	2.01	1.97	1.57	2.72	3.23	3.44	3.42	3.50	3.55
	65 TO 84 years	2.34	2.11	2.13	1.90	2.63	2.83	3.52	3.76	3.64	3.79
	85+ years	1.14	2.48	1.98	1.90		1.96	2.86	2.89	2.64	2.60
	Cardiac Catheterization										
	0 TO 17 years	19.96	17.68	17.78	19.34	18.90	18.56	18.08	16.88	15.49	16.03
	18 TO 44 years	7.02	6.37	3.38	3.76	5.12	4.80	4.50	4.45	4.58	5.40
	45 TO 64 years	32.14	25.45	12.42	12.13	14.62	17.30	18.23	18.66	19.22	20.06
	65 TO 84 years	26.33	20.37	9.95	10.39	10.94	12.27	14.42	14.78	14.77	14.89
	85+ years	17.89	7.25	5.45	4.91	4.69	5.22	8.00	8.18	8.37	8.49
	CABG										
	0 TO 17 years								0.01		
	18 TO 44 years	0.07	0.05		0.03	0.06	0.03	0.07	0.03	0.02	0.02
	45 TO 64 years	0.69	0.66	0.60	0.54	0.74	0.99	1.10	0.87	0.73	0.75
	65 TO 84 years	1.05	1.14	0.95	0.85	1.16	1.11	1.46	1.67	1.20	1.08
	85+ years	0.57									0.26
	Bariatric Weight Loss Surgery										
	0 TO 17 years										0.05
	18 TO 44 years	0.24	0.31	0.33	0.33	0.51	0.53	0.63	0.77	0.89	0.94
	45 TO 64 years	0.25	0.27	0.26	0.35	0.60	0.74	0.92	1.19	1.42	1.35
	65 TO 84 years									0.03	0.05
	Abdominal Hysterectomy										
	0 TO 17 years			0.02	0.02		0.02				
	18 TO 44 years	0.49	0.58	0.65	0.64	0.57	0.74	0.90	0.65	0.50	0.43
	45 TO 64 years	0.79	0.76	0.67	0.79	1.05	1.14	1.17	1.06	0.80	0.70
	65 TO 84 years	0.33	0.37	0.47	0.44	0.42	0.40	0.36	0.35	0.39	0.41
	85+ years			0.26		0.21	0.34	0.15			
	Vaginal Hysterectomy										
	18 TO 44 years	0.25	0.30	0.27	0.37	0.45	0.52	0.50	0.40	0.54	0.30
	45 TO 64 years	0.43	0.38	0.35	0.42	0.66	0.78	0.76	1.07	0.68	0.81
	65 TO 84 years	0.37	0.31	0.35	0.40	0.63	0.64	0.59	1.01	0.85	0.73
	85+ years					0.21			0.15		0.13

Table 10: Utilization of Care Measures for All SPD Enrollees by Year (continued)

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Open Cholecystectomy										
	0 TO 17 years	0.07	0.04			0.02	0.02			0.01	
	18 TO 44 years	0.07	0.08	0.08	0.11	0.10	0.09	0.09	0.08	0.09	0.07
	45 TO 64 years	0.17	0.15	0.19	0.18	0.23	0.26	0.21	0.22	0.14	0.14
	65 TO 84 years	0.16	0.14	0.27	0.15	0.29	0.19	0.15	0.20	0.16	0.14
	85+ years		0.35						0.67	0.36	
	Laparoscopic Cholecystectomy										
	0 TO 17 years	0.09	0.09	0.12	0.06	0.20	0.19	0.13	0.20	0.16	0.17
	18 TO 44 years	1.60	1.30	1.25	1.26	1.97	2.10	2.18	2.27	2.01	2.00
	45 TO 64 years	1.65	1.63	1.68	1.81	2.33	3.09	3.00	3.03	2.85	2.64
	65 TO 84 years	1.78	1.56	1.65	1.77	2.07	2.33	2.65	2.86	2.90	2.64
	85+ years	1.14	1.94	1.32	2.38	1.88	2.28	2.07	2.50	1.64	2.08
	Back Surgery										
	0 TO 17 years	0.18	0.15	0.19	0.06	0.13	0.08	0.04	0.09	0.07	0.09
	18 TO 44 years	0.32	0.35	0.48	0.35	0.49	0.61	0.66	0.67	0.53	0.51
	45 TO 64 years	0.74	0.70	0.82	1.04	1.48	2.43	3.11	2.89	2.92	2.95
	65 TO 84 years	0.21	0.26	0.18	0.33	0.43	0.63	0.84	0.96	0.98	1.22
	85+ years				0.32			0.59	1.16	0.73	1.13
	Prostectomy										
	0 TO 17 years				0.01		0.01				
	18 TO 44 years	0.03	0.02	0.02	0.03		0.03	0.01	0.03	0.03	0.01
	45 TO 64 years	0.81	0.65	0.74	0.72	0.99	1.24	1.38	1.22	1.23	1.21
	65 TO 84 years	2.27	2.87	3.04	2.41	3.07	3.99	3.90	4.89	4.34	4.80
	85+ years	2.09	1.45	2.29	2.19	5.18	2.78	4.81	4.41	3.62	2.76
	Total Hip Replacement										
	0 TO 17 years			0.01				0.01			
	18 TO 44 years	0.07	0.09	0.12	0.13	0.13	0.17	0.16	0.14	0.11	0.11
	45 TO 64 years	0.31	0.36	0.42	0.50	0.70	0.97	1.09	0.95	1.04	0.91
	65 TO 84 years	0.09	0.14	0.26	0.29	0.35	0.43	0.42	0.55	0.53	0.40
	85+ years		0.71								0.26
	Total Knee Replacement										
	0 TO 17 years	0.06	0.04		0.01	0.03	0.03		0.01		0.02
	18 TO 44 years	0.04	0.06	0.05	0.07	0.10	0.09	0.07	0.05	0.13	0.04
	45 TO 64 years	0.43	0.48	0.77	0.72	1.24	1.78	2.01	1.86	1.59	1.67
	65 TO 84 years	0.55	0.67	1.03	1.39	1.68	2.33	2.46	2.90	2.73	3.15
	85+ years			0.66			1.41	0.69	0.48		0.61
	Carotid Endarterectomy										
	45 TO 64 years	0.09	0.06	0.07	0.07	0.11	0.10	0.20	0.12	0.11	0.10
	65 TO 84 years	0.10	0.14	0.08	0.16	0.16	0.33	0.21	0.41	0.19	0.16
	85+ years				0.32			0.20		0.18	

Table 10: Utilization of Care Measures for All SPD Enrollees by Year (continued)

QI	QI Description	Measure Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	At least one Mastectomy										
	0 TO 17 years				0.02			0.02	0.02		
	18 TO 44 years	0.15	0.24	0.17	0.33	0.28	0.43	0.32	0.44	0.46	0.56
	45 TO 64 years	0.65	0.65	0.80	0.78	0.95	1.16	1.22	1.19	1.20	1.30
	65 TO 84 years	0.52	0.50	0.61	0.60	0.84	1.04	0.91	1.14	1.04	1.26
	85+ years			0.26	0.50	0.21	0.17	1.06	0.44		0.53
	Lumpectomy										
	0 TO 17 years	0.07		0.13	0.06	0.17	0.10	0.09	0.02	0.07	0.17
	18 TO 44 years	0.85	0.75	0.61	0.77	0.78	0.79	0.77	0.79	0.65	0.75
	45 TO 64 years	2.29	2.21	1.64	1.68	2.16	2.35	2.33	2.49	2.61	2.08
	65 TO 84 years	1.47	1.24	1.26	0.85	1.43	1.22	1.68	2.09	2.14	1.95
	85+ years		0.28	0.26	0.50	0.21	0.50	0.46	0.44	0.70	0.66

Unadjusted Quality Metrics

Unadjusted high-level quality of care metrics include annual mortality rates, hospitalization rates, 30-day readmission, and 30-day hospital mortality by population (fee-for-service versus managed care). Overall mortality decreased between 2009 and 2014 and has remained constant since, with managed care rates starting lower and rising to nearly equal to the overall rate, while fee-for-service rates started closer to the mean rate and rose much higher than the overall rate by 2019 (**Figure 8**).

Statewide, total numbers of hospitalization discharges shifted from fee-for-service to managed care, with the managed care hospitalizations accounting for the majority of discharges by 2013 (**Figure 9**). Between 2012 and 2014, the total number of reported hospital discharges decreased, likely reflecting underreporting by managed care providers. Since 2015, total discharges have been fairly constant. This change is coincident with the introduction of PACES – the standardized reporting initiated by DHCS in the fall of 2014.

Overall average hospital discharges per 1000 patient-months dropped from 2011 to 2012 and then increased from 2014 to 2015, likely reflecting the same reporting issues noted above (**Figure 10**). By 2019, average hospital discharges per 1000 patient-months was equal to that seen in 2009. Average hospital discharges have increased in the managed care population, reflecting the mandatory inclusion of all SPD enrollees. With voluntary managed care enrollment in 2009, generally healthier patients chose managed care with the majority choosing to remain in fee-for-service Medi-Cal.

Average length of stay per hospitalization (overall, fee-for-service, and managed care) tracked together until the mandatory managed care enrollment began in 2011/2012 (**Figure 11**). Since that point, average length of stay per hospitalization has closely tracked the managed care population.

Average length of stay for hospitalizations among fee-for-service enrollees has steadily increased since the transition to mandatory managed care enrollment. Longer hospitalizations may reflect that the residual fee-for-service population is now a sicker, more heterogeneous and transitory population.

Figure 8: Unadjusted Mortality for SPD Enrollees (Deaths/1000-patient months)
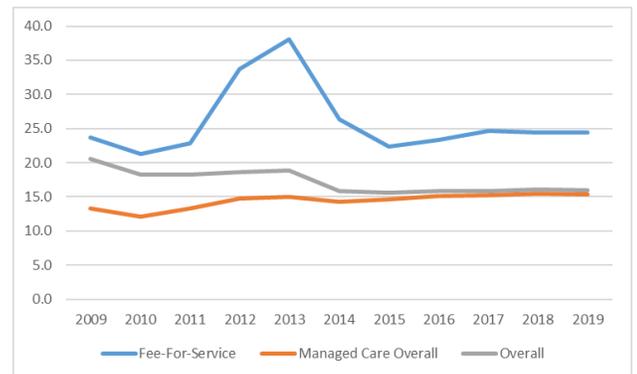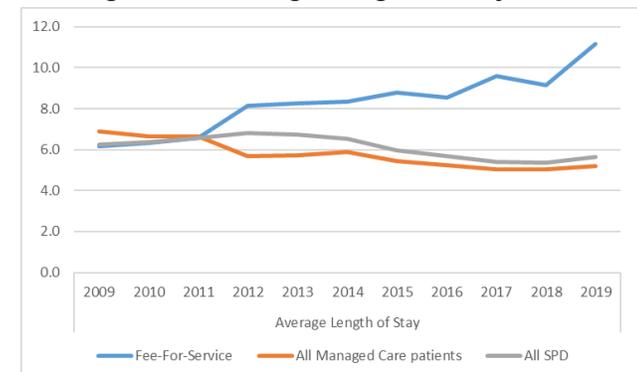

Figure 9: Hospital Discharges per Year
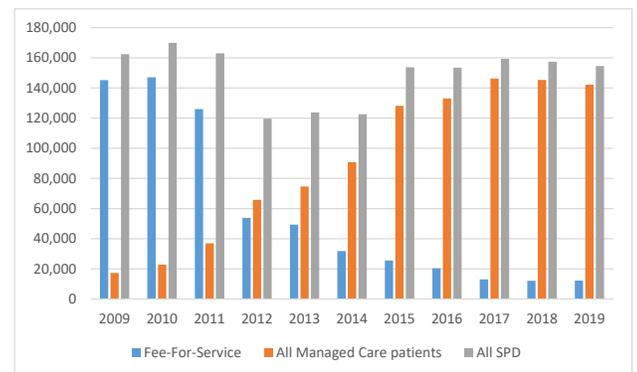
Figure 10: Average Hospital Discharges per 1000 Patient Months
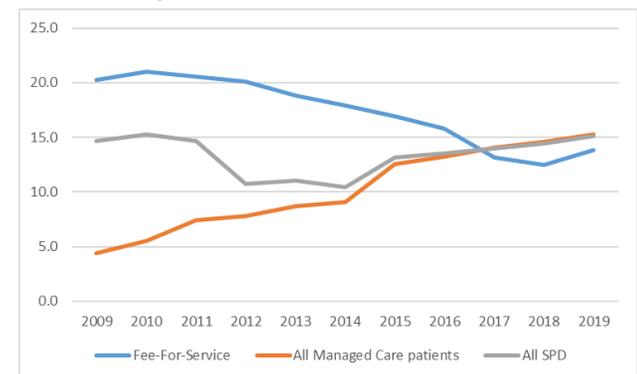
Figure 11: Average Length of Stay

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Overall 30-day readmission rates (excluding scheduled admissions) decreased from 19.9% in 2009 to 17.5% in 2014 and increased thereafter reached 18.4% in 2019 (**Figure 12**). As with other findings, interpretation of the decrease in events during the initial managed care transition must be made in the context of known underreporting during this period. Hospital mortality (inpatient and 30-day all-cause mortality) has decreased since 2009 (**Figure 13**). If one considers the period between 2010 and 2019, overall 30-day mortality modestly decreased from 3.9% to 3.7%, while hospital inpatient mortality from 2.5% to 1.6%. The relatively constant 30-day mortality underlines the lower reliability of inpatient mortality, which is susceptible to selection effects. Underlying societal effects that favor deaths occurring outside of the hospital and policies that support transferring patients out of the hospital at the end of life and allowing them to pass away in other venues would contribute to this observation.

Detailed descriptions by plan and county are shown in **Supplementary Tables S.37 to S48**.

Cancer Care

Subset analysis of care delivery to SPD enrollees with eight common cancers did not substantially show the kind of changes that one would expect with greater adherence to cancer screening and treatment (**Supplementary Tables S.49 through S.56**). We did not see an increase in earlier stage disease, trends towards shorter time from diagnosis to treatment, or improvements in survival. We note that in the last year of the data that there appears to be an increase in higher stage disease for some cancers, which likely reflects reclassification of staging by the cancer registry rather than a true change in clinical behavior. We also note that in pancreatic cancer, survival appears improved in the final two years, but this is likely a censuring issue since merging the vital statistics data with the cancer registry data is usually a prolonged process and pancreatic

Figure 12: Hospital 30-day Readmission
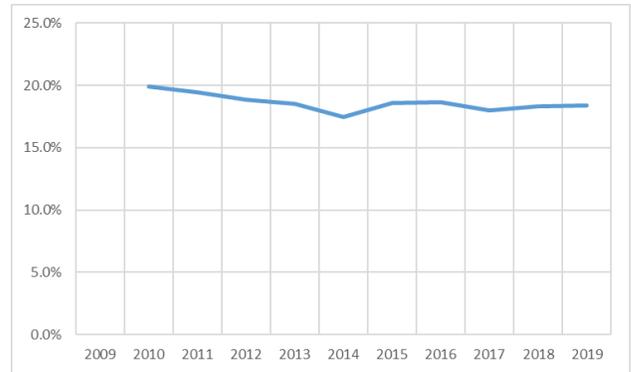
Figure 13: Hospital Inpatient Mortality and 30-day All-Cause Mortality
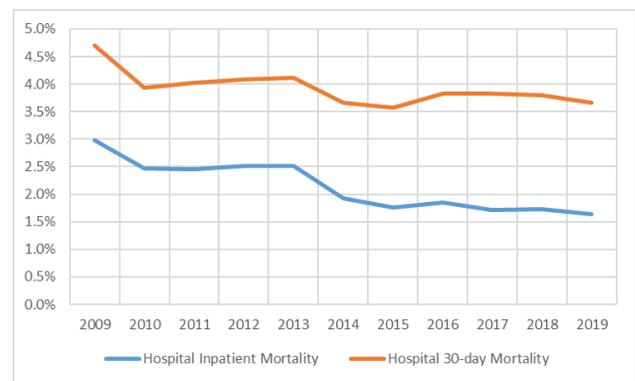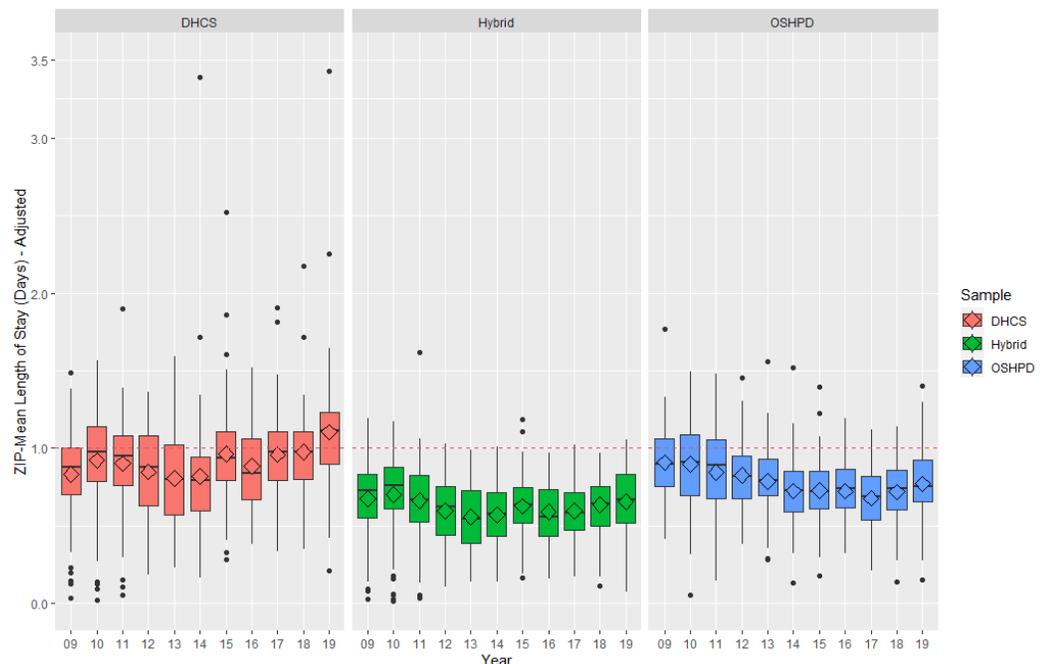

Figure 14: Boxplots of Adjusted County-Level Mean Length of Stay from 2009 to 2019

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cancer has a very high one-year mortality. A slightly longer time horizon data capture would capture these cancer deaths.
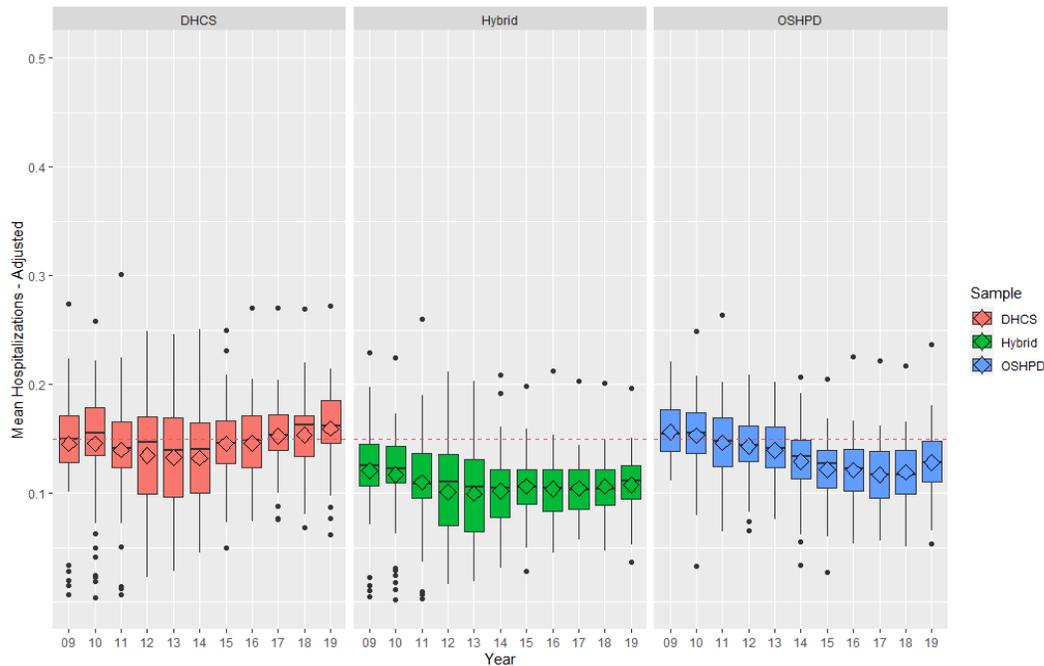
Case-Mix Adjusted Utilization

In addition to the unadjusted utilization measures – annual hospitalizations (number and length of stay), preventable hospitalizations, emergency department visits (not resulting in admission), and ambulatory care visits (excluding ED visits), there are also case-mix adjusted results for these measures. Using zero-inflated regression models, adjusting for age, gender, and race/ethnicity, annual hospitalizations show

Figure 15: Boxplots of Adjusted County-Level Mean Number of Hospitalizations from 2009 to 2019   for

increasing length of stay and number of hospitalizations for managed care enrollees over time and a slight decrease for fee-for-service enrollees over time using DHCS data (**Figures 14 and 15)**. As described in more detail below in the more detailed description on sensitivity analyses, we also used ancillary data from the California state hospital discharge database to filter results. These models (hybrid, OSHPD) are discussed later. As the box plots show, cases still decrease, further highlighting what appeared to be underreporting during this period.

Attempts to model preventive hospitalizations were unsuccessful. These represent a relatively fixed proportion of total hospitalizations for the years evaluated, 2015-201, **(Supplementary Table S.57**). The small proportion (< 2%) made adequate modeling challenging. Case-mix adjusted models are also presented for outpatient visits (**Figure 16A/B**). ED visits and Ambulatory care visits increase over time for managed care enrollees. Although the increase in ED visits not resulting in hospitalization is substantial

Figure 16 A/B: Boxplots of Adjusted County-Level Mean Number of ED Visits and Ambulatory Care Visits from 2009 to 2019

relative to baseline, it is a fraction of the increase of ambulatory care visits, implying that patients began
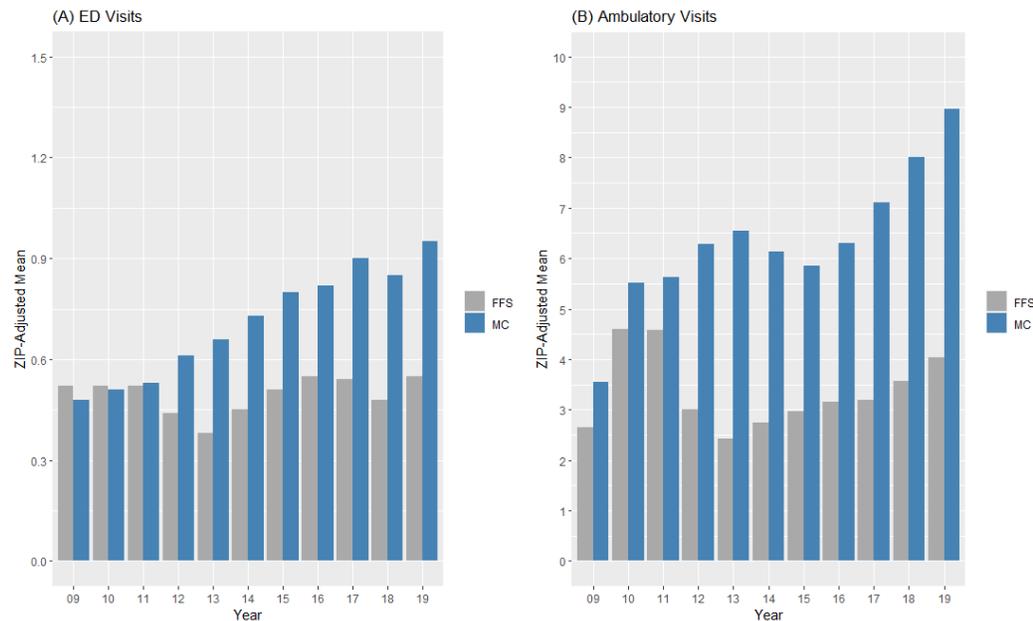
accessing the healthcare system to greater extent across multiple modalities with some overflow to the ED.

Please refer to **Appendix N** for detailed tables.

F5. Costs of Care

We present total and average costs (excluding durable medical equipment) per enrollee per year by enrollment type (managed care versus fee-for-service) and cost source (managed care capitation; fee-for-service claims). Estimated mean total monthly rates for managed care patients (capitated payments and fee-for-service payments) were calculated based upon paid claims and capitation rates. Monthly estimated costs per client generally increased between 2009 and 2019 (**Figure 17**). Tying results to 2009 dollars using a variety of values (CPI, GDP, fixed percent) generated very similar results by the end of the decade – per person costs for managed care enrollees and overall for all SPDs was lower in 2019 than in 2009 (**Figure 18**). Using net enrollment for FFS, managed care, and overall, the nominal cost of care increased and then decreased due to lower overall enrollment among SPDs enrolled in Medi-Cal only (**Figure 19**). Line item details are presented in **Supplementary Table S.58.**

A major challenge characterizing costs of care is the inability to track complete costs on the managed care side. Several proposed measures, such as costs of ED visits, institutional care, and prolonged institutional stays are simply not feasible due to these reporting issues. An analysis of excess costs of prolonged hospitalization (LOS > 10 days) shows that after the managed care transition, total costs of prolonged hospitalizations were negative relative to longer hospitalizations (**Supplementary Table S.59**). We hypothesize that this is likely due to capitated hospitalizations, which include all types of institutional care, including subacute care, making a full accounting impossible.

Costs for patients not in managed care are harder to characterize due to the changing character of this patient population. In general, estimated average costs have always been higher in FFS than for managed care patients. Years with higher average costs are driven by higher hospitalization and medication costs (**Supplementary Table S.58)**. These average costs obscure the impact of costs on specific individual patients (viz. outliers) nor take into account the more transitory nature of the FFS population after the SPD managed care transition.
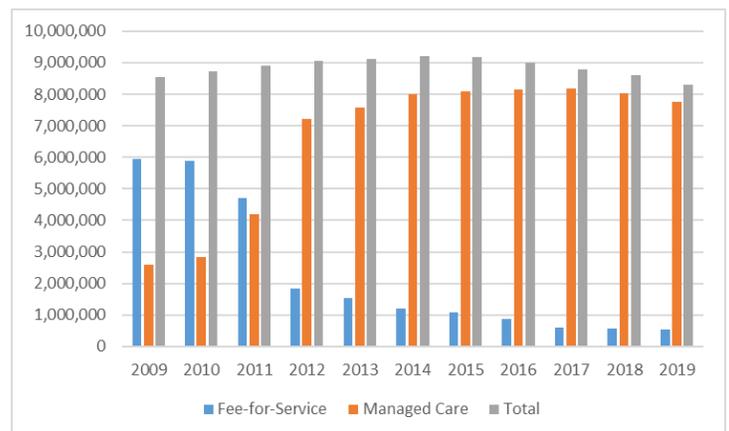

Figure 17: Monthly Unadjusted Overall Costs of Care for SPD Enrollees
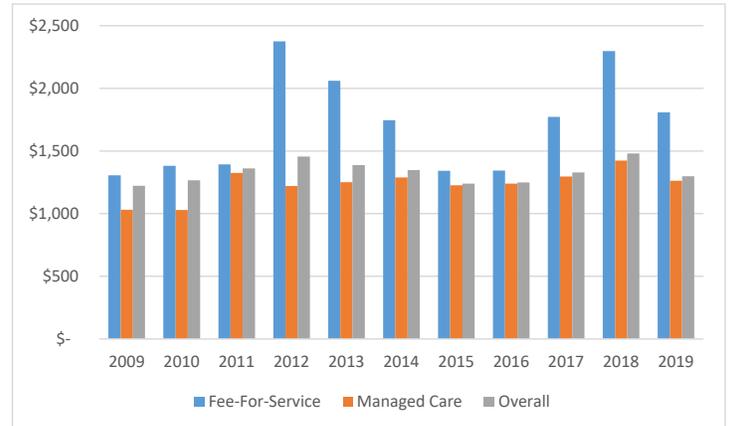
Figure 18: Monthly Costs for SPD Enrollees Unadjusted and Accounting for Inflation by Year
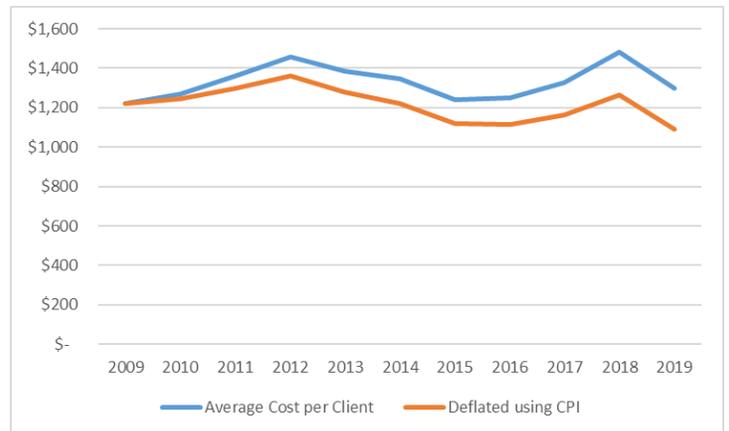
Figure 19: Total Annual Expenses for SPD Enrollees by Year

**F6.1 Data Validation and Sensitivity Analyses**

The evaluation team explored different aspects of the data and supplemented analyses with external supplementary data sets where available.

Hospitalization: In initial analyses, the evaluation team selected all inpatient claims/encounters and attempted to subset the claims by acute inpatient revenue codes and place of service. Managed care claims prior to 2015 had significant missing values, making sub-setting acute hospitalizations directly from the data difficult. An alternative approach was attempted, constructing flags for acute inpatient care from the physician claims, which could be used as an alternative approach to reconstruct acute inpatient stays. This supplemental approach was insufficient.

We attempted using concurrent validation within analyses of hospital stays. Using the state hospital discharge database, we created a filtered (so-call "hybrid") database of DHCS hospital / claims and encounters that were concurrent with those found in the state hospital patient discharge database (PDD). This hybrid database consists of patients hospitalized for acute care in general acute care hospitals in California. It excludes individuals hospitalized outside of California or in federal facilities and it excludes individuals without a valid social security number. In the risk-adjusted modeling of hospital length of stay and number of hospitalizations, we compared these results with those found in the PDD alone linked to the enrollment / eligibility database and with the unfiltered hospital claims / encounters (**Figure 20**). Overall mean results by county showed a decrease in LOS and number of hospitalizations in the middle of the evaluation period. In contrast, mean results by plan enrollment versus fee-for-service shows increasing length of stay and number of hospitalizations over time for the managed care participants. The filtered data show less of this behavior and the PDD show no change in these measures. These results suggest a degree of heterogeneity and reporting bias within the data that is likely linked to both data collection and payment of services as both of these will affect the integrity of the data. This is a reasonable conclusion since the PDD is a mandated data collection with very specific

Figure 20: Barcharts of Adjusted Mean Length of Stay (Top) and Hospitalization (Bottom) by Management Care Enrollment (Managed Care vs. Fee-for-Service) for Three Different Samples from 2009 to 2019
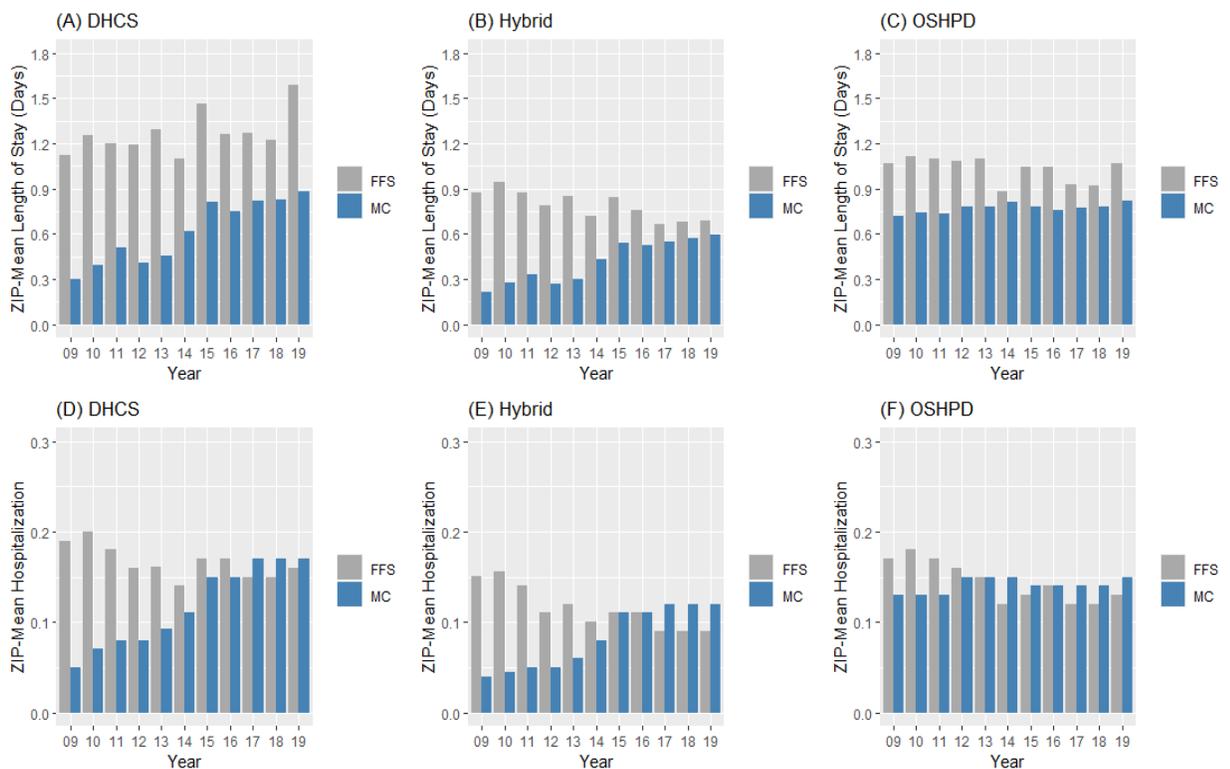
instructions regarding data reporting. A more intensive data matching algorithm and analysis was considered, but is outside the scope of the current evaluation.

Mortality: As described in the initial data evaluation and cleaning, we algorithmically removed inconsistent mortality records from the enrollment file. A comparison of the cleaned file to records from the California Cancer Registry, which has its own data linkage algorithm demonstrated roughly 85% agreement on identified deaths. The 2019 data had significant matching issues, which reflects the delayed update of vital statistics data with the cancer registry. The lack of a true gold standard and the lack of fully identified data available to the UCLA evaluation team limit the UCLA team's ability to evaluate and improve the mortality data, which is adequate but can be improved.

Ambulatory Care: There is no gold standard for outpatient visits that is routinely available.

G. Conclusions

The state of California has successfully transferred most of the SPD population into mandatory Medicaid managed care. This transition greatly expanded care delivery among SPDs in managed care plans. In the process of this transition, the state has leveraged existing county-by-county MCPs in place to transition patients from FFS to managed care. In rural counties originally without MCPs, the state has expanded one model (COHS) to northern counties and have an agreement in place for a commercial plan for the remaining Sierra counties.

When the initial transition to mandatory managed care was implemented, Medi-Cal lacked a uniform reporting system to monitor utilization performance among plans. Subsequent to the start of the initial "Bridge to Reform" 1115 waiver and before the approval of the "Medi-Cal 2020" 1115 waiver, DHCS implemented and enforced uniform reporting standards and audit procedures through PACES. Data quality and consistency improved significantly.

A formalized collection and reporting of grievances was implemented. The online quality dashboard provides some data and public accountability.

Analyses performed for this report illustrate the increased enrollment of individuals in managed care. The state has negotiated capitation rates with all of the participating plans. Cost analyses show that while nominal mean per capita costs for SPDs (total calculated costs / total patient-months) have risen, prices (in 2009 dollars) are actually lower per capita excluding nursing home patients.

Metrics implemented for this report show that data standardization and completeness issues pre-PACES prevented a consistent reporting of performance changes using only DHCS data. Data analysis suggest greater internal consistency since the introduction of PACES, making certain aspects of the evaluation more reliable, valid, and comparable over time – e.g. evaluation of care delivery and managed care delivery in the post-PACES period for patients in managed care. Retrospectively, the addition of measures designed using external data sources, such as state all-payer hospitalization data do provide consistency for analyses during a period in which multiple systematic changes occurred in data collection and reporting. Lookback to the before managed care adoption (2009 and 2010) is useful as a baseline – fee-for-service claims tended to be more complete and consistent than managed care data from the period 2011 to 2014.

Certain measures proposed in the approved protocol have proven to be difficult to achieve in practice. Specifically, access to care – challenges to finding and receiving care and measures of network adequacy – is difficult. No prospective routinely asked questions are linkable to actual patients either currently or in the past. Network adequacy standards that were adopted have allowed the evaluation team to fashion reasonable comparisons to observed behavior, panel composition, and physician patient and visit volume that cover the entire evaluation period.

Definitive conclusions for this evaluation remain a struggle. Challenges with consistency of definitions of hospitalization pre-PACES and other data consistency issues, mean that strong conclusions regarding care patterns cannot be made. The highest-level metric – mortality rate among SPDs – appears stable

across the entire evaluation period (2009 to 2019). Access to care assessments using survey data and network adequacy evaluation suggests that overall access to a range of providers has increased (based on the number of providers), but that overall travel distance rarely matches closest available panel providers. Quality metrics have mostly improved over time. Few have worsened.

We can conclude from these evaluations that:

(1) Medi-Cal has successfully moved most non-dual SPDs into managed care.

(2) Even in difficult to reach rural areas, Medi-Cal has implemented two different models of managed care delivery.

(3) Overall mortality appears to be stable in the population. MCP mortality appears to have increased in the managed care population reflecting adverse selection for FFS with healthier patients opting for optional managed care enrollment prior to the transition period.

(4) Process of care measures suggest general improvement in care in recent years, including greater access to select surgical procedures.

(5) Risk adjusted utilization measures suggest greater use of ambulatory care and emergency department care without concurrent increase in hospitalizations.

(6) Cost analyses show that although nominal costs have increased per capita and overall, costs assessed in 2009 dollars are lower. Attempts to perform detailed cost analyses (such as pharmaceutical costs, excess costs for prolonged hospitalizations) are not feasible with managed care data.

(7) Data quality and consistency appears to improve since the introduction of PACES with consistent reporting of NPI for all claims and encounters. Assessment of travel distance and provider volume suggests that some plans may still not be providing complete data, limiting evaluation of care delivery for those plans.

(8) Even if the evaluation cannot reliably measure earlier years, these data can be used to robustly assess plans managing care during the "Medi-Cal 2020" 1115 Waiver period.

Based upon the findings in this evaluation, the evaluation team recommends:

(1) Expand patient-focused surveys (e.g. CAHPS) of plan members so that they are fielded at closer, regular intervals than previous surveys; Increase the number of survey recipients with oversampling of SPD recipients and geographic regions; Ensure that the survey data are linkable to other patient data.

(2) Routinely link DHCS data with external data sources for purposes of validation and enrichment of analyses. Develop consistent, well-documented, and curated linkage approaches including evaluation of data accuracy and consistency. Expand data linkage to included archived data.

(3) As external data sets are added to DHCS from other data repositories, create a crosswalk of covered populations and redundant data elements for comparison.

(4) Expand quality metrics to routinely capture more granular, special populations and outcomes.

(5) Improved network provider data.

(6) Formal assessment of providers and provider sites.

(7) Creation of a repository of patient-specific clinical information to improve routine quality assessment and auditing of patient care, starting with basic lab values and other test results.

(8) Routinely audit patient encounters and data elements.

(9) Maintain a registry of capitation agreements between managed care plans and delegated plans and providers. The complicated arrangements make predicting potential data issues and clustering of patterns challenging as an end-evaluator. Although managed care plans guarantee the integrity of their data, there are few avenues for DHCS to formally understand the underlying data collection and associated issues.

H. Interpretations, Policy Implications and Interactions with Other State Initiatives

The mandatory transition of the SPD population into managed care follows the long-term goals of the state Medi-Cal program to transform itself from a traditional fee-for-service payment system with few guarantees regarding patient access to care services, oversight of quality of care, and management of growing healthcare costs. Historically, California delivered managed care through different implementation models throughout its 58 counties. However, implementation efforts prior to the "Bridge to Reform" 1115 Waiver did not substantially enroll the state's disabled and older populations into managed care. The ability to deliver care to complex patients requires greater oversight with the ability of the state to audit care delivery by managed care plans in a way that was not possible previously.

The primary mechanism of the "Bridge to Reform" 1115 Waiver was to start with the existing managed care infrastructure, expand enrollment to the SPD population, make programmatic changes to existing plans, and to expand managed care to rural counties, where it had not existed previously. The use of the managed care environment created the structure for care coordination, ensuring network adequacy and care access for enrollees, containing costs, and aligning financial incentives to providers to ensure appropriate care at reasonable cost. The demonstration successfully moved the vast majority of the SPD population into existing managed care plans. In rural areas, two separate approaches to managed care were negotiated. In the northern part of the state the COHS model was expanded to cover eight counties (COHS Expansion), while in the 21 Sierra counties, a single commercial managed care model was adopted (Regional Model). Estimated core per patient costs of care were kept within the projected bounds during this period. Data needs were assessed and data standardization and improved audits were adopted before the end of the audit period. The CAHPS survey was expanded to include the SPD population in a triennial assessment of managed care satisfaction. A core quality of care set was defined using a subset of the CMS Medicaid Core Measures, many drawn from HEDIS. Quarterly reporting on care quality, including grievances was initiated in 2014.

As the state has moved to the "Medi-Cal 2020" 1115 Waiver, we have built on the changes established in the "Bridge to Reform" 1115 Waiver. Having completed the transition of patients to mandatory managed care, we established an improved data capture system for managed care encounters that allows DHCS to more easily audit care delivery in the MCPs. Within the overall system, we improved the ability to capture patient grievances and other quality issues. Starting in 2017, patient level HEDIS records are now reported to DHCS from plans, allowing DHCS to both calculate and validate data delivery and quality assessment from plans by patient. Finally, the 2018 Final Rule for assessing Network Adequacy creates standards and an improved provider file, while setting up a quarterly assessment with the plans and their providers. Thus, DHCS has implemented systems that can now overcome some of the limitations towards oversight and improvement at the beginning of the "Bridge to the Future" 1115 Waiver.

Results from this evaluation point to general programmatic successes for the mandatory SPD transition to managed care in terms of moving enrollees to managed care across the entire state and towards managing costs. Assessing access and quality are more challenging and conclusions more nuanced. Access to care is difficult to measure in any context, but results from network analyses and CAHPS responses suggests that access has been maintained, even as there remain access issues to mental health and surgical specialists.

Measurable quality of care indicators were stable or improved across some metrics during the evaluation period. High-level mortality outcomes were stable across the observation period. The

demonstration did not prospectively assess baseline quality. Fee-for-service patients were not subject to the types of quality assessments that are typical for managed care plan enrollees. The evaluation team adopted a consistent approach for assessment between baseline and after the transition – to retrospectively incorporate administrative-data based metrics in common to all patients. Results demonstrate that overall quality performance improved among SPD Medicaid enrollees, especially as measured by volume of ambulatory care services per patient.

Evaluating costs of care is again nuanced. Based on public spending on Medicaid in California, overall costs of care per patient nominally increased, but in terms of 2009 dollars, costs per patient decreased. This analysis cannot capture detailed costs such as per visit or excess costs per acute care hospitalization. The remaining fee-for-service SPD population is higher cost, but is much smaller and heterogeneous by design.

Most relevant, the Coordinated Care Initiative (CCI) is an eight county demonstration program that moved SPD dual enrollees into managed care (also from the "Bridge to Reform" 1115 Waiver). CCI aims to coordinate Medi-Cal and Medicare benefits across healthcare settings and improve continuity of care across acute care, long-term care, behavioral health, and home- and community-based services settings using a person-centered approach. CCI has two components: (1) Cal MediConnect—a program where medical, behavioral health, long-term institutional, and home and community-based services are provided through a single delivery system and (2) Managed Medi-Cal Long-Term Supports and Services (LTSS) through which dual beneficiaries receive their Medi-Cal benefits, including LTSS and Medicare wrap-around services.

"Medi-Cal 2020" aims to transform and improve the quality of care, access, and efficiency of healthcare services for Medi-Cal members. The waiver funds four programs that shift focus away from hospital-based and inpatient care, and towards outpatient, primary and preventive care – from volume to value. Other related pilots fit into this overall long-term strategy of expanding Medi-Cal managed care to complex patients and to provide innovative care models that may cross traditional delivery system approaches. These include elements from the "Bridge to Reform" 1115 Waiver and "Medi-Cal 2020".

(1) The Public Hospital Redesign and Incentives in Medi-Cal (PRIME) is a pay-for-performance healthcare delivery system transformation and alignment program where California's public health care systems and hospitals are using evidence-based quality improvement methods to achieve performance targets and improve health outcomes for patients. Projects focus on improvements in ambulatory care, behavioral health integration, high-risk populations, and efficiency. PRIME is intended to complement other delivery system transformation efforts that are also focused on strengthening patient-centered primary and specialty outpatient care, improving care coordination, and providing care in the most appropriate settings.

(2) The Global Payment Program is a payment reform initiative that aims to redesign the public safety net by reorganizing existing funding streams to create financial incentives for the state's public health care systems to provide uninsured and underinsured individuals with more appropriate care in outpatient settings. The program complements other delivery system transformation efforts focused on strengthening primary and specialty outpatient care.

(3) Whole Person Care (WPC) is a county-based pilot program that provides integrated, tailored care to the highest-risk and most vulnerable patients in local communities. The overarching goal of WPC is the coordination of health, behavioral health, and social services, as applicable, in a patient-centered manner with the goals of improved beneficiary health and wellbeing through more efficient and effective use of resources. The program addresses the medical, behavioral,

and social determinants of health and improves care coordination among Medi-Cal beneficiaries who are high users of healthcare and who continue to have poor health outcomes.

(4) The Dental Transformation Initiative is an incentive program to increase the frequency and quality of dental care provided to children under Medi-Cal. Dental providers are awarded financial incentives for achieving state-defined targets to improve use of dental care and dental-related outcomes.

For the state of California, results of the current evaluation suggest that the transition of the SPD population to managed care has nominally succeeded along measurable aspects of access, quality, and cost – on measurable aspects, costs have been controlled without impact to access or quality. California has been able to leverage the existing managed care environment and expanded it to rural regions, allowing for SPD enrollment in managed care across the entire state. The state's county-by-county implementation of managed care and choice of multiple managed care organizations to enable care has allowed the state to innovate through staged implementation and regional initiatives (see below). During the first half of the managed care transition, data quality clearly suffered, making accurate assessments of care challenging. The CAHPS survey sample is now powered for assessment of plan performance, but not powered for regional assessment. In order to bend the curve towards improved access and quality of care, the state will need to continue to focus on improved data accuracy and completeness, including obtaining actual clinical data.

The implications at the national level are also clear. States can not only utilize managed care organizations as intermediaries, they can do so without measurably sacrificing access, quality, or cost. The California approach of regional implementation and guided competition creates a way not only to avoid "putting all the eggs in one basket" but also a mechanism for incremental change through the introduction of policies and pilot studies regionally and through different manage care plans. The consideration of a state's waiver for introducing managed care should be conditioned on ensuring that the appropriate regulations and robust data collection are in place. In addition to requiring concrete targets for implementation and improvement, CMS should emphasize approaches and interventions that have succeeded in managed care implementation across the country, including successes without regards to improving access and quality while maintaining cost neutrality.

I. Lessons Learned and Recommendations

The expansion of managed care to special populations with multiple complex conditions, such as the SPD population, is feasible, but requires additional monitoring, data standards, and arrangements to ensure adequate access and provision of services. Although states now have significant experience with using Medicaid – managed care plan arrangements, the particular vulnerabilities of the SPD population require greater oversight and transparency. The following recommendations are aimed at ensuring continuous high quality oversight and data quality for monitoring and for ensuring that plans do not avoid necessary, but high cost care.

(1) Fully formed reporting system in place before implementation

(2) Data standards in place before implementation

(3) Expansion of ability to assess patient experience

(4) Baseline assessment of patient health and health history to improve longitudinal care

(5) Routinely link in gold standard information for audits and enriching available measures

(6) Network adequacy standards and monitoring

(7) Expansion of measures beyond typical core primary care measures to include specialty measures that may be significantly impacted in a vulnerable population

(8) Expansion of qualified data for monitoring quality to include lab and imaging results with the possibility of expanding to other clinical data

(9) Expansion of external data sets with validated data linkages with ongoing review to ensure external standards for ongoing evaluation.

(10) Detailed understanding of underlying contractual arrangements between managed care plans and delegated plans and contracted and capitated providers.

(11) Routine collection of patient preferences on intensity of care

(12) Adequate lead-in time for contingency planning

(13) Public quality reporting must focus on populations of interest, including stratification / standardization to ensure interpretability

(14) Consider carve out benefits from managed care for special populations – long term care, substance abuse, mental health, and other at-risk populations (HIV/AIDS, hepatitis C, and certain cancer treatments) to ensure plan participation and patient access to certain high cost necessary life sustaining treatments.

These suggestions should not be considered all inclusive, but reflect the experience of efforts and improvement within California DHCS and other state health agencies.

J. Attachment: Evaluation Design: Provide the CMS-approved Evaluation Design (**Appendix O**)

K. Attachment: Map of Medi-Cal Managed Care Models by County: (**Appendix P**)

L. Attachment: Supplementary Tables: (**Appendix Q**)

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Abbreviations

ABX—Antibiotics
AHRQ—Agency for Healthcare Research and Quality
AMBV—Ambulatory Visits
CAHPS—Consumer Assessment of Healthcare Providers and Systems
CCI—Coordinated Care Initiative
CCR—California Cancer Registry
CHF—Congestive Heart Failure
CMS—Centers for Medicare and Medicaid Services
COHS—County Organized Health Systems
COPD—Chronic Obstructive Pulmonary Disease
CPI—Consumer Price Index
CPT—Current Procedural Terminology
DHCS--Department of Health Care Services
DME—Durable Medical Equipment
DPH—Department of Public Health
DSS—Department of Social Services
EAS—External Assessment Set
EDD—Emergency Department Database
ED—Emergency Department
EMR—Electronic Medical Record
ESLD—End-Stage Liver Disease
FFS—Fee-for-Service
FSR—Facility Site Review
GDP—Gross Domestic Product
GMC—Geographic Managed Care
HCAI—Health Care Access and Information
HEDIS—Healthcare Effectiveness Data and Information Set
HIPAA—Health Insurance Portability and Accountability Act
IHSS—In-Home Supportive Services
LOS—Length of Stay
LTC—Long-Term Care
LTSS—Long-Term Services and Supports
MCP—Managed Care Plan
MDS—Minimum D+A17ata Set
NCPDP—National Council for Prescription Drug Programs
NCQA—National Committee for Quality Assurance
NPI—National Provider Index
NQF—National Quality Forum
NUCC—National Uniform Claim Committee
OASIS—Outcomes and Assessment Information Set
PACES—Post Adjudicated Claims & Encounters System
PCES—Paid Claims and Encounters
PCP—Primary Care Provider
PDD—Patient Discharge Database
PRIME—Public Hospital Redesign and Incentives in Medi-Cal
QI—Quality Improvement

SNF—Skilled Nursing Facility
SPD—Seniors and People with Disabilities
STC—Special Terms and Conditions
TAP—Technical Advisory Panel
TPM—Two Plan Model
WPC—Whole Person Care