

Assessing the Effects of Coordinated Care Organizations on Dual-Eligibles in Oregon

OHSU CENTER FOR HEALTH SYSTEMS EFFECTIVENESS

FINAL REPORT

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Executive Summary

BACKGROUND

Approximately 11.3 percent of Oregon Health Plan members were also eligible for Medicare coverage in 2014. These ‘dual-eligible’ members represent a unique segment of the Medicaid population: they have a high prevalence of complex chronic conditions, and spending on dual-eligibles accounts for a large proportion of total spending on Medicaid members.¹ As a result, improving care and reducing costs for dual-eligibles is especially important for Oregon’s Medicaid program.

Oregon transformed its Medicaid health care delivery system in 2012 by establishing coordinated care organizations (CCOs). Among their many features, CCOs put a particular focus on coordinating care among different types of health care providers through implementation of patient-centered primary care homes, health information technology, integration of physical and behavioral health care, and other interventions.² The care coordination provided by CCOs may be particularly important for improving care and reducing spending for dual-eligibles, who have complex needs.

STUDY GOALS

- 1 Creation of an analytic dataset that includes multiple data sources to obtain a complete picture of health care and health-related environmental factors that affect dual-eligibles.
- 2 Assessment of the effect of CCO implementation on health service use and quality of care among dual-eligibles in Oregon. Specifically, we use a difference-in-differences approach and compare changes in health service use and quality for dual-eligibles enrolled in Medicaid managed care with changes for dual-eligibles enrolled in Medicaid fee-for-service before and after the establishment of CCOs.

RESULTS

CCOs affected use of four out of eleven health care services. Enrollment in a CCO increased the probability that dual-eligibles received physical, occupational, or speech therapy services, outpatient mental health visits, and long-term services and supports but decreased the probability of receiving post-acute care services. However, effects on the use of each service were relatively small (most changes were less than 1 percentage point).

CCOs were associated with relatively large improvements on two of eight quality measures and decreased performance on one quality measure. Enrollment in a CCO increased the probability that dual-eligibles with diabetes received recommended HbA1c testing and cholesterol screening. However, CCOs were also associated with increased use of high-risk medications for the elderly.

Overall, we find that Oregon Medicaid’s transformation to CCOs improved quality of care for dual-eligibles to some degree, but did not lead to any meaningful improvement in health service use.

SUGGESTIONS FOR FUTURE ANALYSES

- 1 Analyze dual-eligible data by the four Medicare –Medicaid alignment quadrants to assess if there is any difference in care for dual-eligibles with greater alignment of Medicare and Medicaid.
- 2 Analyze dual-eligible data to identify if managed care enrollment rates in CCO regions or counties influenced health outcomes.
- 3 Use more years of data to assess CCO effects over time.

SUGGESTIONS FOR FUTURE DATA WORK

Based on our extensive data work, we have two suggestions for the Oregon Health Authority to consider for future data work related to dual-eligibles.

- 1 Use HSD data to validate identification of full dual-eligibles in APAC and to identify Medicare plan type.
- 2 Incorporate information about dual-eligibles' social determinants of health into future data and analyses.

Introduction

Dual-eligibles are a vulnerable population: they are among the most economically disadvantaged Medicaid beneficiaries, with more than half making an annual income of less than \$10,000 in 2007.³ Compared to other Medicaid beneficiaries, they are substantially more likely to have multiple chronic physical conditions and/or co-occurring behavioral conditions.⁴ Health spending for these individuals is also quite high; although they represent only 15 and 20 percent of the Medicaid and Medicare population, respectively, they account for 39 and 31 percent of total Medicaid and Medicare expenditures.¹ Given their high needs and high costs, care for dual-eligibles is a priority for policymakers.

Oregon started to transform its healthcare delivery system in 2009. Particularly, in 2012, Oregon implemented Coordinated Care Organizations (CCOs), Medicaid performance metrics, and other key health reforms statewide. Among Oregon's many health reforms, CCOs have received national attention for their health system transformation efforts designed to improving care and health outcomes while slowing cost increases.

To aid the decision making and future work of policymakers around the coordinated care model, this study assesses the effect of CCOs on health care for dual-eligibles. This study examines data from January 2011 through June 2012 (six quarters) for the pre-CCO period and data from January 2013 through December 2014 (eight quarters) for the post-CCO period to assess effects of CCOs on care for dual-eligibles. Specifically, this study addresses the following two study questions:

1. What is the effect of CCOs on health service utilization among dual-eligibles?
2. What is the effect of CCOs on quality of care among dual-eligibles?

Background

MEDICARE AND MEDICAID COVERAGE

Dual-eligibles are enrolled in both Medicare and Medicaid. Individual members may become eligible for Medicare because they are age 65 or older or because they have a disability or end-stage renal disease. In Oregon, about half of dual-eligibles are age 65 or older. Individual members may become eligible for Medicaid based on population-specific low-income criteria. In Oregon, Medicaid coverage is available for all Oregon residents with incomes up to 138 percent of the federal poverty level.

Both Medicaid and Medicare cover health services for dual-eligibles. Medicare is the primary payer for dual-eligibles and covers most major health services such as:

- Inpatient hospital services and inpatient post-acute care (skilled nursing facility care, inpatient rehabilitation facility care, and long-term care hospitals)
- Outpatient care, clinician services, skilled home health services, and hospice care
- Medical equipment and outpatient prescription medications

Medicaid is the secondary payer for dual-eligibles and pays for services that are not covered by Medicare such as:

- Required Medicare expenses including Medicare premiums, deductibles, and co-payments
- Health services after Medicare coverage limits are reached
- Additional services that are not covered by Medicare such as long-term services and supports

and transportation to medical appointments

Some dual-eligibles only qualify for partial Medicaid benefits. Medicaid does not cover health care services for these partial dual-eligible members; instead they provide only assistance with expenses related to Medicare plans, such as Medicare premiums, deductibles, and copayments.

HEALTH PLANS FOR DUAL-ELIGIBLES

Dual-eligibles in Oregon have multiple options for their Medicare and Medicaid health plans. For Medicare services, they can either enroll in the traditional fee-for-service plan or in a Medicare Advantage (Medicare managed care plan) available in their area. For Medicaid services, dual-eligibles can also choose to stay in the traditional fee-for-service plan or enroll in managed care plans.

Figure 1 displays the percentage of Oregon dual-eligibles with each type of Medicare and Medicaid health plan at the beginning of 2011. Notably, dual-eligibles with Medicaid fee-for-service plans were more likely to be in the fee-for-service plan for Medicare, whereas those with Medicaid managed care were more likely to be enrolled in Medicare Advantage.

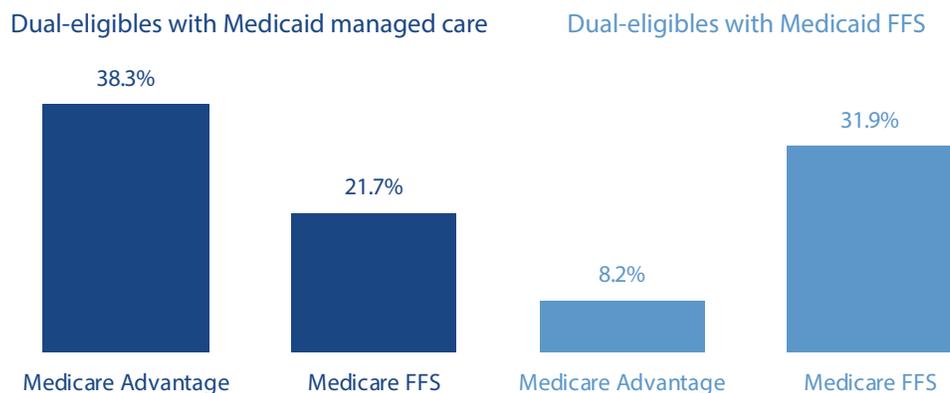


FIGURE 1 PERCENTAGE OF DUAL-ELIGIBLES BY MEDICAID-MEDICARE PLAN TYPE

In Oregon, the default Medicaid plan for dual-eligibles is the standard fee-for-service plan, and dual-eligibles can opt into managed care if they wish. When the CCO model was introduced in mid-2012, all Medicaid managed care plans in Oregon were transitioned to CCOs, and most dual-eligibles who were previously in managed care became enrolled in a CCO. CCOs are encouraged to have alignment or affiliation agreements with a Medicare Advantage plan to better coordinate care for dual-eligibles. However, not all CCOs have alignments or affiliations with Medicare Advantage plans.

One type of Medicare Advantage plan that is specifically tailored to meet dual-eligibles' health care needs is Dual-eligible Special Needs Plans (D-SNPs).⁵ In Oregon, D-SNPs are required to contract with the State Medicaid Agency to coordinate Medicare and Medicaid benefits for dual-eligibles. However, this study was unable to examine differences in coordination by these D-SNPs compared with other Medicare Advantage plans. In addition, Medicare Advantage plans and D-SNPs have historically been unavailable in some areas of the state such as primarily frontier rural regions. For these reasons, the amount of alignment between Medicare Advantage plans and Medicaid CCOs in Oregon varies. A deeper dive into impacts of Medicare and Medicaid alignment could be beneficial to understanding the strongest influences in improving health and quality outcomes for dual-eligibles.

CCO TRANSFORMATION AND DUAL-ELIGIBLES

CCOs have four distinguishing features.

- 1 A global budget.** A CCO receives a fixed, risk adjusted payment from the State for every covered individual. The global budget is set to increase at a pre-specified rate, which is targeted to come in at 2 percent lower than the current historical trend.
- 2 A focus on improving care coordination.** All beneficiaries in CCOs are assigned to a primary care

medical home that coordinates care for the beneficiary. A medical home improves in-person access to care, telephone access, after-hours access, and also preventive services delivery, which forestall the use of more expensive health care services, such as emergency room visits or hospitalization.

3 Pay-for-performance. CCOs receive financial incentives if they meet each of 17 quality targets and spending is within budget. Eight out of 17 quality measures have limited relevance for the dual-eligible population (e.g., well-care visits for adolescents or timeliness of prenatal care for pregnant women). The remaining quality measures are relevant to care for dual-eligibles; however they are not specifically targeted for the dual-eligible population.

4 Integrated payment for physical, behavioral, and dental care. CCOs receive per-member per-month global payments for each beneficiary’s physical, behavioral, and dental care.

Many aspects of CCOs are pertinent to dual-eligibles. For example, a high percentage of dual-eligibles have severe mental illness and many of them also have physical health problems. Therefore, the financial integration of mental and physical health under the CCO can potentially improve care for those dual-eligibles. CCOs also have a financial incentive to improve the quality of care for dual-eligibles under the pay-for-performance program. However, CCOs were not designed to account for all the unique features of dual-eligible coverage. For example, Medicare’s expenditures for dual-eligibles are not accounted for in the CCO beneficiary-level global budget. This might limit CCOs’ incentives to focus on dual-eligibles because saved costs for care of dual-eligibles would be likely to benefit Medicare, the primary payer for dual-eligibles’ care.

Method

OVERALL APPROACH

We use a difference-in-differences approach to estimate the effect of CCOs on health service use and quality of care for dual-eligibles. The difference-in-differences approach compares changes in outcomes for dual-eligibles enrolled in Medicaid managed care with dual-eligibles enrolled in Medicaid fee-for-service (FFS) before and after the establishment of CCOs.

Managed care organizations were capitated health plans without the care coordination focus and other functions of CCOs. In mid-2012, Medicaid managed care organizations were converted into CCOs, and most dual-eligibles enrolled in Medicaid managed care organizations were transitioned into CCOs. In the beginning of 2011, about 60.0 percent of dual-eligibles were enrolled in Medicaid managed care, and the percentage stayed relatively stable over the time.

TABLE 1 MEDICAID PLAN TYPE IN PRE- AND POST-CCO PERIODS

Medicaid plan type	Pre-CCO period	Post-CCO period
Managed care	Dual-eligibles in Medicaid managed care organizations	Dual-eligibles in Medicaid CCOs
FFS	Dual-eligibles in Medicaid FFS	Dual-eligibles in Medicaid FFS

In the difference-in-differences approach, the effect of CCOs is measured as the change in outcomes for dual-eligibles who transitioned from Medicaid managed care organizations to CCOs *minus* the change in outcomes for dual-eligibles in FFS, between the pre- and post-CCO periods:



In this approach, dual-eligibles enrolled in FFS serve as a comparison group, providing an estimate of the change in outcomes that theoretically *would have occurred* in the absence of CCOs.

We use regression analyses to control for observable differences between managed care and FFS

members, and for observable differences among members within each group. We used several techniques to accomplish this. First, we use propensity score weighting to adjust for differences in observable characteristics between dual-eligibles in Medicaid FFS and managed care, as well as changes in the composition of each group over time. We also include variables for dual-eligibles' observable characteristics, such as demographics and health history in regression models. A more detailed explanation of our statistical model is available in the Appendix.

We also carry out the regression analyses separately for members age 18-64 and 65 and over. CCO implementation may have differential impacts on dual-eligibles in different age groups because people in these groups are likely to have different medical conditions and other characteristics.^{6,7} For example, those under age 65 typically qualify for Medicare because of disability or end-stage renal disease.

In the following sections, we provide additional details about the study periods, data, populations, outcome variables, and control variables included in regression models.

STUDY PERIODS

We use data from January 2011 through June 2012 (six quarters) for the pre-CCO period and data from January 2013 through December 2014 (eight quarters) for the post-CCO period. We exclude data from July through December 2012, the transition period from Medicaid managed care organizations to CCOs.

DATA

We create an analytic dataset using the following data sources:

- Data from the Oregon All Payer All Claims (APAC) database, including data on services paid for by Medicaid, Medicare Advantage plans, and the federal Medicare fee-for-service program.
- Data from the Oregon Health Authority's Health Systems Division (HSD, formerly the Division of Medical Assistance Programs), including data on services paid for by Oregon's Medicaid program, but not included in APAC
- Data from the US Census Bureau, including neighborhood characteristics of dual-eligibles based on zip code of residence
- Data on dual-eligibles' Medicare plan type

POPULATIONS

Our study population includes people over 18 years of age who were enrolled in Oregon Medicaid and Medicare simultaneously. We exclude the following groups:

- Partial dual-eligibles for whom Medicaid covers only Medicare premiums since CCOs are not expected to affect their care
- Dual-eligibles who switched their Medicaid coverage type from managed care (including MCO or CCO) to FFS or vice versa during the study period
- Beneficiaries who became dual-eligibles as a result of the 2014 Medicaid expansion under the Affordable Care Act
- Dual-eligibles who were participating in Oregon's Program of All-Inclusive Care for the Elderly (known as PACE) because they were not eligible for enrollment in a CCO

The final analytic file includes 72,976 dual-eligibles.

OUTCOME VARIABLES

We assess the effect of CCOs on eleven utilization measures and eight quality measures. Utilization measures are a binary variable indicating whether or not each dual-eligible used each type of health service at least once, during each quarter. Quality measures are also a binary variable, and indicate whether or not a member met the criteria for a given quality measure during the measurement year associated with each quarter. Health utilization and quality measures were selected based on the availability of standardized definitions and relevance to the dual-eligible population.

Health service use

- Any emergency department (ED) visit
 - » Emergency department visits for any reason
 - » Avoidable emergency department visits
 - » Mental health-related emergency department visits
- Any primary care visit
- Any outpatient specialist visit (including cardiology, gastroenterology, nephrology, pulmonology, and urology)
- Any physical therapy, occupational therapy, or speech therapy visit
- Any inpatient hospitalization (excluding psychiatric hospital services)
- Any inpatient hospitalization for mental health conditions
- Any outpatient mental health visit
- Any use of post-acute care services (including home health, skilled-nursing facility, inpatient rehabilitation facility, and long-term care hospitals)

Quality of care

Quality of care measures include 1) state performance measures for which the State is accountable to the Centers for Medicare and Medicaid Services⁸ and 2) other measures that capture quality of care but are not state performance measures. We don't include CCO incentive measures (which are tied to financial incentives for CCOs) due to lack of data availability. Each measure is based on at least one year of data. Some measures could not be calculated for the full pre-CCO and post-CCO period

TABLE 2 SUMMARY OF QUALITY OF CARE MEASURES

MEASURE	Specification	State Performance Measure?
Comprehensive diabetes care: HbA1c testing: Did a member with diabetes receive a recommended A1c blood sugar test? [higher is better]	Modified NQF 0057	Yes
Comprehensive diabetes care: LDL-C screening: Did a member with diabetes receive a recommended cholesterol test? [higher is better]	Modified NQF 0063	Yes
All-cause 30-day readmission: Did a member who was discharged from a hospital stay have a readmission for any reason within 30 days? [lower is better]	HEDIS	Yes
Prevention quality overall composite: Did a member have an ambulatory care sensitive admission? [lower is better]	PQI #90	No
Use of high-risk medications in the elderly (66+): Did a member receive at least one high-risk medication? [lower is better]	HEDIS	No
Annual monitoring for patients on persistent medications: Did a member taking selected drugs for more than 180 days have a therapeutic monitoring event for the medication? [higher is better]	HEDIS	No
Low-value head imaging for an uncomplicated headache: Did a member with a headache receive head imaging tests? [lower is better]	CW	No
Low-value head imaging for syncope: Did a member with syncope receive head imaging tests? [lower is better]	CW	No

Notes: NQF: National Quality Forum, HEDIS: Healthcare Effectiveness Data and Information Set, PQI: Agency for Healthcare Research and Quality's Prevention Quality Indicators, and CW: American Board of Internal Medicine Foundation's Choosing Wisely Initiative. We modified NQF 0057 and NQF0063 and used a one-year lookback period instead of a two-year lookback.

due to the data requirement.

CONTROL VARIABLES

We use the following variables to control for dual-eligibles' observable characteristics:

- Demographics: age group, sex, race, ethnicity, and nursing home residence (whether or not a dual-eligible lived in a nursing home)
- Neighborhood characteristics (based on zip code of residence): rural or urban and proportion of residents who have completed college
- Medicare health plan: FFS, Medicare Advantage (D-SNP), or Medicare Advantage (not D-SNP)
- History of physical and behavioral health conditions, based on the Charlson comorbidity index and the Ettner behavioral health classification system.⁹⁻¹¹ More details are available in the Appendix.
- County of residence

Results

CHARACTERISTICS OF DUAL-ELIGIBLES IN OREGON

Table 3 describes demographic and health characteristics of full dual-eligibles enrolled in Medicaid FFS and managed care plans. Characteristics of the population were similar before and after CCO implementation. Therefore, we present characteristics in 2011 only.

Dual-eligibles with a Medicaid FFS plan had different demographic and health characteristics from those in a Medicaid managed care. For example, dual-eligibles with a FFS plan were older. They were more likely to be female (63.6 percent for those in FFS plan vs. 60.4 percent for those in managed care) and white (87.0 percent vs. 80.7 percent) and live in a rural area (47.5 percent vs. 34.9 percent). They were also more likely to live in a nursing home (14.0 percent vs. 4.0 percent).

Dual-eligibles' Medicaid and Medicare plan type was highly correlated. For example, 80.6 percent of dual-eligibles with a Medicaid FFS plan had a FFS plan for Medicare, whereas only 33.5 percent of dual-eligibles in a Medicaid managed care had a FFS Medicare plan. About half of dual-eligibles in Medicaid managed care were enrolled in a D-SNP and less than 20 percent of them had a traditional Medicare Advantage plan.

Dual-eligibles with a Medicaid FFS plan had worse physical health status than those with Medicaid managed care plan. The prevalence of physical health conditions among them was higher for all conditions we assessed except peptic ulcer disease and mild/moderate or severe liver disease. However, the prevalence of behavioral health conditions including anxiety disorder, bipolar disorder/depression, adjustment disorder, and schizophrenia/other non-mood disorders was slightly lower among dual-eligibles with a Medicaid FFS plan than those in managed care.

Compared to previously published descriptions of the non-dual-eligible Medicaid population, dual-eligibles in Oregon were generally older, but the percentage of female beneficiaries and beneficiaries living in rural areas was similar.¹² Compared to the rest of the Medicaid population, dual-eligibles were also more likely to have higher rates for most of the physical health conditions we assessed. For example, in this report we found 20.3 percent and 25.8 percent of dual-eligibles had chronic pulmonary disease and diabetes without chronic complications, respectively, whereas rates reported for the non-dual Medicaid population are 1.1 percent and 16.5 percent. However, we found the prevalence of liver disease and peptic ulcer disease was lower among dual-eligibles compared to the prevalence that has been reported for non-dual Medicaid members.

ESTIMATED IMPACT OF CCOS: HEALTH SERVICE USE

Table 4 displays the estimated impact of CCO implementation on health service use in the overall population of dual-eligibles and by age group. Table 4 also presents the unadjusted baseline average utilization rates for each outcome. Difference-in-differences estimates in this table are adjusted for observable characteristics of dual-eligibles, using propensity score weighting and control variables. We found that CCO implementation was associated with statistically significant changes ($P < 0.05$) in four of the eleven health services we examined. However, given the average utilization rates of each health service, the impact was relatively small.

More specifically, we found:

- CCO enrollment increased the probability of receiving a physical, occupational, or speech therapy visit by 0.3 percentage points overall. This increase was driven mostly by increases among younger dual-eligibles.
- CCO enrollment increased the probability of outpatient mental health visits by 0.6 percentage points overall.
- CCO enrollment decreased the probability of receiving a post-acute care service by 0.6 percentage points overall. This decrease was mostly driven by decreases among older dual-eligibles over age 65.
- CCO enrollment increased the probability of receiving any long-term services or supports by 1.6 percentage points overall.

ESTIMATED IMPACT OF CCOS: QUALITY OF CARE

Table 5 displays the estimated impact of CCO implementation on quality of care, in the overall population of dual-eligibles and by age group. Difference-in-differences estimates in this table are adjusted for observable beneficiary characteristics. We found that CCO implementation was associated with sizeable and statistically significant quality ($P < 0.05$) improvement for two of eight quality measures we examined, and a statistically significant worsening for one of eight measures we examined.

More specifically, we found:

- CCOs increased the probability of patients with diabetes receiving HbA1c testing by 4.9 percentage points (improvement). The increases were similar among younger and older dual-eligibles.
- CCOs increased the probability of patients with diabetes receiving LDL-C screening by 3.3 percentage points (improvement). This increase was driven mostly by increases among older dual-eligibles over age 65.
- CCOs increased the probability of high-risk medication use among the elderly by 2.3 percentage points (worsening).

TABLE 3. SUMMARY STATISTICS OF DUAL-ELIGIBLES' CHARACTERISTICS IN 2011

DEMOGRAPHICS %	Medicaid Plan Type	
	Fee-for service (Total Members =20,688)	Managed Care (Total Members =28,950)
Age		
18-49	20.9	26.2
50-64	20.7	24.8
65-74	20.0	26.3
75-84	19.3	15.3
85+	19.1	7.3
Sex		
Male	36.4	39.6
Female	63.6	60.4
Neighborhood characteristics (by ZIP code)		
Rural residence	47.5	34.9
% of residents with college degree– mean(SD)	6.7(7.3)	7.3(8.1)
Nursing home residence	14.0	4.0
Race		
White	87.0	80.7
Black	2.2	3.5
Asian	3.1	5.8
American Indian/Alaska Native	0.7	1.1
Native Hawaiian/Other Pacific Islander	1.6	2.4
Others	5.3	5.5
Unknown	0.1	1.1
Hispanic	1.3	2.1
MEDICARE PLAN TYPE %		
Fee-for-Service	80.6	33.5
Medicare Advantage (Dual-Special Needs Plan)	2.8	47.8
Medicare Advantage (not Dual-Special Needs Plan)	16.6	18.7

**TABLE 3. SUMMARY STATISTICS OF DUAL-ELIGIBLES' CHARACTERISTICS IN 2011
(CONTINUED)**

	Medicaid Plan Type	
	Fee-for service (Total Members = 20,688)	Managed Care (Total Members =28,950)
PHYSICAL HEALTH CONDITIONS %		
Myocardial infarction	3.0	1.9
Congestive heart failure	13.3	8.0
Peripheral vascular disease	9.4	6.0
Cerebrovascular disease	11.6	7.2
Dementia	6.4	2.5
Chronic pulmonary disease	20.4	18.7
Rheumatic disease	2.9	2.2
Peptic ulcer disease	0.8	0.8
Mild liver disease	3.0	3.6
Moderate or severe liver disease	0.4	0.4
Diabetes mellitus without chronic complications	26.2	25.3
Diabetes mellitus with chronic complications	10.5	8.6
Hemiplegia or paraplegia	4.8	4.3
Renal disease	10.6	6.5
Any malignant tumor	5.6	4.9
Metastatic solid tumor	0.9	0.7
BEHAVIORAL HEALTH CONDITIONS %		
Anxiety disorder	10.9	12.7
Bipolar disorder/depression	19.4	19.7
Adjustment disorder	1.0	1.1
Schizophrenia and other non-mood disorders	8.8	9.6
Other psychiatric disorders	27.7	21.2

TABLE 4. EFFECTS OF CCO IMPLEMENTATION ON HEALTH SERVICE USE, OVERALL AND BY AGE GROUP

MEASURE	Mean in 2011	Estimated Change		
		Overall	Age 18-64	Age 65+
Any emergency department visits %	16.7	-0.2	-0.6	-0.1
Any avoidable emergency department visits %	5.9	0.1	0.1	0.0
Any mental health related emergency department visits %	1.0	-0.1	-0.2	0.0
Any primary care visits %	42.6	-0.5	-0.4	-0.3
Any outpatient specialist visits %	9.1	-0.1	-0.2	0.2
Any physical/occupational/speech therapy visits %	2.2	0.3	0.5	0.1
Any inpatient hospitalizations (excluding psychiatric hospital services) %	8.0	0.3	-0.1	0.5
Any inpatient hospitalizations for mental health conditions %	0.5	0.0	0.0	0.0
Any outpatient mental health visits %	15.8	0.6	0.9	0.6
Any use of post-acute care services %	21.2	-0.6	0.2	-1.2
Any use of long-term services and supports %	40.3	1.6	1.2	1.8

Notes:

1. Estimates are adjusted difference-in-differences measures of quarterly health service use that account for patient-level characteristics. For example, a value of 0.6 for any outpatient mental health visits overall indicates that enrollment in CCOs is associated with a 0.6 percentage point increase in the probability of dual-eligibles having at least one primary care visit per quarter.
2. When estimates are significantly different from the comparison (FFS) group, cells are highlighted in dark orange (P<0.01) and soft orange (p<0.05).

TABLE 5. EFFECTS OF CCO IMPLEMENTATION ON QUALITY OF CARE, OVERALL AND BY AGE GROUP

MEASURE	Mean in 2011	Estimated Change		
		Overall	Age 18-64	Age 65+
Diabetes care: annual HBA1c testing %	84.2	4.9	6.1	3.8
Diabetes care: annual LDL-C screening %	72.8	3.3	2.9	4.6
All-cause 30-day readmission %	17.5	2.0	0.8	2.7
Prevention quality overall composite, modified PQI90 %	7.6	0.0	-0.7	0.3
Use of high-risk medications in the elderly %	14.6	2.3	---	2.3
Annual monitoring for patients on persistent medications %	83.4	1.9	1.0	1.4
Head imaging for uncomplicated headache %	29.7	0.6	1.2	-1.7
Head imaging for syncope %	15.5	0.5	---	0.5

Notes:

1. Estimates are adjusted difference-in-differences measures of quality of care that account for patient-level characteristics. For example, a value of 4.9 for HBA1c testing overall indicates that enrollment in CCOs is associated with a 4.9 percentage point increase in the probability of dual-eligibles having at least one HBA1c testing during the last year.
2. When estimates are significantly different from the comparison (FFS) group, cells are highlighted in dark orange (P<0.01) and soft orange (p<0.05).
3. Higher values in measures highlighted in grey indicate lower quality of care. Higher values in measures not highlighted indicate higher quality of care.

Discussion

Overall, CCOs improved some aspects of care quality but did not lead to any meaningful changes in health service use among dual-eligibles. Of the eight quality measures we examined, CCO implementation was associated with sizeable improvements in two measures, and worsening in one measure. CCO implementation was also associated with changes in four of the eleven health services we examined, but the size of the changes was relatively small.

The following considerations may help explain the limited impact of CCOs on health service use among dual-eligibles:

- **CCOs may have limited ability to coordinate care for dual-eligibles.** Improved care coordination has the potential to impact patterns of health service use. For example, improved care coordination may lead to a decrease in emergency department visits.^{13,14} However, both Medicare and Medicaid cover health services for dual-eligibles, and these two sources of coverage are not typically coordinated. Medicare is the primary payer for most health care services received by dual-eligibles. Medicaid often plays a secondary role, by assisting dual-eligibles with paying premiums, copayments, and deductibles required by Medicare plans. Medicaid CCOs may therefore lack information about dual-eligibles' major health service use that is paid for by Medicare, and be unable to manage or coordinate care.
- **CCOs may have limited incentive to coordinate care for dual-eligibles.** Medicaid CCOs may have little financial incentive to coordinate care, improve efficiency, and reduce costs for dual-eligible patients. Saved costs are most likely to benefit Medicare, the primary payer for dual-eligibles. However, CCOs might have a greater incentive to coordinate care if they belong to an insurance company that also offers private Medicare plans because the company would bear risk for both Medicare and Medicaid expenditures.
- **The time required for large changes to occur under the CCO model may be longer than the time period examined in this study.** We assessed the impact of CCOs using only two years of data following CCO implementation. Most quality measures that showed significant changes were process measures that can be improved relatively quickly, which may explain why they changed substantially. In contrast, use of health service use and outcome-related quality measures such as readmission rates may require longer than two years to be affected by CCOs.
- **Medicaid managed care organizations might have already managed dual-eligibles' health care use effectively prior to the CCO implementation.** About 60 percent of dual-eligibles were enrolled in Medicaid managed care organizations before those organizations were converted to CCOs. Medicaid managed care organizations were capitated health plans, and therefore had an incentive to keep inefficient health service use including emergency department visits and hospitalization low. If Medicaid managed care organizations already managed care for dual-eligibles effectively, there might be not much room for improvement in care for dual-eligibles that CCOs could work on.

The following consideration may help explain the relatively sizable impact of CCOs on quality of care among dual-eligibles:

- **CCOs might have a strong incentive to improve quality of care for dual-eligibles to obtain extra bonus payments under the pay-for-performance program.** Dual-eligibles accounted for about 10 percent of Medicaid members in Oregon. Therefore, poor quality of care for dual-eligibles could keep CCOs from obtaining pay-for-performance bonuses. Quality measures that improved under the CCO (diabetes HbA1c testing or LDL-C screening) were not CCO incentive measures that are directly linked to extra bonus payments. However, they are closely related to HbA1c control, which is a CCO incentive measure.

Based on the study results, we have the following suggestions to further improve care for dual-eligibles.

- **Provide financial incentives that would motivate CCOs to improve care for dual-eligibles.** CCOs may not want to use their resources to improve care coordination for dual-eligibles because saved costs for dual-eligibles would be most likely to benefit Medicare, not Medicaid CCOs. It is critical to provide financial incentives that would financially benefit Medicaid CCOs.

In addition, CCO implementation was associated with improvement in screening for diabetic patients possibly because quality of diabetes care was closely linked with a CCO incentive measure.

To further improve quality of care for dual-eligibles, policy makers can consider adding incentive measures relevant to important aspects of care for dual-eligibles such as prescription medications or long-term services and supports.

- **Focus on high-risk medication management for dual-eligibles.** CCO implementation was associated with an increased probability of high-risk medication use, which may lead to patient harm. Individual CCOs could assess the use of high-risk medications among their dual-eligibles and promote appropriate use of prescription drugs.¹⁵

Suggestions for future analyses

1 Analyze dual-eligible data by the four Medicare –Medicaid alignment quadrants to assess if there is any difference in care for dual-eligibles with greater alignment of Medicare and Medicaid.

While it was outside the scope of the current project, our results suggest that it would be beneficial to further examine the impact of Medicaid-Medicare alignment. More specifically, future work could examine whether there were differences in care across four groups of duals with different Medicaid-Medicare alignments (Medicare FFS and Medicaid FFS, Medicare FFS and Medicaid managed care, Medicare managed care and Medicaid FFS, and Medicare managed care and Medicaid managed care).

2 Analyze dual-eligible data to identify if managed care enrollment rates in CCO regions or counties influenced health outcomes.

The variations in managed care enrollments across CCO regions or counties (managed care penetration rates) might have had separate influences on dual-eligibles' health outcomes. However, we did not explore this issue for two reasons. First, managed care penetration rates are highly correlated with each dual-eligible's Medicaid plan type, and therefore controlling for managed care penetration rates would bias our estimation of CCO effects. Second, it is difficult to isolate the causal effects of managed care penetration rates on health outcomes because health outcomes may effect managed care penetration rates. For example, if overall health outcome in one county is excellent, managed care plans may try to serve more beneficiaries in that county to seek potentially high profits. Future studies could focus on developing a method to work around these issues to identify unbiased effects of managed care penetration rates on health outcomes.

3 Use more years of data to assess CCO effects over time.

We had only 2011 to 2014 data, and this limited our ability to examine longer term trends. Future studies can incorporate more years of data, and assess CCO effects over time.

Suggestions for future data work

We created an analytic dataset that includes multiple data sources to obtain a complete picture of health care and health-related environmental factors of dual-eligibles. A detailed description of the main data sources is available in the Appendix. Based on our experience, we have the following suggestions for the Oregon Health Authority regarding building data to study dual-eligibles.

1 Use HSD data to validate identification of full dual-eligibles in APAC and to identify Medicare plan type.

We were able to more easily accomplish these tasks with HSD data than with APAC claims. Once we created these variables using HSD data, a crosswalk between HSD and APAC data allowed us to incorporate them as variables in the main APAC dataset.

Identification of full dual-eligibles

In collaboration with the Oregon Health Authority, we initially aimed to identify dual-eligible beneficiaries in APAC as members who were enrolled in Medicare and Medicaid during the same month. We planned to identify Medicare and Medicaid coverage based on Payer ID and Product Code variables available in APAC. However, identifying dual-eligibles based on these variables was more complicated than anticipated, mainly due to uncertainty around the reliability of these variables for identifying Medicare beneficiaries. Even after identifying dual-eligibles, an additional step was also required.

The Oregon Health Authority had to develop an algorithm to identify full versus partial dual-eligibles so that partial dual-eligibles could be removed from the dataset. In contrast, identifying full dual-eligibles using variables from HSD was straightforward. HSD data has a single variable that we used to determine whether a beneficiary is a full dual-eligible.

Assignment of Medicare plan type

It was not possible to identify dual-eligibles' Medicare plan type using APAC. Again, this was largely due to ambiguity around how the Center for Medicare and Medicaid Services submits Medicare data to APAC, and how they assign Product Codes to that data. Attempts to get clarification on this issue from the State Data Resource Center were unsuccessful. Instead, the Oregon Health Authority created a separate file that included each dual-eligible's Medicare plan type and we incorporated that information into the main analytic dataset.

2 Incorporate information about dual-eligibles' social determinants of health into future data and analyses.

Variables relevant to social determinants of health are of particular importance to the dual-eligible population, and emerged as a pressing data need for studying this population. For example, homelessness, transportation availability, employment status, and social support networks may all be important determinants of health for dual-eligibles. Linking information about social determinants of health from other data sources in Oregon to administrative claims data would therefore be an excellent opportunity for the Oregon Health Authority to improve its capacity to use data to understand the unique characteristics and needs of the dual-eligible population.

Appendix

STATISTICAL MODEL

To carry out the difference-in-differences analysis, we construct models of health service use and quality of care using observations for each dual-eligible in each quarter. The primary independent variables in each model are 1) an indicator for time period (pre- or post- CCO implementation), 2) an indicator for type of Medicaid health plan (Medicaid managed care or FFS), and 3) an interaction term between period and type of plan. Evaluation of the interaction term allows us to determine if changes in outcomes for dual-eligibles in Medicaid managed care were significantly different from changes in outcomes for dual-eligibles in Medicaid FFS (i.e., if the effect of CCO implementation was significant).

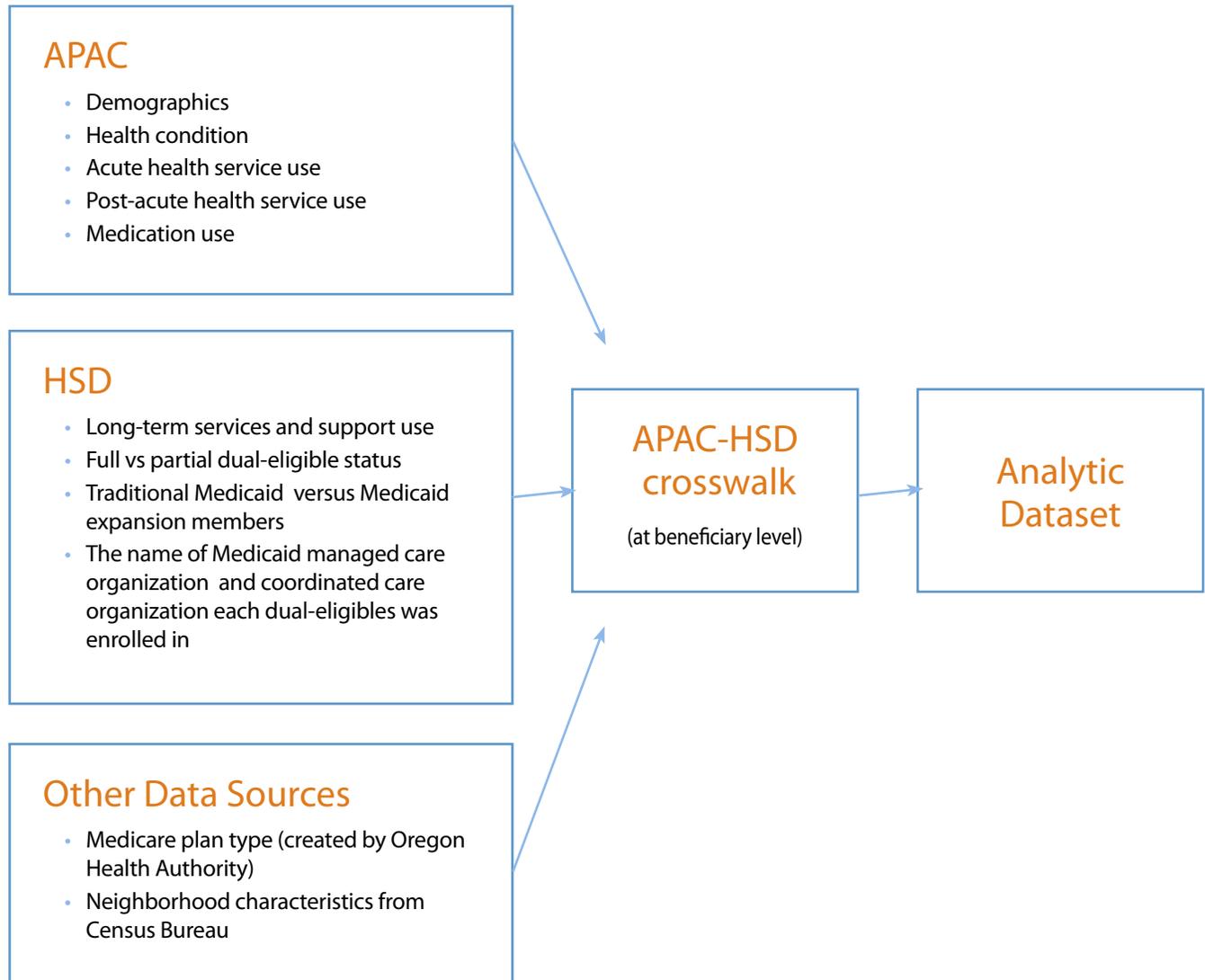
Our models adjust for dual-eligibles' characteristics (described above) including demographics, neighborhood characteristics, Medicare health plan type, history of physical and behavioral health conditions, and county of residence. The models also include indicators for each of the 14 quarters in the sample to control for underlying secular trends in outcome variables. Models are linear regressions with standard errors clustered on each dual-eligible. We also use propensity score weighting to adjust for differences in demographics and health conditions between dual-eligibles enrolled in FFS versus managed care, as well as changes in the composition of each group over time.¹⁶

HISTORY OF PHYSICAL AND BEHAVIORAL HEALTH CONDITIONS

Physical health conditions include a modified version of the Charlson comorbidity index. The modified comorbidity index excludes human immunodeficiency virus and AIDS because the APAC database does not include those conditions. We also include each member's mental health conditions, as defined by the Ettner classification system. Mental health condition categories include: bipolar, major depression, or dysthymia or other depression; adjustment disorder; anxiety disorder; schizophrenia or other non-mood disorder; and other (including disorders originating in childhood, personality disorder, and other miscellaneous mental health conditions).

APPENDIX FIGURE 1. CREATION OF ANALYTIC DATASET

We created an analytic dataset using multiple data sources:



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