

Evaluation of Oregon's 2012-2017 Medicaid Waiver

OHSU CENTER FOR HEALTH SYSTEMS EFFECTIVENESS

FINAL REPORT

PREPARED FOR:

Oregon Health Authority

PREPARED BY:

Oregon Health & Science University, Center for Health Systems Effectiveness

AUTHORS:

Jonah Kushner, M.P.P.

Kyle Tracy, B.S.

Bonnie Lind, Ph.D.

Stephanie Renfro, M.S.

Ruth Rowland, M.A.

John McConnell, Ph.D.

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Many people at OHSU contributed to this evaluation:

CCO INTERVIEWS

Sonya Howk, M.P.A. H.A.
Edgardo Peteros, B.S.
Zoe Velie, B.A.

MEASURE CALCULATION AND VALIDATION

Yifan Gu, M.S.
Thomas Meath, M.P.H.
Kim Yee, M.P.H.

DUAL-ELIGIBLES ANALYSIS

Hyunjee Kim, Ph.D.
Christina Charlesworth, M.P.H.

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EXECUTIVE SUMMARY:

Evaluation of Oregon's 2012-2017 Medicaid Waiver

Oregon's Medicaid Waiver

A Medicaid demonstration waiver allows state Medicaid programs to test new approaches to health care delivery and payment. In 2012, Oregon executed a five-year extension and amendment to its Medicaid waiver with the federal Centers for Medicare & Medicaid Services (CMS). Under the 2012-2017 waiver, Oregon committed to achieving two primary goals:

- Limit increases in per capita spending.
- Improve health care access and quality.

To achieve these goals, Oregon enrolled most Medicaid members in coordinated care organizations (CCOs), a new type of Medicaid managed care organization. CCOs were locally governed and accountable for health care access and quality among their members. Each CCO received a global budget covering physical, behavioral, and oral health care, and was accountable for managing all services covered by the global budget. In addition, CCOs could receive bonus payments from a state incentive pool for improving specific outcomes. The waiver provided CCOs with broad flexibility to carry out activities that would improve health care delivery and payment consistent with the needs of their local communities.

The Oregon Health Authority (OHA) selected Oregon Health & Science University's Center for Health Systems Effectiveness (CHSE) to carry out an evaluation of the 2012-2017 waiver. The evaluation included two overall components: an assessment of OHA's and CCOs' activities to transform Medicaid, and an analysis of the waiver's effects on health care access, quality, spending, and other outcomes. Given the data available at the time of the evaluation, we were able to evaluate activities and outcomes from 2013 to 2015, the first three years of the waiver.

Summary of Findings

Under Oregon's 2012-2017 Medicaid waiver, CCOs implemented innovative ways of providing care and performed well across multiple dimensions. Within the first three years, OHA and CCOs created the infrastructure for transforming health care delivery and payment systems. CCOs initiated activities to transform Medicaid in challenging areas, including alternative payment methods (APMs), integrating physical and behavioral health care, and health-related flexible services. CCOs were associated with reductions in spending growth and improvement in some quality domains. Experience of care measures and self-reported health status for CCO members also improved. Measures of access to care decreased slightly among CCO members, likely due to Oregon's 2014 Medicaid expansion: total enrollment in physical health care coverage increased by over 385,000 members from December 2013 to December 2014, and use of services by new Medicaid members may have reduced the ability of previously enrolled CCO members to get appointments and services.

The CCO model combines a variety of evidence-based reforms in health care delivery and payment. More work remains to fully implement the model. The report concludes with recommendations to help Oregon continue improving health care delivery and payment under the 2017-2022 Medicaid waiver.

Activities to Transform Medicaid

We assessed OHA's and CCOs' activities to transform health care through a review of existing studies, analysis of data on CCOs' transformation activities, and interviews with CCO staff.

OHA successfully implemented CCO-level reforms—including global budgets, a quality reporting system, and an incentive payment system for quality measures—and helped spread innovations and best practices through its Transformation Center. CCOs began transforming health care delivery and payment across multiple areas, with substantial progress improving the infrastructure for care coordination. More work remains in challenging areas, including alternative payment methods, integration of physical, behavioral, and oral health care, and health-related services to improve members' social determinants of health.

See Chapters 2 and 3 for details on OHA's and CCOs' activities to transform Medicaid.

The Waiver's Effects on Outcomes

We evaluated the waiver's effects in five broad areas: access to care, quality of care, experience of care, health status, and spending. We selected specific outcome measures to represent progress in each area and calculated changes in these measures from 2011 to 2013, 2014, and 2015. We used statistical techniques to control for the effects of member demographics and health status on outcome measures.

Where data were available, we compared changes in outcomes among CCO members to changes among a comparison group comprised of Medicaid members in Washington State. Washington and Oregon have similar demographics, and although both states expanded Medicaid eligibility in 2014, Washington had no other major Medicaid reforms from 2011 to 2015. Using this comparison group provides stronger evidence about the waiver's effects than simply comparing change in outcomes before and after the waiver was executed.

See Chapter 4, pages 43-52 for details on our methods for evaluating the waiver's effects.

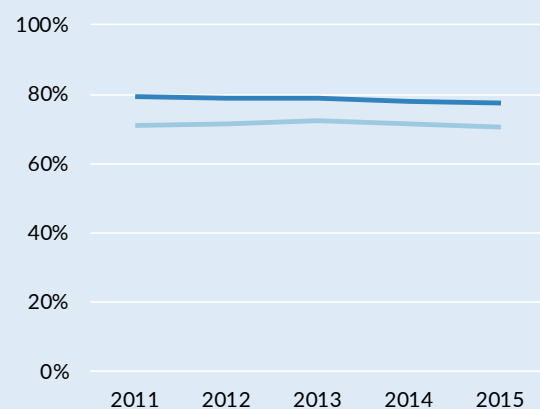
MOST MEASURES OF ACCESS TO CARE DECREASED SLIGHTLY.

Most access measures decreased slightly among CCO members and Washington Medicaid members, but decreased more among CCO members. Trends in the percentage of members with any primary care (Figure E.1) were representative of most access measures.

Medicaid expansion likely contributed to decreased access among previously enrolled CCO members. In 2014, Oregon expanded eligibility for Medicaid. New Medicaid members who used benefits to access health care may have reduced the ability of existing CCO members to get appointments and services. While both Oregon and Washington expanded Medicaid eligibility in 2014, enrollment increased much less in Washington relative to mid-2011 levels.

See Chapter 4, pages 60-71 for analysis of access measures.

Figure E.1. Members with Any Primary Care
Oregon CCO vs Washington Medicaid members*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

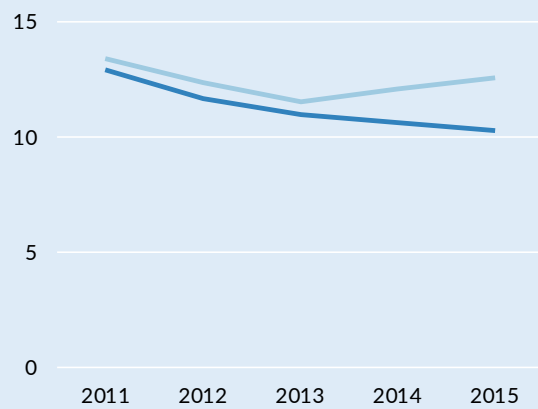
IMPROVEMENT ON QUALITY MEASURES WAS MIXED.

We evaluated changes in 41 quality measures categorized into seven domains, with 3 to 7 measures in each domain.

- **Quality measures generally improved in three domains:** Prevention and Wellness for Children and Adolescents, Emergency Department and Hospital Use, and Avoiding Low-Value Care. For example, the rate of avoidable emergency department visits among adults, a measure in the Emergency Department and Hospital Use domain, decreased relative to Washington Medicaid members (Figure E.2).
- **More work was needed to improve quality in four domains:** Prevention and Wellness for Adults; Care Coordination; Physical, Behavioral, and Oral Health Integration; and Care for People with Chronic Conditions. For example, the percentage of members with diabetes who had an HbA1c test, a measure in the Prevention and Wellness for Adults domain, decreased slightly among CCO members but increased slightly among Washington Medicaid members (Figure E.3).

Figure E.2. Avoidable Emergency Department Visits (Adults) per 1,000 Member Months*

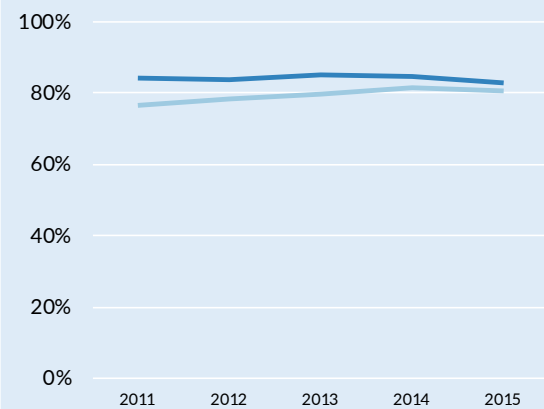
Oregon CCO vs Washington Medicaid members (a lower rate is better)*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

Figure E.3. Glucose Testing for People with Diabetes*

Oregon CCO vs Washington Medicaid members*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

These results indicate that CCOs accomplished the 2012-2017 waiver's goal of improving health care quality in the first three years, but that improvements were not uniform across domains.

See Chapter 4, pages 72-103 for analysis of quality measures.

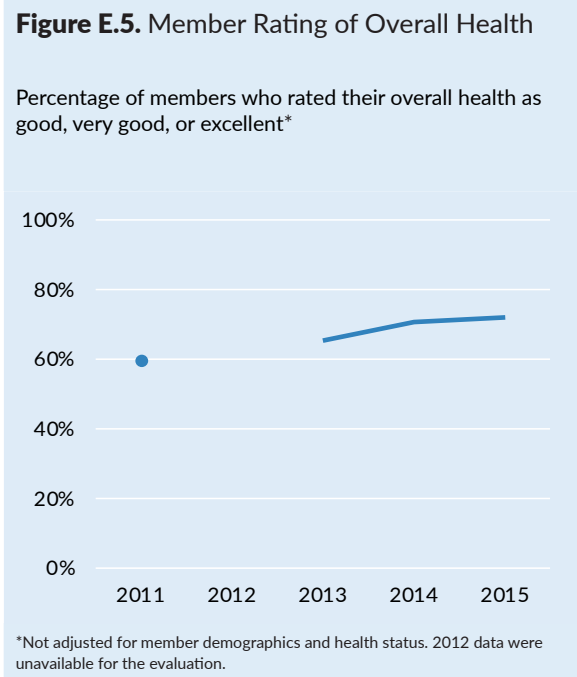
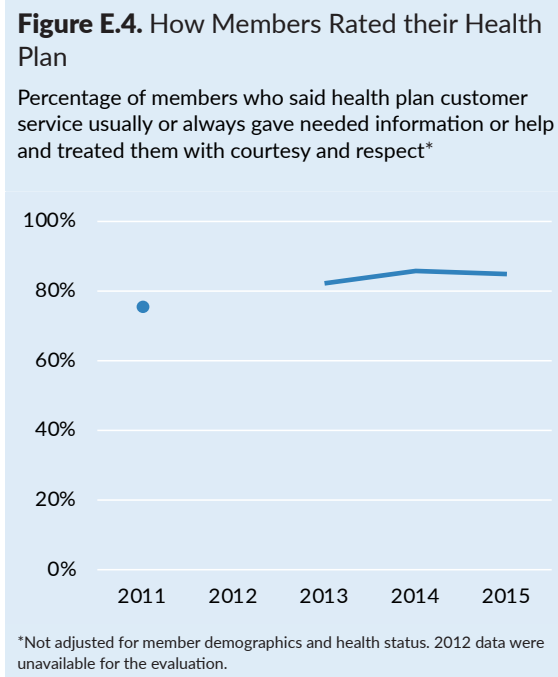
MOST EXPERIENCE OF CARE MEASURES IMPROVED.

Four of five experience of care measures—including members' ratings of their overall health care, how well doctors communicate, ratings of specialists, and ratings of health plan information and customer service—improved from 2011 to 2013, 2014, and 2015. For example, the percentage of members who said health plan customer service usually or always gave them the information or help they needed and treated them with courtesy and respect increased by 10 percentage points from 2011 to 2014 and 2015 (Figure E.4).

See Chapter 4, pages 104-106 for analysis of care experience measures.

SELF-REPORTED HEALTH STATUS IMPROVED.

The percentage of members who rated their overall health as "good," "very good," or "excellent" on a standardized survey increased from 2011 to 2013, 2014, and 2015 (Figure E.5). Self-reported health status was the only indicator of members' health available for the evaluation. Additional indicators, such as data from members' health records, would be needed to evaluate with confidence whether the waiver was associated with changes in members' health.



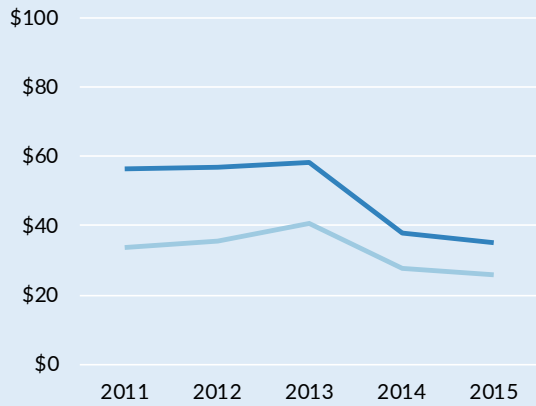
See Chapter 4, pages 107-108 for analysis of self-reported health status.

TOTAL SPENDING PER-MEMBER, PER MONTH (PMPM) DECREASED RELATIVE TO WASHINGTON MEDICAID MEMBERS.

Total Spending PMPM decreased among CCO members relative to Washington Medicaid members from 2011 to 2014 and 2015. This measure decreased moderately among both groups, but decreased more among CCO members than among Washington Medicaid members. Inpatient Facility Spending PMPM decreased among both groups, but decreased much more among CCO members in 2014 and 2015, driving the decrease in total spending among CCO members (Figure E.6). These measures indicate that CCOs helped achieve the waiver's goal of limiting increases in per capita spending.

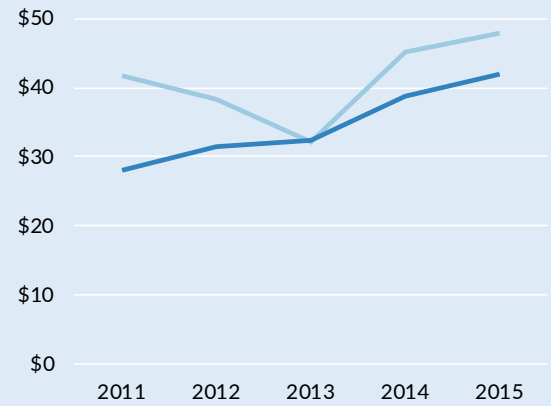
In contrast to Total Spending PMPM and Inpatient Facility Spending PMPM, Prescription Drug Spending PMPM increased substantially among CCO members and Washington Medicaid members from 2011 to 2014 and 2015 (Figure E.7). Limiting prescription drug spending growth will be important for controlling the growth of total spending in the future.

Figure E.6. Inpatient Facility Spending PMPM Oregon CCO vs Washington Medicaid members (a lower rate is better)*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

Figure E.7. Prescription Drug Spending PMPM Oregon CCO vs Washington Medicaid members (a lower rate is better)*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

See Chapter 4, pages 109-116 for analysis of spending measures.

FINANCIAL INCENTIVES WERE ASSOCIATED WITH IMPROVED PERFORMANCE

CCOs could receive incentive payments from a state bonus pool for improving specific outcomes, called CCO Incentive Measures, among their members. Examples of CCO Incentive Measures include: the percentage of children age one, two, or three who received a developmental screening; the percentage of members who said they got care and appointments as soon as needed; and the rate of emergency department visits among CCO members (a lower rate is better).

Financial incentives were strongly associated with improvements in performance: Two-thirds of CCO Incentive Measures improved in at least two of three years from 2013 to 2015. By contrast, about one-third of all measures we evaluated improved in at least two of three years in the study period.

See Table 4.6, page 56 for details.

Recommendations for Continuing Medicaid Transformation in Oregon

In January 2017, Oregon executed an extension of the waiver through June 2022. Based on findings from this evaluation, we present eight recommendations, categorized into four areas, for continuing health system transformation within the framework of the 2012-2017 waiver.

VALUE-BASED PAYMENT FOR CCOs AND PROVIDERS

- 1 Increase the portion of total CCO payments awarded for quality and access, and raise the bar for awards.** A larger quality pool and higher performance standards can be used to drive improvement in areas with relatively little progress.
- 2 Require CCOs to report detailed data on value-based payment (VBP) arrangements.** The 2017-2022 waiver requires the State to promote VBP arrangements designed to improve quality and manage cost growth. More detailed data will be essential for identifying effective VBP arrangements and monitoring progress toward VBP targets required by the waiver.

CARE COORDINATION AND INTEGRATION

- 3 Provide additional incentives and resources to increase electronic health record (EHR) functionality.** EHRs can improve many aspects of care coordination. However, clinics interviewed for an evaluation of OHA's Patient-Centered Primary Care Home Program reported challenges using EHRs to their full potential.
- 4 Inventory billing restrictions and regulations that impede physical, behavioral, and oral health care integration.** Existing studies identified billing restrictions and regulations as barriers to integration.

HEALTH-RELATED SERVICES AND SOCIAL DETERMINANTS OF HEALTH (SDOH)

- 5 Create a "one-stop shop" where CCOs and other stakeholders can find information about health-related services.** Include information on definition and reporting, treatment of health-related services in rate setting, and state and federal regulations pertaining to health-related services.
- 6 Require CCOs to report person-level data on use of health-related services.** Some CCOs have begun to evaluate health-related services by linking data on health-related services use with data on outcomes, such as spending from health care claims. Person-level data are needed to evaluate the effects of these services with precision.
- 7 Require CCOs to commit one percent of their global budget to spending on SDOH.** Investments beyond the health care system have the potential to improve Medicaid members' health outcomes and reduce health care spending. A targeted spending amount will provide additional incentives for CCOs to improve outcomes outside hospital and clinic walls.

SUSTAINABLE SPENDING

- 8 Evaluate options for limiting the growth of prescription drug spending.** The State may need to focus on limiting prescription drug spending growth in order to meet the 2017-2022 waiver's spending goals.

See Chapter 5 for details on our recommendations.

CHAPTER 1: Background on Oregon's Medicaid Waiver

OVERVIEW

A Medicaid demonstration waiver allows state Medicaid programs to test new approaches to health care delivery and payment. Oregon has a history of using waivers to innovate in its Medicaid program. In 1994, Oregon received a waiver to implement the Oregon Health Plan. This demonstration project enrolled Medicaid members in managed care organizations (MCOs), implemented a new approach to structuring Medicaid benefits, and extended Medicaid eligibility to previously uncovered adults. Oregon implemented additional reforms under subsequent extensions and amendments to the waiver.

In 2012, Oregon executed a five-year extension and amendment to its Medicaid waiver with the federal Centers for Medicare & Medicaid Services (CMS). Under the 2012-2017 waiver, Oregon committed to reduce spending growth and increase health care access and quality by transforming health care delivery and payment for Medicaid members. Oregon planned to achieve these goals by enrolling Medicaid members in coordinated care organizations (CCOs), a new type of MCO.

The State of Oregon was required to contract with independent evaluators to carry out midpoint and summative evaluations of the 2012-2017 waiver (see *Waiver Evaluation*, page 3). The Oregon Health Authority (OHA), Oregon's Medicaid Agency, selected Oregon Health & Science University's Center for Health Systems Effectiveness (CHSE) to carry out the summative evaluation.

ROADMAP TO THIS REPORT

This report presents CHSE's evaluation of Oregon's Medicaid waiver:

- **Chapter 1:** Chapter 1 describes Oregon's system of Medicaid managed care before the 2012-2017 waiver and the waiver's goals. It then describes CCOs, a new kind of MCO established under the waiver. CCOs were intended to integrate and coordinate care for members with the goals of reducing spending growth and improving access and quality.
- **Chapter 2:** Chapter 2 assesses OHA's and CCOs' activities to transform health care delivery and payment. We used two sources of information for the assessment: Existing studies of the waiver and quantitative measures reflecting progress on specific activities.
- **Chapter 3:** Chapter 3 describes CCOs' use of cost-effective, health-related services, called flexible services, to improve health care and reduce health care costs based on interviews with all CCOs.
- **Chapter 4:** Chapter 4 evaluates the 2012-2017 waiver's effect on outcomes in five overall areas: access, quality, experience of care, health status, and spending. We evaluate the waiver's effect on Medicaid members as a whole, and on specific subgroups of Medicaid members, using statistical techniques to control for other factors that may have affected outcomes. In addition, we assess differences in performance across CCOs. Finally, we

compare changes in outcomes among Oregon Medicaid members and Medicaid members in another state.

- **Chapter 5:** Chapter 5 presents our recommendations for continuing health system transformation in Oregon beyond the 2012-2017 waiver.
- **Supplemental information:** Throughout the report, sections in *thin gray text* present supplemental information that helps explain specific aspects of the waiver.
- **Appendixes A through F:** Appendixes A through F describe existing studies and methods used for the evaluation in detail.
- **Data Appendix:** The Data Appendix, a separate file accompanying this report, provides all results presented in tables and figures and any other results referenced in the report.

The remainder of this chapter presents background information about Oregon's 2012-2017 Medicaid waiver.

WAIVER EVALUATION

Oregon's 2012-2017 Medicaid waiver required the State of Oregon to evaluate the waiver's effects on health care spending, access, quality, and other outcomes. The evaluation had no bearing on whether CMS would impose financial penalties on the State for failing to reduce spending growth or improve access and quality, and no bearing on whether the State would reward CCOs with incentive payments for quality improvements. Rather, it was intended to determine whether the waiver *resulted* in improved outcomes.

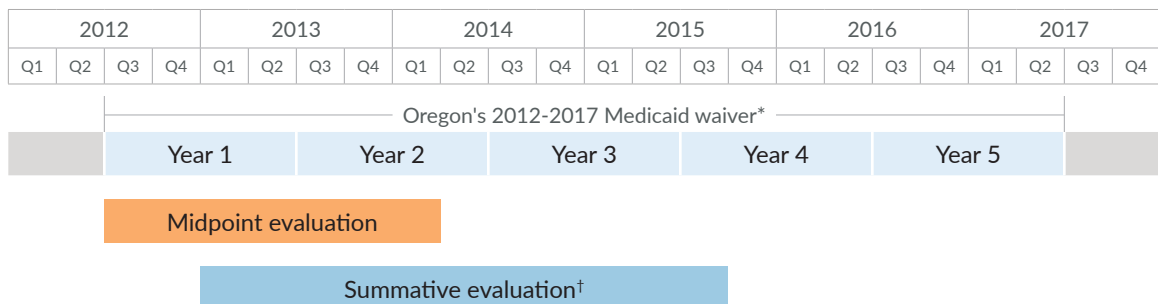
The evaluation included three components:

- **Formative evaluation:** The formative evaluation tracked OHA's and CCOs' activities to transform Medicaid. It was intended to provide feedback that would help Oregon improve care for Medicaid members, and to help explain changes in outcomes experienced by Medicaid members under the waiver. It included data collection and reporting by OHA, as well as OHA-sponsored evaluation projects carried out by external evaluators.
- **Midpoint evaluation:** The midpoint evaluation summarized OHA's and CCOs' transformation activities and assessed their effect on access and quality through mid-2014. By contrast with other efforts to track and report on outcomes, the midpoint evaluation was intended to determine whether changes in outcomes were attributable to the waiver by using statistical techniques to control for the effect of other factors.
- **Summative evaluation:** The summative evaluation was intended to evaluate the waiver's effects on a broader set of outcomes than the midpoint evaluation. These included access, quality, experience of care, health status, and spending. In addition to requirements in the waiver, OHA specified that the summative evaluation would assess the relationship between OHA's and CCOs' activities to transform Medicaid and outcomes, and provide recommendations to continue Medicaid transformation beyond the 2012-2017 waiver period.

The waiver required the State to contract with independent evaluators to carry out the midpoint and summative evaluations. OHA selected Mathematica Policy Research to carry out the midpoint evaluation, which was completed in April 2015. In February 2016, OHA selected CHSE to carry out the summative evaluation.

Figure 1.1 shows the time periods covered by the midpoint and summative evaluations. Both evaluations used health care claims data to assess the waiver's effect on outcomes. Due to the time required to process claims, these data are not sufficiently complete to use for analysis until at least a year after health care services are delivered. As a result, the midpoint and summative evaluations could not assess waiver's effects over the entire period from its execution in July 2012 to its midpoint and end, respectively. In addition, the summative evaluation excluded 2012 as a transition year, when CCOs were starting up operations and beginning to enroll members.

Figure 1.1. Timelines for midpoint and summative waiver evaluations



*As amended July 5, 2012. Oregon's 2017-2022 Medicaid waiver went into effect on January 12, 2017. †2012 was excluded as a transition year. Q4 2015 was excluded due to a nationwide change in health care billing codes that occurred in October 2015. See **Appendix F** for details.

MEDICAID MANAGED CARE BEFORE THE 2012-2017 WAIVER

Under Oregon's system of Medicaid managed care before 2012, different kinds of MCOs managed benefits for most Medicaid members. These included fully-capitated health plans and physician care organizations, which managed physical health benefits; mental health organizations, which managed behavioral health benefits; and dental care organizations, which managed dental benefits. Each MCO received per capita payments from the State for members enrolled in coverage and used these funds to pay providers for services received by Medicaid members. A relatively small share of Medicaid members (approximately 15 to 17 percent from 2010 to 2012) received fee-for-service coverage, meaning Oregon's Medicaid program (not MCOs) directly paid providers for care they received.¹ In addition, county governments received funding for some mental health services and contracted with providers to deliver those services.

Because different kinds of MCOs managed physical, behavioral, and oral health care, Oregon lacked a single point of accountability for all health care received by Medicaid members, and for the health outcomes of these members. This fragmented system was described as resulting in poor health and high costs.²

2012-2017 WAIVER GOALS

In 2011, Oregon faced a shortfall in its Medicaid budget.³ Rather than reduce Medicaid enrollment, benefits, or payments to health care providers, Oregon sought to reduce Medicaid spending by transforming its health care delivery and payment system and improving health care access, quality, and other outcomes for Medicaid members.

In July 2012, Oregon executed a five-year extension and amendment to its Medicaid waiver with CMS. CMS agreed to provide \$1.9 billion to support Medicaid transformation; in return, Oregon committed to achieving two primary goals:

- Limit increases in per capita spending to no more than 4.4 percent between the first and second years of the waiver, and to no more than 3.4 percent in the remaining years.
- Improve health care access and quality over the period of the waiver compared to a baseline year.

The 2012-2017 waiver stated that CMS would monitor Oregon's Medicaid spending, as well as quality and access as reflected by 33 outcome measures, called Quality and Access Test Measures. If Oregon failed to achieve either goal, CMS would impose substantial financial penalties on its Medicaid program.

COORDINATED CARE ORGANIZATIONS (CCOs)

Oregon sought to achieve the 2012-2017 waiver's goals of controlling spending and improving quality and access by enrolling Medicaid members into CCOs, a new type of MCO. Each CCO provided coverage for Medicaid members in a specific region of the state. CCOs were accountable for improving health care access and quality for their members, and had broad flexibility to implement reforms to meet the unique needs of their members and communities.

Five key features differentiated CCOs from other MCOs:

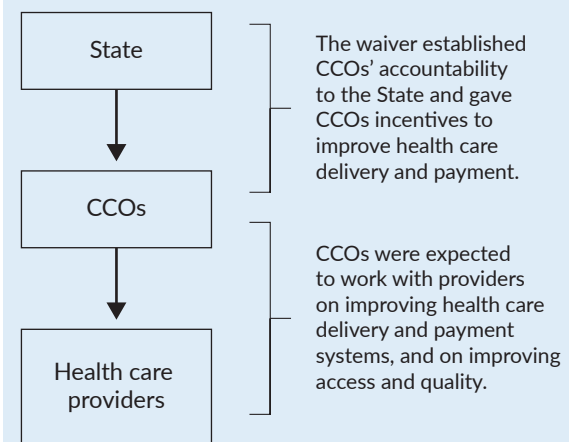
- **Local governance with representation from health care providers, Medicaid members, and other community members:** CCOs' governance structures were required to include health care providers, members of a community advisory council (CAC), and members of the community at large to ensure decision making consistent with community values. The role of CACs was ensuring the health needs of CCOs' communities were being met. CACs were required to include representatives of the community and county government, with Medicaid members making up the majority. The waiver included other provisions to ensure that CCOs responded to community needs: CCOs were required to establish agreements with local governments, carry out community health assessments, and develop community health improvement plans based on the assessments.
- **Global budgets covering physical, behavioral, and oral health care:** CCOs received per capita payments to cover the cost of members' physical, behavioral, and oral health care, as well as other costs of operating a CCO. Together, these payments comprised a CCO's global budget. CCOs were accountable for managing all services covered by the global budget and had flexibility to allocate their global budgets in ways tailored to the needs of their members and communities. Global budgets placed CCOs "at risk" for all types of health care, creating a financial incentive to coordinate and integrate different types of care (see *Global Budgets*, page 6).
- **Accountability for health care access and quality:** As described above, CCOs represented the single point of accountability for members' health care access and quality. OHA publicly reported CCOs' performance on a variety of outcome measures on its website, reinforcing accountability.
- **Payment for performance:** CCOs could receive incentive payments from a state bonus incentive pool for improving specific outcomes, called CCO Incentive Measures, among their members. OHA established a Metrics and Scoring Committee to select Incentive Measures, establish performance benchmarks and improvement targets used to award incentive payments, and adjust the Incentive Measures and performance goals over time.
- **Levers:** The waiver directed OHA and CCOs to use six overall approaches, or levers, to improve health care delivery and payment (see *Chapter 2* for descriptions of each lever).

Most Medicaid members were required to enroll in a CCO. Members of Indian tribes and people eligible for Medicare and Medicaid coverage, called dual-eligible members, were allowed to choose CCO enrollment or FFS coverage. Medicaid members with special health needs were required to transition from FFS coverage to a CCO only after receiving an individualized transition plan to meet their care needs.

The waiver established CCOs' accountability to the State and local communities, and gave CCOs incentives to help improve health care delivery and payment. CCOs, in turn, were expected to work with health care providers on implementing the levers in order to improve health care delivery and payment. Figure 1.2 illustrates the relationship among the State, CCOs, and providers.

CCOs share characteristics with Medicaid MCOs and accountable care organizations (ACOs), but resemble MCOs more closely than ACOs (see *MCOs, ACOs, and CCOs*, page 7).

Figure 1.2. Relationship among the State, CCOs, and health care providers



GLOBAL BUDGETS

A global budget is the sum of per capita payments from the State to each CCO. Global budgets were meant to cover the cost of physical, behavioral, and oral health care received by the CCO's members, administrative expenses, and other expenses. CCOs were accountable for managing all services covered by the global budget.

The per capita payments that comprised CCOs' global budgets consisted of two components:

- A medical portion based on health care services members used in prior years and meant to cover the costs of members' physical, behavioral, and oral health care.
- A non-medical portion meant to cover the costs of administration, care management, and other expenses.

Payment rates for each CCO were risk-adjusted to account for the health status of their populations. OHA set payment rates to limit spending increases in order to meet the waiver's spending goal.

Global budgets placed CCOs "at risk" for total spending on physical, behavioral, and dental health care, meaning a CCO (not the state or federal government) was required to make up the difference if members' health care expenses exceeded the global budget amount. As a result, global budgets gave CCOs a financial incentive to work toward coordinating and integrating different types of health care in order to ensure members' needs were met and the need for costly services was avoided. CCOs were required to demonstrate the capacity to manage financial risk and maintain adequate reserves as needed to meet potential liabilities.⁴

CCOs had flexibility to allocate their global budgets in ways tailored to the needs of their members and local communities. CCOs could choose the payment method they used to pay providers from their global budgets, including traditional fee-for-service (FFS) payment or alternative payment methods (APMs). Some CCOs passed a portion of their global budgets to their partner organizations—such as health plans, county mental health organizations, and dental care organizations—who paid providers using FFS or APMs. In such cases, the CCO retained ultimate responsibility for managing services and ensuring access to care and quality of care for its members. In addition to paying providers for health care services covered by Medicaid, CCOs could use their global budgets to pay for flexible services, defined as cost-effective, health-related services with the potential to improve members' health and reduce health care costs.

CCO FORMATION AND DIVERSITY

OHA began soliciting applications from existing health care organizations to form CCOs before executing the waiver with CMS.⁵ Some CCOs formed from a single MCO and maintained that MCO's contractual relationships with health care providers. Other CCOs formed from partnerships among MCOs, health systems, mental health organizations, dental care organizations, and county health departments.⁶

Sixteen CCOs ultimately formed to provide coverage for Oregon Medicaid members. Figure 1.3 shows the service areas of the CCOs and the number of Medicaid members enrolled in physical health care coverage with each CCO as of December 2016. The service areas of some CCOs overlapped; for example, both FamilyCare and Health Share provided coverage for Medicaid members in the Portland metropolitan area.

CCOs varied widely in their organizational structures, the kinds of communities they served, and other characteristics (see *Diversity among CCOs*, page 9).

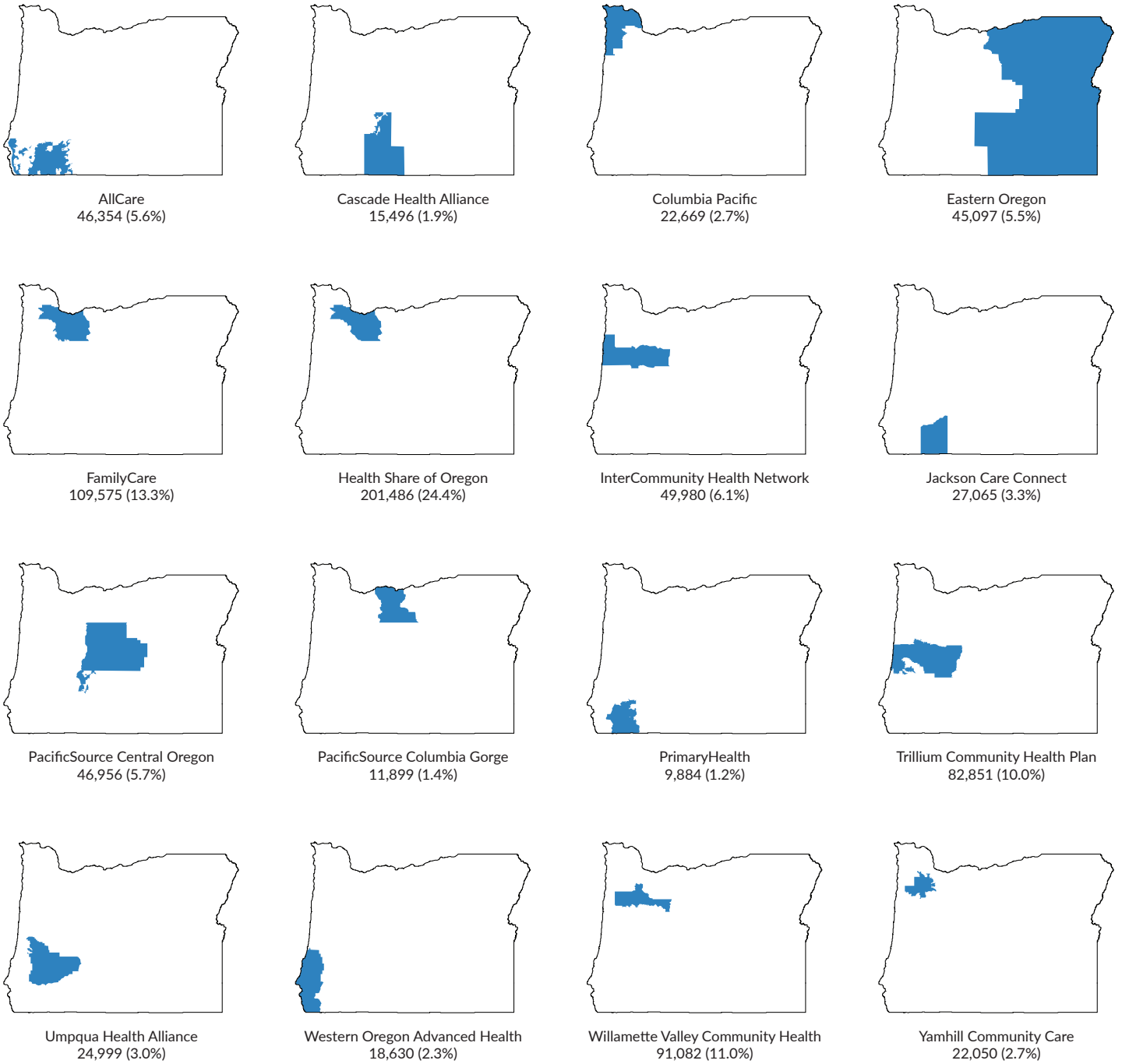
MCOs, ACOs, AND CCOs

Medicaid MCOs are managed care organizations that manage health care benefits for Medicaid members. ACOs are groups of health care providers that assume responsibility for a defined group of patients under contract with the federal Medicare program or a state Medicaid program. While CCOs shared characteristics with Medicaid MCOs and ACOs, they resembled MCOs more closely.⁴

- MCOs are managed care organizations that receive capitated payments from a state Medicaid program to manage benefits for Medicaid members. They typically contract with and manage a network of health care providers. As in Oregon before 2012, separate MCOs typically manage physical, behavioral, and oral health benefits. MCOs may work with providers in their networks to improve care coordination, implement APMs, and improve other aspects of health care delivery and payment systems, although they usually lack an explicit directive to transform health care broadly.
- ACOs are groups of providers that assume responsibility for health care access and quality among a defined population of members. At minimum, they consist of a group of doctors and a hospital. ACOs typically receive financial incentives if they meet quality goals. The federal Medicare program recognizes multiple kinds of ACOs. In addition, some states are beginning to experiment with Medicaid ACOs, although these are diverse. Medicare ACOs are not involved in providing behavioral and oral health care, while Medicaid ACOs are typically involved in providing behavioral health care.
- CCOs shared aspects of MCOs and ACOs but resembled MCOs more closely. Like MCOs, CCOs contracted with and managed networks of providers, although some CCOs were organized as partnerships between MCOs and providers (see *Diversity among CCOs*, page 9). Like ACOs, CCOs were accountable for the health care of a defined population and could receive financial incentives for performance. Unlike MCOs and ACOs, CCOs integrated funding and payment for behavioral and oral health care, and were directed to transform health care delivery and payment more broadly.

Figure 1.3. Oregon's CCOs

Number of members and percentage of all CCO members enrolled in physical health care coverage, December 2016



Source: CHSE analysis of OHA enrollment reports and map files

MEDICAID EXPANSION AND CCO ENROLLMENT

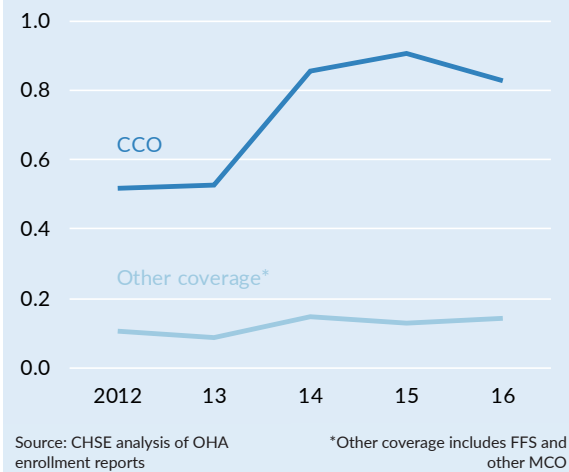
CCO enrollment increased substantially in 2014, when Oregon expanded Medicaid eligibility under the Affordable Care Act. The income limit for Medicaid eligibility increased from 100 percent to 138 percent of the federal poverty level. Total enrollment in physical health care coverage increased by over 385,000 members from December 2013 to December 2014. CCOs absorbed most of the increase: enrollment in physical health care coverage through CCOs increased by over 325,000 members, representing 63 percent of the increase in total enrollment.⁷ Figure 1.4 shows the increase in CCO enrollment.

Because the characteristics of members who enrolled after Medicaid expansion may have differed substantially from previously enrolled Medicaid members, we report results for post-expansion members and other members separately in this report.

As of December 2016, 85 percent of Medicaid members were enrolled in CCOs for physical health care coverage.⁷

The next chapter describes the six levers OHA and CCOs were directed to use to transform health care delivery and payment for Medicaid members, and assesses OHA's and CCOs' activities to implement the levers.

Figure 1.4. Oregon Medicaid enrollment
Million members enrolled in physical health care coverage, 2012-2016



DIVERSITY AMONG CCOs

CCOs varied widely across Oregon. They included for-profit and non-profit organizations, employed different governance structures, and included different kinds of partner organizations. The following examples illustrate diversity among CCOs.

- Health Share of Oregon, Oregon's largest CCO, served three counties in the Portland metropolitan area. It included four health plans, three county mental health organizations, nine dental care organizations, and numerous provider organizations. It consisted of a "lean" staff designed to administer the CCO contract with OHA and gave its partner organizations considerable freedom to innovate with health care delivery.⁸
- PacificSource Central Oregon served three counties in central Oregon. It consisted of a single health plan that contracted with OHA to form the CCO. The Central Oregon Health Council, a collaborative of health care leaders, community members, and county commissioners that existed before the 2012-2017 waiver, governed the CCO.⁸
- Eastern Oregon CCO (EOCCO) covered a relatively small number of members distributed over 12 counties comprising nearly half the geographic area of Oregon. It formed from two MCOs—a fully-capitated health plan and a mental health organization—that served the area. Due to its widely distributed population, EOCCO formed 12 local CACs to represent the communities in its service area.⁹

CHAPTER 2: OHA's and CCOs' Activities to Transform Medicaid

OVERVIEW

This chapter assesses OHA's and CCOs' activities to transform Medicaid using two sources of information: existing studies of Oregon's Medicaid waiver and activity measures that reflect progress on specific activities to transform Medicaid.

LEVERS FOR IMPROVING HEALTH CARE

Oregon's 2012-2017 Medicaid waiver directed OHA and CCOs to use six overall approaches, or levers, to transform health care delivery and payment, and identified specific activities OHA and CCOs would carry out to implement each lever (Table 2.1).

Table 2.1. Transformation levers and activities*

Lever	OHA actions	CCO actions
Lever 1: Improve Care Coordination	<ul style="list-style-type: none"> Continue recognizing clinics as patient-centered primary care homes (PCPCHs) through the PCPCH Program Certify traditional health workers (THWs) 	<ul style="list-style-type: none"> Help clinics meet Oregon's PCPCHs model and help patients access care through PCPCHs Link providers using health information technology (HIT) Use THWs to coordinate care
Lever 2: Implement alternative payment methods (APMs)	<ul style="list-style-type: none"> Provide technical assistance to CCOs with APMs 	<ul style="list-style-type: none"> Use APMs to pay providers as an alternative to fee-for-service (FFS) payment systems
Lever 3: Integrate physical, behavioral, and oral health care	<ul style="list-style-type: none"> Establish global budgets, which provide a financial incentive to integrate care 	<ul style="list-style-type: none"> Take actions to integrate different types of care, such as co-locating physical and behavioral providers
Lever 4: Increase efficiency	<ul style="list-style-type: none"> Establish global budgets and support CCOs' use of levers that may promote efficiency 	<ul style="list-style-type: none"> Simplify administrative structures and implement levers that may promote efficiency
Lever 5: Use flexible services	<ul style="list-style-type: none"> Define and provide guidance to CCOs on using low-cost, health-related flexible services 	<ul style="list-style-type: none"> Consider using flexible services to replace or reduce the need for health care services
Lever 6: Spread Innovation and Best Practices	<ul style="list-style-type: none"> Establish a Transformation Center to provide learning collaboratives and technical assistance Use innovator agents to exchange information with CCOs 	<ul style="list-style-type: none"> Participate in learning collaboratives Use technical assistance from the Transformation Center

*Adapted from the Theory of Action Model included in the Special Terms and Conditions for Oregon Section 1115 Medicaid Demonstration amended July 5, 2012: 211. See [Appendix A](#) for the original Theory of Action Model.

The waiver provided CCOs with broad flexibility to implement the levers in ways that would meet the needs of their members and service areas. CCOs were required to describe their planned activities and goals for implementing specific levers in transformation plans that would become part of their contracts with OHA.

We assess OHA's and CCOs' activities to implement each lever using two sources of information:

- **Existing studies:** We reviewed a selection of existing studies about OHA's and CCOs' activities to implement the levers. These included four reports commissioned or carried out by OHA and four studies carried out by independent researchers (see **Appendix B** for summaries of each study).
- **Activity measures:** We created quantitative indicators that reflect progress on specific activities to transform health care delivery and payment (see **Appendix C** for detailed descriptions of each activity measure). Due to the limitations of existing data sources, we were unable to identify activity measures that reflect CCOs' activities under some levers. In these cases, we present claims-based outcome measures that may reflect CCOs' progress on transformation activities. The claims-based measures presented in this chapter are not adjusted for member characteristics or other factors.

Table 2.2, page 12 summarizes our assessment of OHA's and CCOs' transformation activities based on existing studies and activity measures.

Table 2.2. Progress on transformation activities

Lever	Key findings
Lever 1: Improve care coordination	<ul style="list-style-type: none"> • CCOs made substantial progress working with patient-centered primary care homes (PCPCHs) and increasing electronic health record (EHR) adoption among providers. • Small and rural clinics experienced challenges improving care coordination and “exemplary” clinics identified by one study reported challenges using EHRs to their full potential. • Payment reform is needed to pay for non-medical care coordination services.
Lever 2: Implement alternative payment methods (APMs)	<ul style="list-style-type: none"> • Self-reported financial data indicate that CCOs achieved a moderate level of APM adoption midway through the waiver, with the average CCO paying one-third of total dollars for members’ care through non-fee-for-service (FFS) payment methods in 2015. • Existing studies suggest that provider readiness to adopt APMs and CCOs’ organizational structures affected the pace of APM adoption.
Lever 3: Integrate physical, behavioral, and oral health care	<ul style="list-style-type: none"> • CCOs made some progress integrating care by co-locating physical and behavioral health care providers. • Existing studies indicate that old contracting and payment systems impeded integration and proved difficult to change. Billing restrictions and federal regulations also created challenges for funding integrated care. • Claims-based measures of integration remained unchanged or declined slightly from 2011 to 2015.
Lever 4: Increase efficiency	<ul style="list-style-type: none"> • Claims-based measures indicate CCOs made substantial progress on activities to improve efficiency from 2011 to 2015.
Lever 5: Use flexible services	<ul style="list-style-type: none"> • Some CCOs were using flexible services midway through the waiver. CCOs supported a wide variety of housing-related services as of mid-2015, although the number of members that received these services is unknown. • Barriers to using flexible services included lack of guidance from the State and the requirement to report flexible services as administrative expenses (instead of medical expenses) for rate-setting purposes.
Lever 6: Spread Innovations and Best Practices	<ul style="list-style-type: none"> • OHA effectively spread innovations and best practices to CCOs. CCOs described OHA’s Transformation Center and innovator agents as important to their transformation efforts. • CCO participation in OHA’s Statewide Learning Collaborative was high and most CCOs received technical assistance through the Transformation Center.

LEVER 1: IMPROVE CARE COORDINATION

Care coordination means deliberately organizing health care activities among people involved in a patient's care—including physicians, family caregivers, and patients themselves—to facilitate the appropriate delivery of health care services. It encompasses access to care, respect for patients' needs and preferences, and collaboration among the different types of providers involved in a patient's care. Common interventions to support care coordination include use of a medical home model, health information technology (HIT), multidisciplinary teams, and payment systems that reimburse providers for activities to coordinate care.¹⁰

Oregon's 2012-2017 Medicaid waiver stated that CCOs were accountable for the provision of coordinated health care to their members and directed CCOs to undertake specific actions to improve care coordination:

- Help clinics meet Oregon's patient-centered primary care home (PCPCH) model and provide members with access to health care through PCPCHs. The PCPCH model is Oregon's version of a medical home model. OHA developed the model and recognizes clinics as PCPCHs (see *Medical Homes and Oregon's PCPCH Program*, page 14).
- Link different types of providers using HIT. This includes helping providers adopt electronic health records (EHRs) and exchange information with other providers using health information exchanges (HIEs).
- Use traditional health workers (THWs), including community health workers, patient navigators, peer support specialists, and doulas. These types of health care workers can help members navigate the health care system, coordinate care, and keep people healthy outside of clinics and hospitals, in their homes and communities.

Key Findings:

- *CCOs made substantial progress improving care coordination by supporting the PCPCH model and enrolling members in PCPCHs. Progress may have been facilitated by the supply of experienced PCPCHs created by Oregon's PCPCH Program, which began operating before the 2012-2017 waiver was executed.*
- *Workforce shortages and lack of resources created challenges with improving care coordination for small and rural clinics. Rural CCOs reported PCPCHs were less available in their service areas.*
- *CCOs made progress increasing EHR adoption and closing the gap between the highest and lowest CCOs; however, "exemplary" PCPCHs identified in one study reported challenges using EHRs to their full potential.*
- *Reform of existing payment systems is needed in order to pay health care providers and THWs for non-medical services needed to coordinate care.*

MEDICAL HOMES AND OREGON'S PCPCH PROGRAM

The medical home model is a set of nationally-recognized standards for providing primary care. It includes enhanced access to care, respect for patients' needs and preferences, accountability for patients' total health care needs, coordination of care among providers and settings, and commitment to quality and safety. Across the United States, different organizations have developed variations on the medical home model.¹¹

The patient-centered primary care home (PCPCH) model is Oregon's version of the medical home model.¹² OHA's PCPCH Program developed the PCPCH model and certifies clinics that meet the model as recognized PCPCHs. The Program developed the initial PCPCH model in 2010 and began recognizing clinics as PCPCHs in 2011. A revised version of the model with additional standards was implemented in 2017.

To be recognized as a PCPCH, a clinic must attest to meeting 10 standards, called "must-pass" measures. Examples of must-pass measures include: providing continuous access to clinical advice by telephone; having a screening strategy for mental health, substance use, and developmental conditions; and offering providers who speak a patient and family's language or telephonic interpreters to communicate with patients and families at the time of service.

A clinic can achieve three levels of PCPCH recognition, or tiers, based on the number of standards it attests to outside the must-pass measures. Examples of these standards include: providing same-day appointments and sharing clinical information electronically in real time with other providers.

The Program conducts site visits to verify that clinics meet the measures they attested to and assist clinics with making improvements. A small portion of clinics are selected for verification at random because the Program lacks capacity to visit all clinics.¹³ In addition to providing direct technical assistance, the Program supports the Patient-Centered Primary Care Institute (PCPCI), a public-private partnership that provides clinics with information about the PCPCH model and technical assistance with meeting the model and improving primary care.

Some health care payers make incentive payments to recognized clinics based on their tier. These include the Oregon Public Employees' Benefit Board, some CCOs, and one commercial insurance company.

Oregon's 2012-2017 Medicaid waiver directed CCOs to assist clinics with meeting the PCPCH model and help members access services through PCPCHs. As a result, the PCPCH Program's effectiveness at improving outcomes was important to the waiver's effectiveness overall.

In their evaluation of the PCPCH Program, Gelmon et al found that PCPCH recognition reduced total spending per patient, increased primary care spending and use per patient, and reduced spending per patient on ED care, inpatient care, and specialty care.¹³ Most of these effects occurred in the second and third years after recognition and increased over time. According to Gelmon et al, this suggests that increased "upstream" spending on primary care resulted in reduced "downstream" spending on ED care, inpatient care, and specialty care, and that the ability of PCPCHs to provide patient-centered care improved over time.

Recent evaluations of medical home programs in multiple states have found fewer positive effects than Gelmon et al found for the PCPCH Program.^{11,14} Gelmon notes that PCPCHs include some of Oregon's largest clinics, which are connected to large health care systems. Such clinics may enjoy the resources needed to make quality improvements that result in improved care and reduced spending.

Existing Studies

In the midpoint evaluation of Oregon's Medicaid waiver, Irvin et al found that CCOs made more progress improving care coordination than in most other areas by assisting clinics with meeting the PCPCH model and enrolling members in PCPCHs.⁹ However, they identified the following challenges for improving care coordination:

- Small clinics and rural clinics often lacked resources to become PCPCHs, and rural CCOs reported that PCPCHs were less available in their service areas.
- More work was needed by CCOs to promote health information technology, as evidenced by wide variation in EHR adoption among providers in CCOs' networks.
- More work was needed on paying THWs to provide health-related services such as care coordination and community-based prevention.

The "exemplary" PCPCHs interviewed by Gelmon et al described similar challenges for improving care coordination¹³:

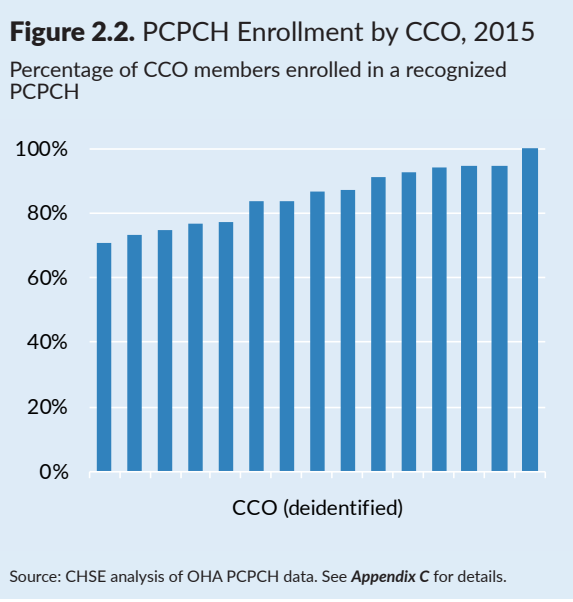
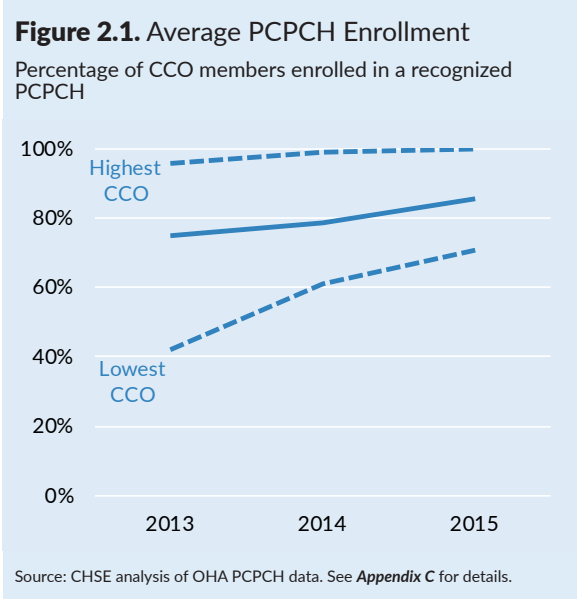
- Medicaid expansion, workforce shortages, and increased demands on staff occurred at the same time many clinics were attempting to meet the PCPCH model. Workforce shortages and demands on staff were especially challenging for small clinics and rural clinics.
- FFS payment systems did not adequately reimburse PCPCHs for many non-medical services needed to provide coordinated care, such as increased communication with patients and coordination with specialists and social service providers.
- PCPCHs experienced challenges using EHRs to their full potential. EHRs were important for improving care coordination. They helped team members within the clinic communicate, helped clinics improve access by generating appointment reminders, and improved continuity of care by allowing PCPCHs to exchange information with other clinics and hospitals. Having a customizable EHR and the expertise needed to modify it was especially important for care coordination. However, PCPCHs often lacked staff to manage or analyze data from EHRs. PCPCHs experienced challenges extracting information from EHRs and exchanging information with other clinics and hospitals.

Activity Measures

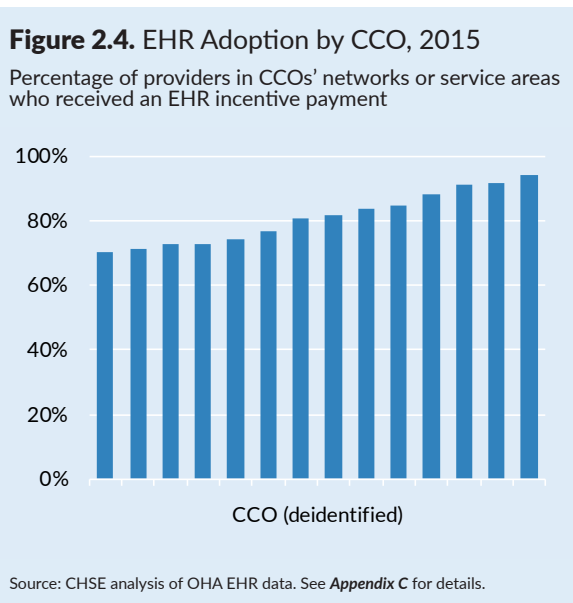
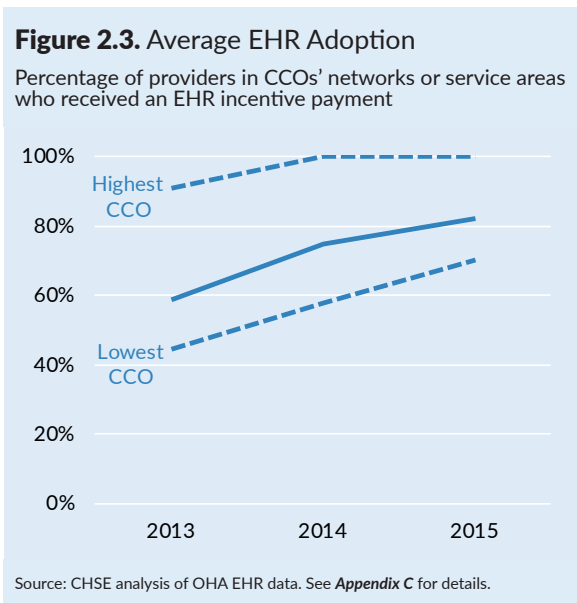
We used two activity measures to assess CCOs' activities to improve care coordination: PCPCH Enrollment and EHR Adoption. Both measures were included in OHA's CCO Incentive Measures, meaning CCOs could have earned incentive payments for improving their performance on these measures.

The measures indicate that CCOs made substantial progress on activities to increase care coordination from 2013 to 2015.

PCPCH Enrollment: PCPCH enrollment among all CCO members increased moderately (from 75 to 86 percent) from 2013 to 2015. However, the gap between CCOs with the highest and lowest PCPCH enrollment was halved in the same period. The relatively high level of PCPCH enrollment in 2013 and the moderate increase from 2013 to 2015 may reflect the existence of the PCPCH Program and its success enrolling Medicaid members in PCPCHs before the 2012-2017 waiver was executed.



EHR adoption: EHR adoption among providers in CCOs' networks and service areas increased considerably (from 59 to 82 percent) from 2013 to 2015. The gap between the CCOs with the lowest and highest EHR adoption was reduced by over one-third in the same period.



LEVER 2: IMPLEMENT ALTERNATIVE PAYMENT METHODS (APMs)

Across the United States, fee-for-service (FFS) payment remains the dominant health care payment system.¹⁵ FFS payment offers few incentives for health care providers to control the use of services or improve health care quality, and may encourage providers to increase the volume of services they provide. Alternatives to FFS payment, called alternative payment methods (APMs), are designed to reward providers for delivering care more efficiently and improving quality or other outcomes (see *Alternative Payment Methods*, page 18).¹⁶

Oregon's 2012-2017 Medicaid waiver directed CCOs to implement APMs that focus on value and pay providers for improved outcomes. In addition, it directed OHA to support CCOs' use of APMs through its Transformation Center, which would provide technical assistance with APMs and establish a learning collaborative where CCOs could share best and emerging practices for APMs.

Key Findings:

- *CCOs achieved a moderate level of APM adoption midway through the waiver: The average CCO paid about one-third of total dollars for members' care using non-FFS payment methods; only four CCOs paid out more than half these dollars using non-FFS payment methods.*
- *CCOs described lack of provider readiness for APMs, including the inability of small providers to take on risk and lack of data infrastructure, as a barriers to developing APMs.*
- *Given broad flexibility to implement payment reform, CCOs' organizational structures may have affected the pace at which they adopted APMs. A study of two CCOs indicates that a CCO with many competing partners made less progress transforming pre-existing payment structures than a CCO with relatively few partners.*

Existing Studies

As of early 2014, Irvin et al observed that CCOs had just started to develop APMs with providers.⁹ CCOs described lack of provider readiness for APMs, including the inability of small providers to take on risk due to small margins and lack of infrastructure to collect and monitor needed data, as a barrier to developing APMs with providers.

Broffman et al assessed how Health Share of Oregon and PacificSource Central Oregon, two CCOs with different organizational structures, used their global budgets to develop APMs with providers.⁸ They found that both CCOs continued some aspects of pre-CCO payment systems but made progress toward implementing APMs. Relationships among partner organizations that comprised the CCOs affected the extent to which each CCO developed APMs with providers.

- Competition among the organizations that comprised Health Share resulted in gradual movement toward APMs. Health Share passed most of its global budget through to health plans, county mental health organizations, and dental managed care organizations; these organizations, in turn, used the funds to pay providers. For the most part, these organizations paid providers on a FFS basis. However, Health Share had also initiated APM planning and pilot projects by 2015.
- The relative lack of competition among organizations comprising PacificSource Central Oregon gave the CCO "room to experiment" with APMs and facilitated development of

an extensive APM. Before it formed a CCO, the PacificSource health plan had a capitated payment arrangement with the local physician association. PacificSource Central Oregon expanded on this arrangement by setting up an APM with the hospital in its service area in which a substantial share of the hospital's payments depended on quality measures.

Leof et al described other APMs implemented by CCOs as pilot projects or on a full scale as of mid-2014.¹⁶ AllCare Health Plan and Eastern Oregon CCO implemented APMs with shared savings elements. AllCare's APM distributed savings to providers based on measures of health care service use, access, and quality. Eastern Oregon's APM withheld a portion of claims payments and passed these on to providers if spending was below the CCO's budget. The CCOs had not yet distributed APM payments at the time Leof et al conducted interviews with the CCOs' staffs. As a result, evidence about the APMs' effect was unavailable.

Activity Measures

We used APM Adoption, defined as the share of total dollars paid to providers using non-FFS payment methods, to assess CCOs' activities to implement APMs. CCOs report data used to create this measure in their quarterly financial reports to OHA. We excluded data prior to 2015 due to changes in the report format and improvements in reporting over time.

ALTERNATIVE PAYMENT METHODS (APMs)

Under a FFS payment system, health care providers receive a payment for each health care service they deliver. FFS systems offer few incentives for providers to provide care efficiently or improve quality, and may encourage providers to increase the volume of services they provide. By contrast, APMs are designed to reward providers for providing care efficiently and improving quality or other outcomes.¹⁶ Basic APMs include:

- Episode-based payment and capitation payment: Providers receive a fixed payment to provide all care related to a specific condition or procedure (episode-based payment) or all care a patient needs during a period of time (capitation payment). These APMs create incentives for providers to hold down costs by providing care that prevents costly complications, avoiding expensive services when a less-costly equivalent is available, and eliminating unnecessary or duplicative services.
- Shared savings and shared risk: A health plan or other payer sets a cost target for patient care. Providers receive a portion of the savings if costs are below the target (shared savings) or pay a penalty if costs are above the target (shared risk). Like episode-based payment, shared savings and shared risk create incentives for providers to manage care efficiently in order to reduce costs.
- Pay-for-performance and payment penalties: Providers receive payments for achieving specific goals, such as meeting quality targets (pay-for-performance), or have a portion of payment withheld if they fail to meet goals (payment penalties).

These APMs may be combined with FFS systems or with other APMs. For example, a payer can supplement FFS or capitation payments with pay for performance in order to reward providers for quality improvements.

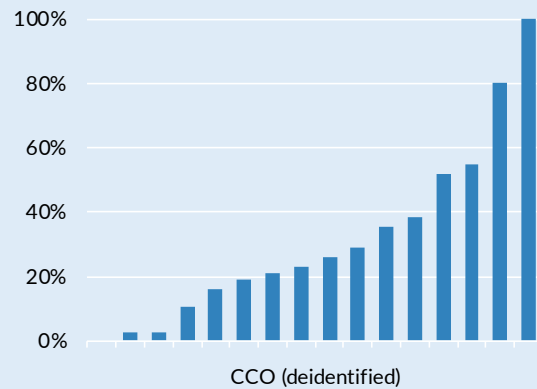
APM Adoption: According to self-reported financial data, CCOs achieved a moderate level of APM adoption midway through the waiver. On average, they reported paying about one-third of total dollars to providers using non-FFS payment methods. Only four CCOs reported paying more than half of total dollars to providers using non-FFS payment methods.

Level of APM adoption reported by CCOs varied widely: it ranged from zero percent (all dollars paid through FFS payment) to 100 percent (all dollars paid through non-FFS payment methods). Self-reported levels of APM adoption should be interpreted with caution, as the wide variation may have resulted from inconsistent definitions of APMs or reporting practices among CCOs.

As described above, CCOs' organizational structures may have affected the pace at which they adopted APMs. The level of APM Adoption as of 2015 may also reflect some progress that occurred before the waiver, as many of the MCOs that preceded CCOs used capitation payment systems for primary care.¹⁷

Figure 2.5. APM Adoption by CCO

Percentage of dollars paid to providers in CCOs' networks through non-FFS payment methods in 2015



Source: CHSE analysis of CCO financial report data. See [Appendix C](#) for details.

LEVER 3: INTEGRATE PHYSICAL, BEHAVIORAL, AND ORAL HEALTH CARE

Integration means systematically connecting different types of health care providers to meet members' physical, behavioral, and oral health care needs, no matter where they seek care. Integration can improve access to different types of care and increase the likelihood that physical, behavioral, and oral health issues are effectively diagnosed and treated. Activities to increase integration include delivering physical and behavioral health care at the same location, developing shared plans for patient care among different types of providers, and using shared records among different types of providers.¹⁸

Oregon's 2012-2017 Medicaid waiver required CCOs to be responsible for managing physical, behavioral, and oral health services covered by global budgets and accountable for ensuring that members received integrated care. It directed OHA to support integration by establishing global budgets, which created a financial incentive for integrating care.

Key Findings:

- *CCOs and primary care clinics focused on co-locating physical and behavioral health care providers as a means to increase integration.*
- *Factors that existed before the waiver—including contracting systems, billing restrictions, and federal regulations—limited CCOs' ability to promote integration at the clinic level and created challenges for funding behavioral health services delivered in primary care clinics*
- *Performance on claims-based measures that may reflect behavioral and oral health care integration remained unchanged or declined slightly from 2011 to 2015*

Existing Studies

Existing studies indicate that CCOs and primary care clinics focused on co-locating physical and behavioral health care providers as a means to increase integration. Most often, primary care clinics brought behavioral health care providers on-site by hiring them directly or contracting with mental health organizations. In some cases, mental health clinics brought primary care providers on-site through hiring or contracting. CCOs also contracted with mental health clinics to place mental health providers in schools.¹⁹ Other activities to integrate physical and behavioral health care included placing mental health and addiction counselors at an obstetric practice and making mental health counselors available at a YMCA.⁹

In the midpoint evaluation of Oregon's Medicaid waiver, Irvin et al found that CCOs had made more progress integrating physical and behavioral health care than in most other areas; however, contracting systems, billing restrictions, and regulations that existed before the waiver impeded integration of physical and behavioral health care.⁹ Kroening-Roche et al described these challenges in detail¹⁹:

- Contracting and payment systems that impeded integration proved difficult to change. Before CCOs, counties received funding for many behavioral health services and contracted with behavioral health providers to deliver these services to Medicaid members. CCOs' global budgets were intended to promote integration by allowing CCOs to flexibly allocate funding to physical or behavioral health care as needed. However, most CCOs studied by Kroening-Roche et al continued to pass funding for mental health clinics to counties, limiting their ability to promote integration of physical and behavioral health care at the clinic level. Contracting and funding structures were difficult to change because

primary care and behavioral health organizations had not worked together previously, and because some stakeholders feared that funding needed to serve patients with severe and persistent mental illness would be redirected to primary care.

- Billing restrictions and federal regulations created challenges for funding integrated care. For example, regulations prevented behavioral health clinicians contracted by primary care clinics from billing for services like brief interventions and warm hand-offs to physical health care providers, viewed as important for integrating physical and behavioral health care. As a result of such factors, primary care clinics reported they could not receive adequate reimbursement rates or bill for some services provided by behavioral health clinicians.
- CCOs were concerned about justifying spending on non-billable services to support integration. They were concerned about meeting federal requirements for data to justify spending, since non-billable services do not generate claims or encounter data.

Importantly, Irvin et al observed that global budgets do not lead to integration of care without significant work to change preexisting regulations and contracting systems.⁹

State legislation required CCOs to contract with dental care organizations (DCOs) to manage dental benefits beginning July 2014. Most CCOs began contracting with DCOs earlier: Three CCOs began in July 2013 and 11 more CCOs began in January 2014. Existing studies synthesized for this evaluation did not specifically address CCOs' activities to integrate physical and oral health care coverage.

Activity Measures

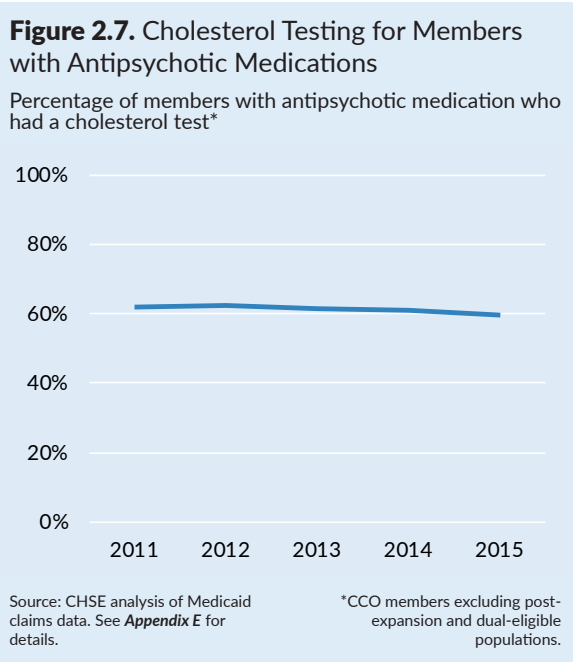
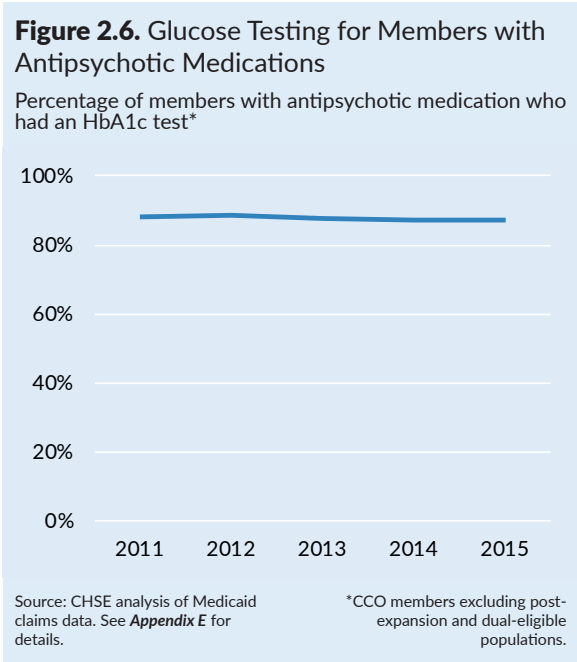
CHSE and OHA explored potential measures of CCOs' activities to integrate care, but were unable to identify measures that directly reflect these activities using existing data sources. As a result, we used four claims-based measures that may reflect CCOs' activities in this area.

- **Glucose Testing for Members on Antipsychotic Medications and Cholesterol Testing for Members on Antipsychotic Medications:** Experts recommend monitoring patients on antipsychotic medications for diabetes-related problems, including increased glucose and cholesterol. Increased communication between mental health providers who prescribe antipsychotic medications and physical health providers who order glucose and cholesterol tests may result in improved performance on these measures.
- **Members with Any Dental Care:** This measure reflects access to dental care, which CCOs were required to manage beginning in July 2014. Increased communication and collaboration between physical and oral health care providers may improve access to dental care, resulting in improved performance on this measure.
- **Dental Sealants for Children:** Like Members with Any Dental Care, this measure reflects access to dental care, which may improve with physical and oral health care integration.

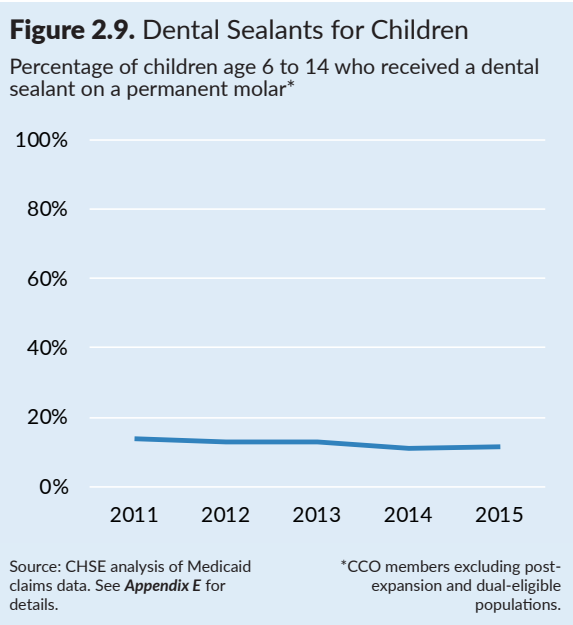
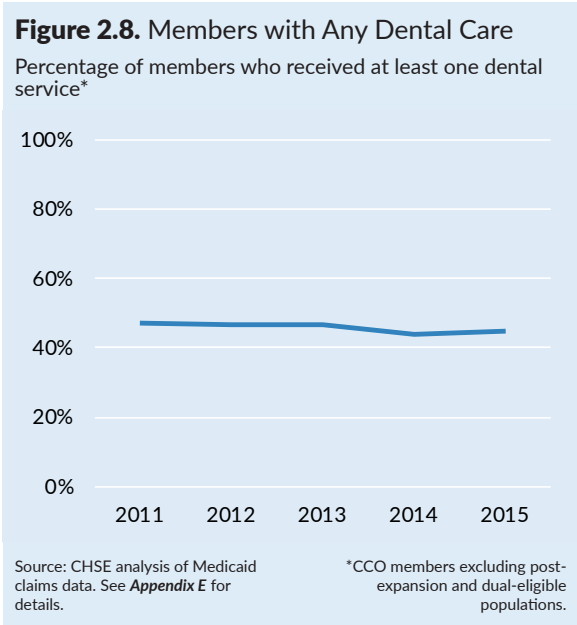
See **Appendix E, Section 6** for detailed descriptions of these measures.

The measures suggest that CCOs experienced challenges with activities to integrate care in the first three years of the 2012-2017 waiver.

Glucose testing and cholesterol testing for members on antipsychotic medications: Rates of glucose testing and cholesterol testing for members on antipsychotic medications remained almost unchanged from 2011 to 2015.



Members with Any Dental Care and Dental Sealants for Children: Both dental care measures decreased moderately from 2011 to 2015. Because CCOs began managing dental care recently, more time is needed to evaluate the waiver’s effects on dental care integration.



Chapter 4 evaluates the waiver’s effect on these measures, controlling for other factors that may have affected outcomes.

LEVER 4: INCREASE EFFICIENCY

Oregon's 2012-2017 Medicaid waiver directed Oregon to increase efficiency through administrative simplification and a more effective model of care, and to reduce administrative waste. Many features of CCOs may increase efficiency:

- Global budgets may reduce administrative overhead by combining management of physical, behavioral, and dental health benefits under one organization.
- Care coordination and integration may reduce the need for high-cost health services by ensuring that members receive screening and treatment for physical, behavioral, and oral health issues before problems worsen.
- APMs may encourage providers to reduce spending or improve quality by providing fixed payments for delivering care or incentive payments for achieving quality or savings goals.
- Cost-effective flexible services may reduce the need for higher-cost health care services.

Key Findings:

- *Measures of avoiding low-value care and avoidable ED visit rates suggest that CCOs made substantial progress on activities to increase efficiency from 2011 to 2015.*

Existing Studies

Existing studies selected for the evaluation do not specifically address OHA's or CCOs' activities to increase efficiency. However, Irvin et al found that OHA had successfully supported CCO-level reforms that may increase efficiency, including global budgets, a quality reporting system, and an incentive payment system for quality measures.⁹

Activity Measures

CHSE and OHA explored potential measures of CCOs' activities to increase efficiency but were unable to identify measures that directly reflect these activities using existing data sources. As a result, we used seven claims-based measures that may reflect CCOs' activities in this area. These include six avoiding low-value care measures and Avoidable ED Visit Rate:

- **Avoiding Low-Value Care Measures:** These six measures reflect whether members received unnecessary health care services. They represent the percentage of members who did not receive tests or treatments that were unnecessary given their diagnoses. Because the measures reflect avoidance of unnecessary care, higher outcomes are better.
- **Avoidable ED Visit Rate:** This measure reflects emergency department care that could have been provided in other settings, often at lower cost. Lower outcomes are better.

See [Appendix E, Section 6](#) for detailed descriptions of these measures.

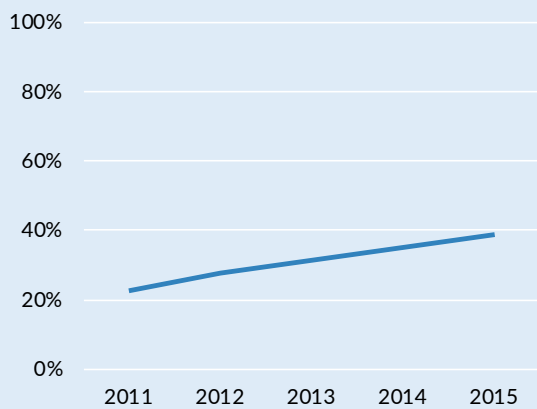
Overall, the measures suggest that CCOs made substantial progress on activities to increase efficiency in the first three years of the 2012-2017 waiver.

Avoiding low-value care measure: Three of six measures increased substantially from 2011 to 2015: Avoidance of Antibiotic Treatment for Adults with Sore Throat, Avoidance of Unnecessary Cervical Cancer Screenings in Adolescents, and Appropriate Testing for Children with Sore Throat. These measures had increased from 2011 to 2012, but continued to increase after execution of the waiver.

Avoidance of CT Scan without Ultrasound for Appendicitis decreased substantially from 2011 to 2015, although the rate of decrease slowed after execution of the waiver.

Figure 2.10. Avoidance of Antibiotics for Adults with Acute Bronchitis

Percentage of members with acute bronchitis who were not dispensed an antibiotic*



Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

*CCO members excluding post-expansion and dual-eligible populations.

Figure 2.11. Avoidance of Unnecessary Cervical Cancer Screening

Percentage of females age 16 to 20 who were not screened unnecessarily for cervical cancer*

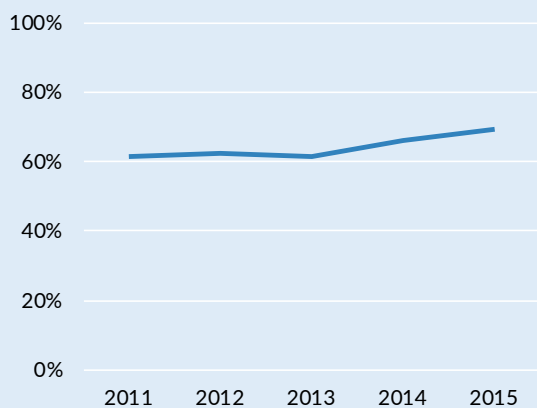


Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

*CCO members excluding post-expansion and dual-eligible populations.

Figure 2.12. Appropriate Testing for Children with Sore Throat

Percentage of children with a sore throat who were dispensed an antibiotic and who received a strep test*



Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

*CCO members excluding post-expansion and dual-eligible populations.

Figure 2.13. Avoidance of CT Scan without Ultrasound for Appendicitis

Percentage of children with appendicitis who had a CT scan, but not an ultrasound, prior to the diagnosis*



Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

*CCO members excluding post-expansion and dual-eligible populations.

Two additional measures (Avoidance of Imaging Tests for Headache and Appropriate Use of Imaging Tests for Low Back Pain) remained almost unchanged between 2011 and 2015.

Figure 2.14. Avoidance of Imaging Tests for Headache

Percentage of members with a diagnosis of uncomplicated headache who did not receive a CT or MRI*

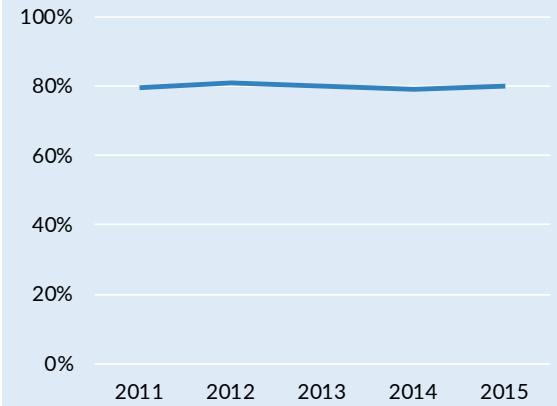


Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

*CCO members excluding post-expansion and dual-eligible populations.

Figure 2.15. Appropriate Use of Imaging Tests for Low Back Pain

Percentage of members with a new diagnosis of low back pain who did not receive an imaging study within 28 days*



Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

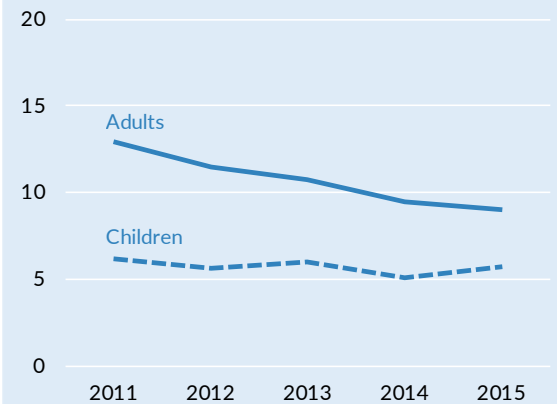
*CCO members excluding post-expansion and dual-eligible populations.

Avoidable ED Visit Rate: The Avoidable ED Visit Rate for adults decreased by one-third from 2011 to 2015. The Avoidable ED Visit Rate for children decreased slightly in the same period.

Chapter 4 evaluates the waiver's effect on these measures, controlling for other factors that may have affected outcomes.

Figure 2.16. Avoidable ED Visit Rate (Adults)

Emergency department visits that were preventable or treatable with appropriate primary care per 1,000 months of enrollment*



Source: CHSE analysis of Medicaid claims data. See [Appendix E](#) for details.

*CCO members excluding post-expansion and dual-eligible populations.

LEVER 5: USE FLEXIBLE SERVICES

Diverse factors outside the health care system—including health-related behaviors, transportation, housing, nutrition, and social support—can affect health outcomes and health care spending. Health-related services that address these factors have the potential to improve health outcomes and reduce health care spending at relatively low cost.

Oregon's 2012-2017 Medicaid waiver required CCOs to consider using cost-effective, health-related services, called flexible services, to replace or reduce the need for medical services covered by Oregon's Medicaid program. It directed CCOs to “be creative with deploying flexible services” in order to lower costs, and provided CCOs “broad flexibility in creating the array of services to improve care delivery and enrollee health.”²⁰

Flexible services are not health care services and lack traditional billing and encounter codes. As a result, flexible services spending could not be included in the medical spending that was used to determine the medical portion of CCOs' global budgets (see **Global Budgets**, page 6). To encourage use of flexible services, the waiver allowed the State to build funding for flexible services into the non-medical portion of CCOs' global budgets.

To collect qualitative information about CCOs' use of flexible services, we carried out interviews with staff involved in providing flexible services at all 16 CCOs. **Chapter 3** describes CCOs' use of flexible services based on the interviews. This section summarizes evidence about flexible services from existing studies and activity measures, with a focus on housing-related services.

Key Findings:

- *By the midpoint of the 2012-2017 waiver, some CCOs were using their global budgets to pay for flexible services that would not have been supported by a FFS payment system.*
- *All CCOs supported some type of housing-related service for their members. High need for housing drove CCOs' support for these services.*
- *CCOs described lack of guidance on flexible services and inclusion of flexible services in the non-medical portion of the global budget as barriers to using flexible services.*

Existing Studies

As of mid-2014, Irvin et al found that some CCOs were using their global budgets to pay for flexible services that would not have been supported by a traditional FFS payment system, such as community-based support for people with disabilities and mental illness and use of community health workers for preventive care.⁹ CCOs described lack of guidance on flexible services and inclusion of flexible services in the non-medical portion of the global budget as barriers to using flexible services.

Housing-related services exemplify the kinds of services that may improve health outcomes and reduce health care spending. Evidence from Oregon indicates that housing and housing-related services can reduce spending and improve outcomes:

- Wright et al assessed changes in outcomes among people experiencing homeless who moved into Bud Clark Commons, a supportive housing facility in Portland, Oregon.²¹ The facility provided on-site services, including case management, physical and mental health care, substance use treatment, and employment counseling. Wright et al found that moving into Bud Clark Commons was associated with reduced per-member, per-month

(PMPM) health care spending, reduced ED and hospital use, increased access to primary care, and increased subjective well-being.

- In a separate study, Wright et al assessed changes in outcomes among members of the Health Share of Oregon CCO who moved into affordable housing properties in Portland.²² The overwhelming majority of properties offered at least one type of health care or health-related service on site, although the type and intensity of services varied widely. Wright et al found that moving into two types of affordable housing—supportive housing for people experiencing homelessness and housing for seniors and people with disabilities—was associated with reduced PMPM spending. In addition, moving into any type of affordable housing was associated with an increased rate of primary care visits and a reduced rate of ED visits.

From a mid-2015 survey of CCOs, OHA found that all CCOs supported some type of housing-related service for their members.²³ These included services to help members gain new housing or stay in housing, and services to help members access health care or health-related services through housing. Most CCOs reported high need for housing as the most important reason they supported these services. Several CCOs described lack of housing and rising housing prices in their service areas.

Twelve CCOs reported using their global budgets to pay for housing-related services. However, several CCOs reported challenges using global budgets for these services. These included the requirement to report housing-related services as administrative expenses rather than medical expenses and the adequacy of global budgets to pay for these services. Some CCOs used funding sources outside global budgets, such as grants, to pay for housing-related services.

Activity Measures

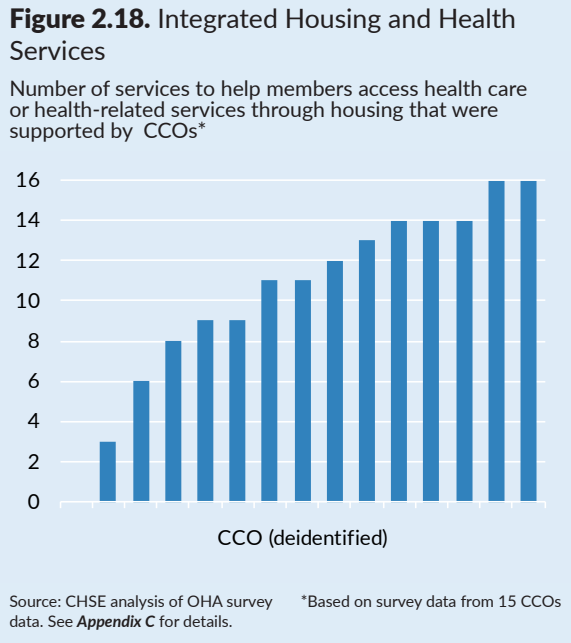
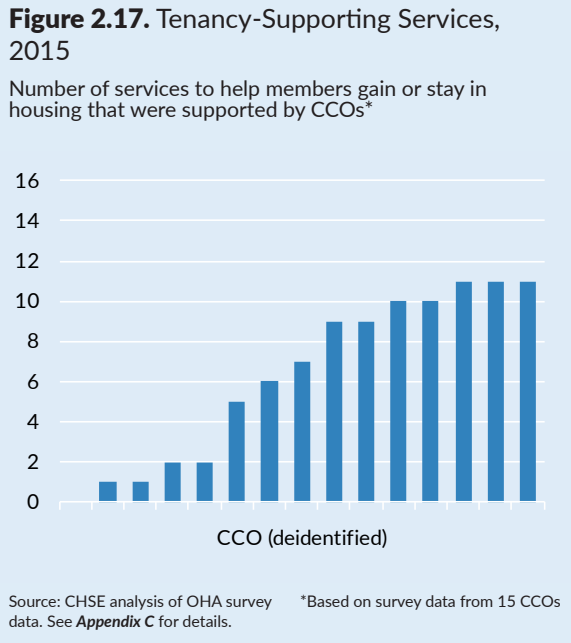
We developed two activity measures based on OHA's survey of CCOs' housing-related services. These measures provide an overall picture of the housing-related services that CCOs support, although they do not indicate how many members *received* each type of service.

- **Tenancy-Supporting Services:** Number of services to help members gain new housing or stay in housing. Examples include identifying members in need of housing-related services, helping members with move-in costs, educating tenants about leases, and short-term rental assistance.
- **Integrated Housing and Health Services:** Number of services to help members access health care or health-related services. Examples include coordination between housing and health care providers, locating mental health or dental clinics in housing, and transportation to appointments.

The activity measures indicate CCOs supported a wide variety of housing-related services as of mid-2015.

Tenancy-Supporting Services: All but one CCO that responded to the survey supported at least one tenancy-supporting service, with the average CCO supporting 6 of the 10 services listed on the survey.

Integrated Housing and Health Services: All but one CCO that responded to the survey supported at least one integrated housing and health service. The majority of respondents supported 10 or more of the 16 services listed on the survey, indicating that CCOs facilitated a wide variety of services to help members access health care or health-related services through housing.



LEVER 6: SPREAD INNOVATIONS AND BEST PRACTICES

Oregon's 2012-2017 Medicaid waiver directed OHA to spread innovations and best practices by establishing a Transformation Center and using innovator agents.

- The Transformation Center served as the State's hub for information about the CCO model. It established a CCO learning collaborative, a series of meetings where CCOs could share emerging and best practices for implementing the levers, and helped CCOs obtain technical assistance to carry out transformation activities.
- Innovator agents served as the single point of contact between OHA and CCOs. The waiver tasked innovator agents with a wide variety of responsibilities, including helping CCOs understand the health care needs of their service areas, use data, and develop strategies for quality improvement. In addition, innovator agents were intended to inform OHA about opportunities to improve the health care delivery system, work with CACs to learn about the impact of health system transformation on communities, and participate in the Transformation Center's learning collaborative.

CCOs were required to participate in the Transformation Center's learning collaborative meetings at a frequency established in their contracts.

Key Findings:

- *CCOs described the Transformation Center and innovator agents as important to their transformation efforts.*
- *Participation by CCOs in OHA's Statewide Learning Collaborative was high from 2013 through 2016, with the average CCO attending 19 of 23 meetings.*
- *Fourteen CCOs obtained technical assistance through the Transformation Center from October 2014 through December 2015, with the average CCO using 25 hours of assistance.*

Existing Studies

According to Irvin et al, CCOs described the Transformation Center as key to their success.⁹ It provided CCOs with useful technical assistance and learning collaboratives, and valuable assistance with community health assessments and community health improvement plans. CCOs described innovator agents as important contributors to transformation efforts and used them frequently to solve problems.

Activity Measures

We developed two measures of CCOs' participation in activities to spread innovation and best practices.

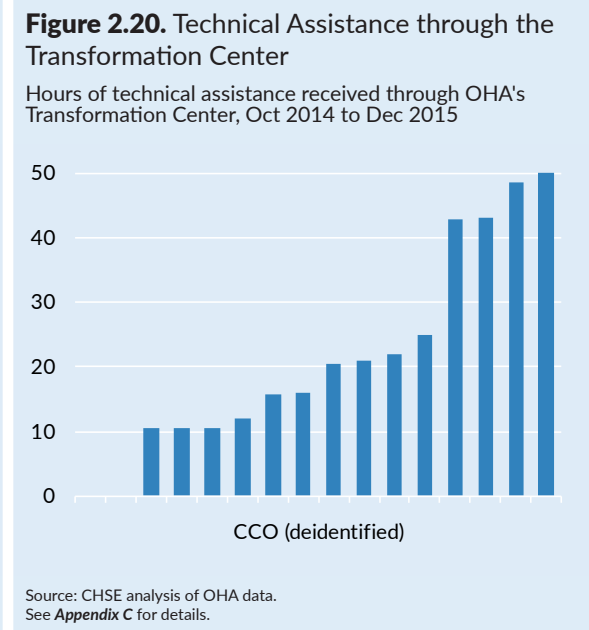
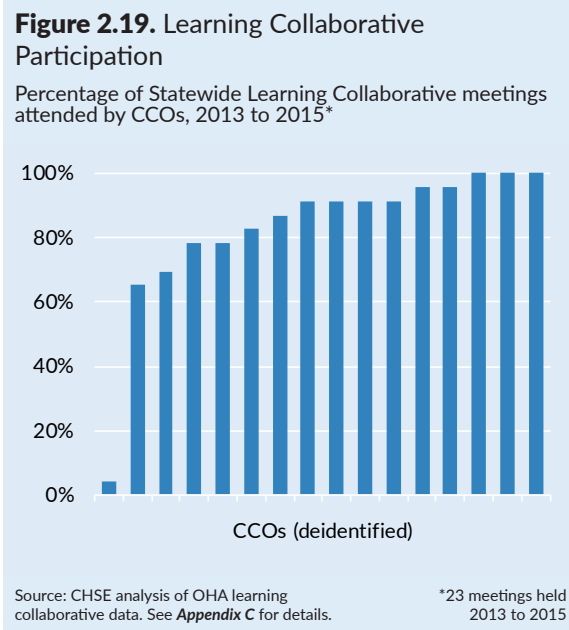
- **Learning Collaborative Participation:** Percentage of Statewide Learning Collaborative meetings attended by CCOs. OHA held 23 Statewide Learning Collaborative meetings from 2013 to 2015.
- **Technical Assistance through the Transformation Center:** Hours of technical assistance received through OHA's Transformation Center. The Transformation Center connected CCOs with experts through its Technical Assistance Bank, which offered technical assistance on a wide variety of topics. These included broad areas of delivery system

transformation, such as APMs, behavioral health integration, and health information technology; specific outcome areas like immunization and tobacco cessation; and general topics like program evaluation and project management.

The measures indicated a high level of CCO participation in efforts to spread innovation and best practices.

Learning Collaborative Participation: On average, CCOs attended 19 of 23 Statewide Learning Collaborative meetings from 2013 through 2015.

Technical Assistance through the Transformation Center: Fourteen CCOs obtained technical assistance through the Transformation Center from October 2014 through December 2015, with the average CCO using 22 hours of technical assistance.



CONCLUSIONS

Three overall conclusions emerged from the review of existing studies and analysis of activity measures presented in this chapter:

- **OHA successfully implemented CCO-level reforms and systems for spreading innovation and best practices.** These included a quality reporting system to foster CCOs' accountability for health care access and quality, global budgets to promote integration and efficiency, and an incentive payment system for quality measures. CCO feedback indicated that OHA's Transformation Center and innovator agents successfully disseminated information and assistance from the State and spread innovations and best practices among CCOs.
- **CCOs made substantial progress on activities to improve care coordination, and claims-based measures indicate they made progress on activities to increase efficiency.** Progress in these areas may have been facilitated by the supply of PCPCHs created by Oregon's PCPCH Program, which began operating before the waiver. Gelmon et al suggest that PCPCHs increased spending on primary care and reduced spending on ED visits,¹³ although recent evaluations of other medical home programs have found fewer positive effects.^{11,14}
- **CCOs made less progress on activities to implement APMs, integrate care, and use flexible services.** By contrast with reforms at the CCO level, these activities require working with providers to change aspects of health care delivery and payment systems that may be deeply entrenched. Two overarching challenges with these activities emerged from our review of existing studies:
 - » **Provider capacity:** Provider capacity created barriers to improving care coordination and implementing APMs, especially for small and rural clinics. Although CCOs succeeded in increasing EHR adoption, exemplary clinics studied by Gelmon et al experienced challenges using EHRs to their full potential that were related to lack of staff.¹³ CCOs studied by Irvin et al described lack of provider readiness, including the inability of small providers to take on risk and lack of infrastructure to collect and monitor needed data, as a barrier to developing APMs.⁹
 - » **Preexisting systems and regulations, including federal regulations:** Broffman et al and Kroening-Roche et al suggest that dynamics among providers who participate in a CCO—including competition, lack of experience working together, and concerns about receiving adequate shares of global budget funding—contributed to slow transformation of payment and contracting systems.^{8,19} Irvin et al and Kroening-Roche et al describe federal regulations as creating challenges for funding integrated care.^{9,19} In addition, they describe federal requirements for MCOs to report and justifying their spending as creating barriers to funding non-medical, health-related services.

Although the waiver provides CCOs with broad flexibility to transform health care delivery and payment, these challenges impeded transformation activities in the areas of APMs, integration, and flexible services.

CCOs' efforts to use flexible services illustrate how state and federal regulations can affect health care transformation. The next chapter describes these efforts based on our interviews with CCOs.

CHAPTER 3:

CCOs' Use of Flexible Services

OVERVIEW

Diverse factors outside the health care system can affect health outcomes and health care spending. These include transportation, which can affect access to health care; behaviors, such as exercise and tobacco use; and access to housing, nutrition, and social support. Improving these factors, often called social determinants of health, has the potential to improve health outcomes and reduce health care spending at relatively low cost.

Oregon's 2012-2017 Medicaid waiver directed CCOs to consider using cost-effective, health-related services, called *flexible services*, to replace or reduce the need for medical services covered by Oregon's Medicaid program. It directed CCOs to "be creative with deploying flexible services" in order to lower costs, and provided CCOs "broad flexibility in creating the array of services to improve care delivery and enrollee health."²⁰

Starting with calendar year 2014, OHA required CCOs to report dollars spent providing flexible services in a subsection of their quarterly financial reports, indicating eight categories of services (plus "other"). In 2015, OHA completed a rule-making process to guide CCOs in implementing their flexible services programs; Oregon Administrative Rule 410-141-3150, "Flexible Services," went into effect in January 2016.

The waiver required Oregon to evaluate whether CCOs' use of flexible services deterred high-cost care. To meet this requirement, CHSE planned to analyze the relationship between CCOs' spending on flexible services (as reported in CCOs' financial reports to OHA) and changes in specific measures of CCOs' health care spending and quality. To assess the usefulness of financial report data for analysis, and to collect qualitative information about CCOs' use of flexible services, we carried out interviews with staff identified as key informants by all 16 CCOs (see **CCO Interviews**, page 33). We learned that existing data sources did not contain sufficient information to evaluate the effects of flexible services quantitatively; however, the interviews yielded valuable information about CCOs' approaches to providing flexible services, challenges they experienced with flexible services, and other areas.

This chapter describes findings from our interviews with CCO staff. It concludes with three overall themes that emerged from the interviews, and that inform our recommendations regarding flexible services in Chapter 5.

CHALLENGES EVALUATING FLEXIBLE SERVICES

CCOs' 2014 and 2015 financial reports do not fully capture many services that meet the definition of flexible services. As described above, CCOs' quarterly financial reports include a subsection that identifies a CCO's spending on flexible services and the number of members who received flexible services by category. CCOs often omitted the following services from this section in their 2014 and 2015 reports:

Community-level services: Several CCOs provided health-related services that may have benefited their members and others in the community. Most often, these CCOs omitted such

services from their flexible services reporting because they could not be attributed to specific CCO members. One interviewee believed this may have resulted in substantial under-reporting of the flexible services a CCO provided:

Honestly, I think we may be actually significantly under capturing our flexible services, our funding of flexible services in the community, and I think particularly those things that fund things at the community level. For example, we helped to fund and then now fund operations for a homeless shelter locally that serves teens. We know that our members are served there, but we don't evaluate that on a per-member basis.

Care coordination and disease management: CCOs often omitted programs to coordinate members' care or help members manage diseases from flexible services reporting. One interviewee said a CCO omitted its "overall" programs, including a community health worker (CHW) program, a peer support program, and a wellness center that provided education for pain management and other disease management. Another interviewee said a CCO omitted free classes and mentorship because these services were provided by the CCO's employees and their costs could not be broken out and attributed to individual members.

Services provided using funding sources outside global budgets: CCOs omitted flexible services funded using "transformation grants" from OHA and quality incentive payments from OHA's quality pool. OHA may have instructed CCOs to omit these services because funding sources outside the global budget are not applicable for financial reporting; however, their omission means financial reports provide an incomplete picture of flexible services.

Services not tied to medical diagnoses or services with billing codes: Some interviewees said CCOs stopped reporting health-related services that were not tied to a medical diagnosis or services with billing codes following the 2015 change in state administrative rules defining flexible services; however, the CCOs continued providing these services, in some cases from a different "pot of money." As one interviewee explained:

Sometimes, in the past, say, we could buy somebody shoes, right? Because they needed shoes. But if we can't tie that to a diagnosis and a health outcome then those shoes won't necessarily come out of flex. They might have to come out of community or admin. So it's not that the person doesn't get the shoes. I have to figure out a different way to pay for it.

CCO INTERVIEWS

We interviewed staff involved with flexible services at all 16 CCOs in spring 2017. The interviews covered CCOs' overall approaches to providing flexible services and how they developed their approaches; CCOs' processes for providing, tracking, and evaluating flexible services; and challenges CCOs experienced providing flexible services. To assess the completeness of flexible services data in CCOs' 2014 and 2015 financial reports, we asked CCOs to describe how they populated the reports, whether the reports captured all flexible services they provided, and why they excluded some flexible services from the reports if applicable.

To recruit participants, we asked CCO executives to provide contact information for experts on how their CCO uses and reports on its flexible services. The staff we interviewed had diverse position titles, including CEOs and CFOs, financial managers, care coordination and utilization managers, community relations staff, and others. Their diversity demonstrates the different types of positions involved in creating flexible services policies and delivering flexible services across CCOs. This diversity of backgrounds and perspectives may mean that their descriptions of flexible services are not directly comparable across CCOs. See **Appendix D** for details about the interviews.

CCOs were just beginning to provide flexible services as defined in state administrative rules.

The MCOs that preceded CCOs provided health-related flexible services similar to those described in the waiver; however, CCOs did not receive detailed guidance from OHA about the definition and use of flexible services until the fourth year of the waiver:

...when OHA came out with flexible services, there was absolutely no guidance provided from them as to what that meant, and the CCOs for the first two years defined what flexible services were and how they were utilized. In 2016, actually I think late 2015, they actually pushed down some guidance and rules related to what flexible services could be and so that's why we now have standard policies and procedures of what a flex service is and what those funds can be used for versus what a benefit is.

After receiving the new administrative rules and guidance, CCOs needed time to develop and implement their policies. As a result, CCOs spent relatively little on individual-level flexible services in 2014 and 2015:

Yeah, we didn't have any in 2014, we really didn't start implementing the use of flexible spending until the second quarter of 2015. We had to go through a couple of policy revisions and get the approval of the policy before we could start doing that...

Most interviewees reported that CCOs increased flexible services spending from 2015 to 2016 or planned to increase spending from 2016 to 2017. This may reflect CCOs' progress along a "learning curve" as they gained confidence using their flexible services policies and providing flexible services.

CCOs' APPROACHES TO FLEXIBLE SERVICES

CCOs provided a wide variety of flexible services. Figure 3.1 shows the types of flexible services interviewees described. These include services provided to individual members, such as a gym membership or a hotel room for recovery after a hospital stay; services provided to groups of members, such as health classes; and services available to members and other people in the community, such as a farmer's market and a homeless shelter.

The variety of flexible services reflects CCOs' different "visions" for flexible services. For example, one CCO described the flexible services it provided as aimed at reducing the use of high-cost health care services in the short term:

It's health enhancing, it's cost reducing, that there's a relatively short term benefit in terms of enhancing the health of the member and lowering the chance of high avoidable cost in the near future.

Another CCO provided gym memberships to help members develop a "healthy habit":

...we have decided that the flexible services is going to be used toward a healthy habit, helping a member become healthy by creating a healthy habit. So we, when we have a request for a farmer's market or shoes or something outside a gym membership, we help the provider find that within the community, because there's so many community resources, but our flexible services are mainly used toward gym memberships throughout [the CCO's service area].

A third CCO made community investments, and considered these flexible services:

...in 2016, we funded a number of grant projects and these grant projects are available to providers in the community and also available to our local community advisory councils; and their projects are all focused on community health improvement and focused on improving the CCO quality metrics...We consider those as flexible services, and we'll be reporting those in 2016 financials as expenses.

Figure 3.1: Examples of flexible services provided by CCOs

Frequently provided individual-level services

<i>Equipment</i>	<i>Memberships</i>	<i>Shelter</i>
Bath scale	Gym memberships	Hotel rooms for recovery or as a bridge for hospital discharge
Blood pressure cuffs	Pool memberships	Rental assistance
Pill minders and medication dispensers	Parks and recreation memberships	Temporary housing
In-home exercise equipment (e.g., exercise bike)	YMCA punch card	

Less frequently provided individual-level services

<i>Food and nutrition</i>	<i>Shelter</i>	<i>Clothing and eyewear</i>
Food processor/blender	Plumbing	Specialized clothing
Oral supplementation (thickener for liquids used with a feeding tube)	Roof repair	Corrective lenses
Veggie Rx (providers write prescriptions for vegetables)	Small construction projects (e.g., steps up to a home)	
Vitamins	Utility bills	
<i>Transportation</i>	<i>Other</i>	
Bicycles	A radio to help with audio hallucinations	
Car repairs	Cell phones	
Car seats	Punching bags	
Vouchers for gasoline	Weighted blankets	

Group and community-level services

<i>Education</i>	<i>Health and wellness</i>	<i>Social support</i>
Cribs for Kids education program	Abuse prevention	Farmer's market
Health classes	Tobacco cessation for pregnant women	Drop-in center for peer support
Community cooking classes	Wellness center (behavioral health and pain management)	Community youth programs
Parenting programs	Community health worker hub	Employment services for members with substance use disorders
		Support for a homeless shelter

Most CCOs used stakeholder input to create their flexible services policies. These CCOs used their CACs, provider committees, finance committees, membership committees, and, in one case, primary care and behavioral health providers to provide input on policy development. By contrast, one CCO's policy of using flexible services to help members develop a "healthy habit" appeared to have been driven by the "wellness focus" of its executive without apparent community input.

Communicating the availability of flexible services was an early hurdle CCOs had to clear to implement their flexible services programs. CCOs identified educating providers as a challenge:

Probably one of the challenges has been that, I think, providers don't know that's available or they don't remember that it's available. So we're spending a lot of time on the education piece.

CCOs targeted providers and care coordinators for their "get the word out" efforts, using in-service trainings, committee meetings, newsletters, and outreach by CCO care managers, with positive effects:

We just had a provider training...and they talked about the flex fund. And then the following couple of weeks we got an increase in requests.

In contrast to their different visions of flexible services, CCOs used broadly similar processes for delivering flexible services. These included processes for collecting requests for flexible services and reviewing requests.

Most often, requests for flexible services originated from the CCO staff who helped manage members' care, such as utilization or case management staff and CHWs or other outreach workers. Providers represented the second most common source of requests. Depending on the CCO, the provider may have been a physical or behavioral health care provider, or a service provider in the community. One CCO received requests from early learning professionals for patient education programs. Some CCOs allowed members to request flexible services directly, although most required requests to come through CCO staff or providers.

Most CCOs required review of flexible services requests by their medical staff, such as a medical director or committee, or a provider signature to approve a flexible services request. Consistently with state administrative rules, CCOs considered whether a request fit with a member's treatment plan and the potential costs and benefits of the services when evaluating a request. CCOs tended to approve a high share of the total requests they received, most likely because they required requesters to research a service's fit with a member's treatment plan and justify requests with evidence. Sometimes CCO staff performed extensive research to ensure other community services were not available to meet a member's request:

...if they're asking for food assistance, we find out, we opt to find out how they work with [the local food bank], what other things have been done. If it's utility assistance, have they already worked with the utility company to...access the utility assistance that's available with the utility company?

TRACKING AND EVALUATING FLEXIBLE SERVICES

CCOs varied widely in their capacity to track and report on flexible services. Some CCOs used sophisticated systems to track flexible services spending for accounting and financial reporting purposes. For example, several CCOs used online systems that enabled staff to place orders for flexible services and track delivery electronically. By contrast, one CCO described tracking flexible services delivery and spending on a spreadsheet.

CCOs lacked systems for tracking and reporting on members' use of flexible services and outcomes associated with flexible services. While some CCOs used sophisticated systems

for accounting and financial reporting, these systems were not used to track flexible services use or outcomes, such as members' health status or satisfaction. CCOs tracked members' use of gym memberships using punch card systems or attendance records, but tracking the use of other services was less consistent. Most interviewees said members' use of flexible services and outcomes were recorded as part of the care management process and stored in CCOs' case management systems or providers' electronic health records, which are separate from systems for accounting and financial reporting.

At the time of the interviews, most CCOs said data needed to evaluate the effect of flexible services on health care use and spending were unavailable. Interviewees said more widespread use of flexible services over a longer timeframe would be needed to confidently evaluate these effects. In addition, several interviewees highlighted the challenge of demonstrating that flexible services cause decreases in spending or improvements in health outcomes:

...trying to do a pre and post-expense measurement is tough because we have trouble finding control groups. It's hard to find that homeless person that has all the same health conditions that didn't get a hotel room and compare their outcomes with somebody who did get a hotel room.

Despite the challenges, a minority of CCOs had begun to rigorously evaluate flexible services. One CCO analyzed change in spending among members in its CHW program:

We took 20 of [the CHW's] clients, some of whom did receive some flex services, and we did an analysis of six months prior to intervention and six months after. The result was a spend of about 150,000 dollars less in the latter six months. What was interesting is that you saw it incrementally and gradually get better each month. In-hospital stays would go down a little bit one month, and then some more the next month, same with ED visits, same with ambulance transportation, those types of things.

Another CCO connected information on members' flexible services use and outcomes from multiple EHR systems with information on spending from health care claims. A third CCO used surveys to assess patient satisfaction before and after receiving flexible services.

Most CCOs believed flexible services were effective at improving outcomes and reducing costs. Overall, interviewees were confident that flexible services reduced spending and improved outcomes based on their experiences (see *How Flexible Services Can Improve Health and Reduce Spending*, page 38).

HOW FLEXIBLE SERVICES CAN IMPROVE HEALTH AND REDUCE SPENDING

The following examples from CCOs illustrate how flexible services can improve health, reduce health care spending, and improve members' quality of life.

We had an individual who had a very severe intestinal disease, and she was homeless and living in her car...because she had this intestinal disease, it was difficult for her to keep herself clean. She couldn't get evaluated by a doctor, and she also couldn't then get the treatment that she needed because in order for the treatment to take effect, she had to remain clean. She was ending up in the hospital ED...so we put her up in the hotel, we got her cleaned up, we got her visit to her doctor taken care of, and she began the treatment that she needed, and then went into the facility.

...we gave [the member] an exercise bike so that she could use that at home, because she has been relatively house-bound and not able to get somewhere like a gym...she's been able to exercise a few times a day for short periods of time, has lost weight, and has actually been able to cite some better emotional regulation, and actually through that then has opened up to other flexible services, and one is a living well class.

We also purchased punching bags for a child...because he would become explosive. He was ready to be kicked out of school. He was failing in mental health services and that really just helped control his aggression and frustration.

...a patient I've known a long time...lived in a mobile home. She's quite obese, and she's got diabetes and a number of other chronic conditions. She has enough trouble getting around anyway, but getting in and out of her mobile home was fairly dangerous. I think she even had a fall.... Somebody was able to hire a handyman to build a nice, stable set of stairs with a handrail so she can get in and out of her place.... I think that just allowed her to be more mobile, get in and out of her place more safely, get lots of doctors' appointments, and she's actually pretty active socially with her family, so it's allowed her to be out in society a lot more, as well as getting to her doctor's appointments.

FUNDING FLEXIBLE SERVICES

As several interviewees explained, CCOs did not receive “credit” for spending on flexible services under the 2012-2017 waiver. Flexible services are not health care services and lack traditional billing and encounter codes. As a result, spending on these services was not included in the medical spending used by OHA to set CCOs’ global budget payment rates and did not contribute to the medical portion of rates in the future (see *Global Budgets*, page 6). OHA included funding for flexible services in the non-medical portion of CCOs’ global budgets; however, this approach may have created barriers to greater use of flexible services (see *Flexible Services and Global Budgets* below). While flexible services spending was not counted as medical spending for rate-setting purposes, it was counted as medical spending for purposes of calculating a CCO’s medical loss ratio (MLR), the minimum share of premium revenue a CCO was required to spend on members’ health care expenses.

CCOs described the treatment of flexible services spending in the rate-setting process as a challenge. Several interviewees believed that OHA originally intended to include flexible services spending in the rate-setting process. They described federal rules about rate setting as an obstacle, and wanted OHA to advocate for flexibility with CMS. As one CCO stated:

...the dream was flexible services would be built into your rates. Well, no. Not unless they meet two fairly restrictive CFRs [federal rules]. CMS has been clear that mostly it will be paid out of any surplus dollars. That just seems so fundamentally different to me from what the State was advocating, but I really want someone to circle back to the state level and address this with us, but that hasn't happened yet.

Generally, CCOs were confused about how flexible services spending fit into the rate-setting process. Interviewees listed differences in the treatment of flexible services spending for rate setting and MLR calculation and reporting of flexible services spending for rate-setting purposes as areas of confusion.

FLEXIBLE SERVICES AND GLOBAL BUDGETS

Flexible services are not medical services, and spending on flexible services did not contribute to the medical portion of CCOs’ global budgets. Rather, OHA defined flexible services as administrative expenses for purposes of setting global budgets. To account for CCOs’ administrative expenses, OHA provided an administrative adjustment to the non-medical portion of global budgets. To set the adjustment, OHA evaluated CCOs’ administrative expenses—including flexible services—in a baseline year and increased the adjustment by an inflation factor for future years.

These funding mechanisms may have created barriers to greater use of flexible services and other health-related services: CCOs’ use of flexible services may reduce members’ use of medical services, thereby reducing the medical portion of CCOs’ global budgets. However, increased use of flexible services would not “feed back” into the rate-setting process and increase the resources available for providing flexible services.

The 2017-2022 waiver includes provisions to encourage use of flexible services and other health-related services by CCOs (see **Chapter 5** for a summary of these provisions).

Several CCOs acknowledged OHA's recent efforts to address challenges with funding health-related services. For example, one interviewee stated:

I think OHA and Optumas [OHA's actuarial contractor], they're really trying to figure out, where do these [flexible services spending] go and how do we account for them? How do we work them into the rates or just the overall global budget?

Beyond flexible services, CCOs expressed concerns about funding community-level investments to improve social determinants of health (SDOH). CCOs viewed community-level investments to improve SDOH as important to improving members' health and reducing health care costs; however, they expressed concern about the flexibility and adequacy of their global budgets to address SDOH. For example, one CCO expressed concerns about using the global budget to pay for housing given federal rules and the scope of the housing problem in its service area:

...there are pretty clear restrictions on using Medicaid rate dollars to pay for housing or for rent. I know some folks feel like that's a low risk area, so they can do it anyway, but CMS has been pretty clear about that, so we are trying to be careful. It's also just worth knowing that in our market it's typically not whether we can provide a couple months of transitional housing. The rental vacancy rate is so low here, it's less than one percent.

Another CCO described the need to train nurses and other health care workers in its community as illustrative of the need for infrastructure to support CCOs: "If we made one major mistake in standing up CCOs from day one, it is that we did not recognize the need in different communities for infrastructure."

CONCLUSIONS

Three overall conclusions emerged from our interviews about CCOs' use of flexible services:

- **CCOs need greater communication and clarity regarding definition, reporting, and rate setting.** Even after OHA provided new administrative rules and guidance on flexible services, confusion about the definition of flexible services resulted in inconsistent reporting of flexible services spending across CCOs. Examples include reporting of community-level services, care coordination and disease management programs, and services with billing codes. In addition, CCOs indicated confusion about how flexible services fit into the rate-setting process.
- **A tension exists between flexibility and achieving the State's desired outcomes.** CCOs described different "visions" for flexible services, ranging from short-term services to avoid high-cost health care use, to helping members develop a healthy habit, to community investments. Consistent with CCOs' broad flexibility to implement reforms, these different visions may reflect CCOs' responses to the diverse needs of their members and communities. However, OHA may need to provide CCOs with greater guidance and clearer expectations if it intends for CCOs to use flexible services for specific purposes.
- **A need exists for complete and consistent data about flexible services, with awareness of the burden for CCOs.** Financial reports provide an incomplete picture of flexible services, and only a minority of CCOs have begun to link data about flexible services and member outcomes at an individual level. More complete, consistent, and granular data will be needed to gain an accurate picture of flexible services and begin to evaluate their effects. However, collecting and reporting these data may be burdensome for CCOs, which have been directed to implement and report on a wide variety of reforms.

Chapter 5 includes recommendations for continuing the use of flexible services based on the findings presented in this chapter.

CHAPTER 4:

The Waiver's Effects on Outcomes

OVERVIEW

Chapters 2 and 3 described activities OHA and CCOs used to transform health care delivery and payment under Oregon's 2012-2017 Medicaid waiver. This chapter evaluates changes in outcomes associated with the waiver in 2013, 2014, and 2015. It includes the following sections:

- **Methods for evaluating the waiver's effects:** We provide a brief summary of our two primary methods used for evaluating the waiver's effects: pre-post analysis and comparison group analysis.
- **Outcome measures:** We describe measures used to evaluate the waiver's effects in five overall areas: access, quality, member experience, health status, and spending. For ease of interpretation, we categorize these measures into 13 domains.
- **Analyses:** We provide details on four types of analysis used to evaluate outcomes: pre-post analysis, subgroup analysis, predicted rates for high and low-performing CCOs, and comparison group analysis.
- **Medicaid populations:** We describe the four groups of Medicaid members for whom we report results: CCO members, fee-for-service (FFS) members, post-expansion members, and dual-eligible members.
- **Interpreting the results:** We highlight limitations that should be considered when interpreting the results.
- **Overview of results:** We provide an overview of results for CCO members and other populations.
- **How to read the results:** We explain how to read the tables and graphs in the detailed presentation of results beginning on page 60.

METHODS FOR EVALUATING THE WAIVER'S EFFECTS

Several methods exist for evaluating the effect of health care policy changes, such as those in Oregon's Medicaid waiver.

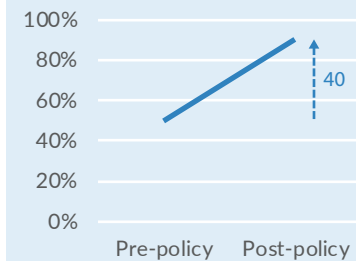
Pre-Post Analysis

Pre-post analysis compares outcomes for people affected by a policy before and after the policy was implemented.

The result is the difference between outcomes before and after the policy change (Figure 4.1). A statistical technique called a regression model can be used to estimate the change in outcomes associated with the policy, controlling for other factors that may have affected outcomes, such as the population's demographics or health status.

Pre-post analysis cannot be used to determine whether a policy *caused* improved outcomes. Changes in overarching or difficult-to-measure factors—such as regional economic trends or attitudes toward health care use—may also affect outcomes; if such changes coincide with a policy change, then their effect may be mistaken for the effect of the policy. As a result, estimates from pre-post analysis can only be interpreted as the change in outcomes *associated* with a policy change.

Figure 4.1. Example of pre-post analysis



Result: **Change for affected group = 90% - 50% = 40 percentage-point increase**

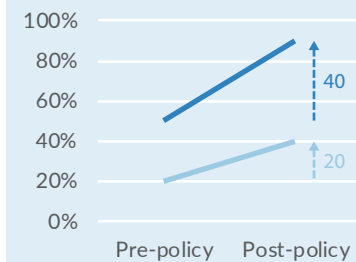
Comparison Group Analysis

Comparison group analysis compares outcomes for people directly affected by a policy with outcomes for a similar group not directly affected by the policy.

The result is the change in outcomes for the affected group *minus* the change in outcomes for the comparison group, also called the difference-in-differences (Figure 4.2). The comparison group provides an estimate of change that *would have occurred* for the affected group in the absence of the policy change. The difference-in-differences “nets out” the estimated change in outcomes that would have occurred without the policy change, leaving only the change attributable to the policy. As with pre-post analysis, a regression model can be used to control for the effect of observable factors other than the policy, such as demographics and health status.

Comparison group analysis can provide stronger evidence than pre-post analysis that a change in outcomes was related to a policy change *if* the comparison group meets certain conditions. The affected group and comparison group must be exposed to the same overarching trends and respond to these trends in the same ways. In addition, results from comparison group analysis must be interpreted in light of any policy changes that affected the comparison group.

Figure 4.2. Example of comparison group analysis



Result: **Change for affected group minus change for comparison group = (90% - 50%) - (40% - 20%) = 40% - 20% = 20 percentage-point increase**

Several existing studies have used pre-post analysis and comparison group analysis to estimate the effects of Oregon's 2012-2017 Medicaid waiver (see *Existing Studies of the Waiver's Effects*, page 45). These studies have two primary limitations:

- The studies included a relatively small number of access, quality, and spending measures, and excluded experience of care and health status measures.
- The studies provided early estimates of the waiver's effects, with no results beyond 2014.

This evaluation improves on existing studies by using additional measures and a longer time period: We used a more comprehensive set of access, quality, and spending measures, as well as survey-based measures of member experience and health status. Where data were available for a comparison group, we used comparison group analysis to evaluate the waiver's effects. In addition, we estimated the waiver's effects through 2015.

The next three sections describe the outcome measures, analyses, and Medicaid populations used in this evaluation.

EXISTING STUDIES OF THE WAIVER'S EFFECTS

Several existing studies have evaluated the early effect of Oregon's Medicaid waiver on health care access, quality, and spending.

- **Midpoint evaluation:** In the midpoint evaluation of Oregon's Medicaid waiver, Irvin et al found that the waiver was not associated with widespread improvement in health care quality.⁹ They compared changes in quality measures from the 42 months preceding the waiver to the first 21 months of the waiver, using regression analysis to control for member demographics. They found that two of six primary care quality measures included in the evaluation improved slightly; however, none of the remaining 22 measures improved or worsened significantly.
- **Comparison of access, quality, and spending between Oregon and Washington:** A comparison of outcomes among Oregon and Washington Medicaid members by McConnell et al suggested that the waiver positively affected important measures of emergency department (ED) use, hospital use, and spending, with mixed effects on other areas.²⁴ McConnell et al compared changes in measures of access, quality, and spending among Oregon and Washington Medicaid members from a year before the waiver to 2013 and 2014, using propensity-score weighting to control for differences among the two groups. They found that total spending per member, per month decreased moderately from 2011 to 2013 and 2014 relative to Washington. Oregon's total ED visit rate and avoidable ED visit rate decreased relative to Washington from 2011 to 2014, and Oregon's overall avoidable hospitalization rate decreased substantially from 2011 to 2013 relative to Washington. By contrast, measures of access indicated that access decreased in 2013 and 2014, while measures for avoiding low-value care were mixed. McConnell et al suggested that Oregon's large increase in Medicaid enrollment may account for lack of improvement in access relative to Washington.
- **Comparison of access, quality, and spending between Oregon and Colorado:** In a similar study, McConnell et al compared change in outcomes among Oregon and Colorado Medicaid members.²⁵ Consistently with the Washington comparison, the Colorado comparison suggested that the waiver positively affected important measures of ED and hospital use, but had more mixed effects in other areas. However, McConnell et al found that rates of well-child visit for children age 3 to 6 and adolescent well-care visits increased from the pre-waiver period to 2013 and 2014. This suggests that the waiver maintained or improved access to specific services even if access to care overall declined.
- **Comparison of prenatal care quality between Oregon and Washington:** Muoto et al compared changes in two prenatal care quality measures among Oregon and Washington Medicaid members from the 4.5 year period before the waiver to 2013.²⁶ They found that early prenatal care initiation increased slightly relative to Washington in 2013, while prenatal care adequacy did not change significantly.

See **Appendix B** for summaries of these studies.

OUTCOME MEASURES

We evaluated changes in health care access, quality, experience of care, health status, and spending using 72 outcome measures categorized into 13 domains (Table 4.1). The measures were selected from the Quality and Access Test Measures, the CCO Incentive Measures, and other measure sets to provide a complete picture of outcomes in each domain.

Most measures were calculated based on information from health care claims. Some measures were calculated based on information from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey. A small number of measures were calculated based on other data sources. See **Appendix E** for additional information about measure selection and definitions.

OHA reports rates for many of these measures in public-facing reports. Due to differences in data sources, populations, measure definitions, and other factors, rates reported by OHA may differ from rates we calculated for the evaluation. See **Appendix F** for details on how we calculated measure rates.

Table 4.1: Outcome measures*

Domain	Measures
ACCESS: Access to Care Overall	<ul style="list-style-type: none"> Members with Any Health Care Getting Care Quickly <input checked="" type="checkbox"/> \$ Getting Needed Care Physicians Accepting New Medicaid Patients <input checked="" type="checkbox"/> Physicians Caring for Medicaid Patients <input checked="" type="checkbox"/> Percentage of Physicians' Patients with Medicaid Coverage <input checked="" type="checkbox"/>
ACCESS: Access to Primary Care	<ul style="list-style-type: none"> Members with Any Primary Care Children and Adolescents' Access to Primary Care (Age 1 to 6) Children and Adolescents' Access to Primary Care (Age 7 to 19) Adults' Access to Primary Care (Age 20 to 44) Adults' Access to Primary Care (Age 45 to 64)
ACCESS: Access to Behavioral Health Care	<ul style="list-style-type: none"> Outpatient Visits for Behavioral Health Care Outpatient Visits for Non-Behavioral Health Care
QUALITY: Prevention and Wellness for Children and Adolescents	<ul style="list-style-type: none"> Well-Child Visits in the First 15 Months <input checked="" type="checkbox"/> Developmental Screening in the First Three Years <input checked="" type="checkbox"/> \$ Adolescent Well-Care Visits <input checked="" type="checkbox"/> \$ Immunizations for Children <input checked="" type="checkbox"/> \$ Immunizations for Adolescents <input checked="" type="checkbox"/> Assessments for Children in DHS Custody \$
QUALITY: Prevention and Wellness for Adults	<ul style="list-style-type: none"> Chlamydia Screening for Women (Age 16-20) <input checked="" type="checkbox"/> Effective Contraceptive Use <input checked="" type="checkbox"/> \$ Monitoring for Patients on Long-Term Medications Tobacco Use <input checked="" type="checkbox"/> Help Quitting Tobacco: Members Advised to Quit <input checked="" type="checkbox"/> Help Quitting Tobacco: Doctor Recommended Medication <input checked="" type="checkbox"/> Help Quitting Tobacco: Doctor Discussed Strategies <input checked="" type="checkbox"/>

* Lower is better. Measure is a Quality and Access Test Measure. \$ Measure is a CCO Incentive Measure. See **Appendix E** for details on measure selection and definitions.

Table 4.1. (continued) Outcome measures*

Domain	Measures
QUALITY: Care Coordination	<ul style="list-style-type: none"> • 30-Day Follow-Up after Hospitalization for Heart Attack • 30-Day Follow-Up after Hospitalization for Heart Failure • 30-Day Follow-Up after Hospitalization for Pneumonia • Alcohol or Other Drug Treatment: Initiation • Alcohol or Other Drug Treatment: Engagement
QUALITY: Physical, Behavioral, and Oral Health Care Integration	<ul style="list-style-type: none"> • Follow-Up for Children with ADHD Medication: Initiation <input checked="" type="checkbox"/> \$ • Follow-Up for Children with ADHD Medication: Engagement <input checked="" type="checkbox"/> \$ • 30-Day Follow-Up after Hospitalization for Mental Illness <input checked="" type="checkbox"/> \$ • Glucose Testing for Members with Antipsychotic Medications • Cholesterol Testing for Members with Antipsychotic Medications • Members with Any Dental Care • Dental Sealants for Children \$
QUALITY: Care for People with Chronic Conditions	<ul style="list-style-type: none"> • Appropriate Medications for Children with Asthma • Appropriate Medications for Adults with Asthma • Glucose Testing for People with Diabetes <input checked="" type="checkbox"/> • Cholesterol Testing for People with Diabetes <input checked="" type="checkbox"/> • Cholesterol Testing for People with Cardiovascular Conditions
QUALITY: Emergency Department and Hospital Use	<ul style="list-style-type: none"> • Emergency Department Visit Rate <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> \$ • Avoidable Emergency Department Visit Rate (Age 1 to 17) <input checked="" type="checkbox"/> • Avoidable Emergency Department Visit Rate (Age 18 and Over) <input checked="" type="checkbox"/> • Avoidable Hospitalization Rate: Short-Term Complications from Diabetes <input checked="" type="checkbox"/> • Avoidable Hospitalization Rate: Asthma in Younger Adults <input checked="" type="checkbox"/> • Avoidable Hospitalization Rate: COPD or Asthma in Older Adults <input checked="" type="checkbox"/> • Avoidable Hospitalization Rate: Heart Failure <input checked="" type="checkbox"/> • Readmissions to the Hospital within 30 Days <input checked="" type="checkbox"/>
QUALITY: Avoiding Low-Value Care	<ul style="list-style-type: none"> • Appropriate Use of Imaging Tests for Low Back Pain • Avoidance of Imaging Tests for Headache • Avoidance of Antibiotics for Adults with Acute Bronchitis • Avoidance of CT Scan without Ultrasound for Appendicitis • Avoidance of Unnecessary Cervical Cancer Screening • Appropriate Testing for Children with Sore Throat <input checked="" type="checkbox"/>

* Lower is better. Measure is a Quality and Access Test Measure. \$ Measure is a CCO Incentive Measure. See **Appendix E** for details on measure selection and definitions.

Table 4.1. (continued) Outcome measures*

Domain	Measures
EXPERIENCE OF CARE	<ul style="list-style-type: none">• How Members Rated their Health Care• How Members Rated their Doctor• How Well Doctors Communicate• How Members Rated their Specialist• How Members Rated their Health Plan <input checked="" type="checkbox"/>
HEALTH STATUS	<ul style="list-style-type: none">• Member Rating of Overall Health
SPENDING	<ul style="list-style-type: none">• Primary Care Spending Per Member, Per Month (PMPM)• Emergency Department Spending PMPM <input type="checkbox"/>• Other Outpatient Spending <input type="checkbox"/>• Inpatient Facility Spending PMPM <input type="checkbox"/>• Inpatient Professional Spending PMPM <input type="checkbox"/>• Prescription Drug Spending PMPM <input type="checkbox"/>• Behavioral Health Care Spending PMPM• Total Spending PMPM for pre-post analysis <input type="checkbox"/>• Total Spending PMPM for comparison group analysis <input type="checkbox"/>

* Lower is better. Measure is a Quality and Access Test Measure. Measure is a CCO Incentive Measure. See [Appendix D](#) for details on measure selection and definitions.

ANALYSES

The 2012-2017 waiver required the State of Oregon to answer three primary questions about outcomes. Table 4.2 summarizes the types of analysis we used to answer the evaluation questions. See **Appendix F** for details on each type of analysis.

Table 4.2. Evaluation questions and analyses

Evaluation question	Analysis
Were outcomes improved or at least maintained over time?	Pre-post analysis: Calculate change in outcome measures from 2011 to 2013, 2014, and 2015, using regression analysis to control for member demographics and health status.
Have there been variations in outcomes by subgroup?	<p>Subgroup analysis: Divide members into subgroups (Table 4.3, page 50) and calculate change in outcome measures for each subgroup from 2011 to the three-year period 2013-2015, using regression analysis to control for member demographics and health status.</p> <p>Highest and lowest CCO analysis: Calculate predicted outcomes for the entire CCO population if they had been enrolled in the highest-performing and lowest-performing CCOs on each outcome measure in the period 2013-2015. Use relationships among members' characteristics, CCO enrollment, and outcomes, as identified by regression models, to calculate predicted outcomes.</p> <p>This analysis illustrates differences in performance across CCOs, controlling for other factors that may affect outcomes.</p>
Did the waiver result in improved outcomes?	<p>Comparison group analysis: Calculate change in outcome measures for CCO members minus change for Washington Medicaid members from 2011 to 2013, 2014, and 2015. Use propensity-score weighting and regression analysis to help control for differences between groups.</p> <p>While comparison group analysis can provide strong evidence that a change in outcomes was related to a policy change, it cannot show with certainty that a policy change <i>resulted</i> in improved outcomes.</p>

For comparison group analysis, we used Washington Medicaid as the comparison group. Washington Medicaid members offer a useful comparison group for several reasons:

- Oregon and Washington are demographically similar and geographically contiguous. As a result, using Washington Medicaid members as a comparison group can help control for the effect of regional changes that affect health care use and spending by Medicaid members.
- Oregon's and Washington's Medicaid programs are historically similar. Both programs were based on managed care and expanded Medicaid eligibility in 2014.
- While Washington launched health system reforms in 2012 and 2013, they were much more limited than Oregon's Medicaid reforms. The reforms focused on specific goals (care coordination for high-risk Medicaid members and reducing unnecessary emergency department use) and did not include large-scale payment reforms like global budgets or incentive payment systems.²⁴

We used a statistical technique called propensity-score weighting to help control for differences between Oregon and Washington Medicaid members. This technique gives more "weight" to Washington Medicaid members with observable characteristics similar to Oregon Medicaid members. **Data Appendix Table 11A** shows that weighted Washington Medicaid members have

very similar characteristics, on average, to CCO members. Regression analysis was used to help control for any remaining differences between the two groups.

Table 4.3. Subgroups

Race/ethnicity	Asian	We identified tribal members based on a list from OHA (for claims-based measures) and self-reported American Indian/Alaska Native status (for CAHPS-based measures). For other subgroups, we used race/ethnicity indicated in Medicaid enrollment records (for claims-based measures) and self-reported race/ethnicity (for CAHPS-based measures).
	Black	
	Hispanic	
	Indian tribe member (tribal)	
	Native Hawaiian/Pacific Islander (NH/PI)	
	White	
Age group	<18	Age as indicated in Medicaid enrollment records (for claims-based measures) or self-reported age (for CAHPS-based measures)
	18-34	
	35-64	
Sex	Female	Sex as indicated in Medicaid enrollment records
	Male	
Geography of residence*	Isolated	Resided in an area without a population center of 2,500 or more, with no commuting flows to an urban area
	Rural	Resided in an area with a population center of 2,500 to 49,000, or connected to such an area through commuting patterns
	Urban	Resided in an area with a population center of 50,000 or more, or connected to such an area through commuting patterns
Other characteristics*	Non-English-speaking	Belonged to a non-English-speaking household as indicated in Medicaid enrollment records
	Disabled	Eligible for Medicaid based on blindness or another disability
	High utilizers	Had four or more ED visits in 2010-2011
	Severe and persistent mental illness (SPMI)	Had at least two health care claims within a two-year period for a severe mental health condition
	Children and youth with special health needs (CYSHN)	Was under 18 and had a severe mental or physical health condition

*Information needed to identify members by these characteristics was unavailable in CAHPS survey data. As a result, we were unable to report results for CAHPS-based measures by these subgroups. See [Appendix F](#) for details.

MEDICAID POPULATIONS

We report results separately for four non-overlapping populations of Medicaid members (Table 4.4). We carried out all analyses described above for CCO members and only pre-post analysis for other populations. Data needed to calculate some measures were unavailable for some populations. See **Appendix F** for details on how we defined each population.

Table 4.4. Medicaid populations*

	CCO members	Fee-for-service members	Post-expansion members	Dual-eligible members
Definition	Enrolled in a CCO Not a post-expansion member or dual-eligible member	Enrolled in FFS coverage Not a post-expansion member or dual-eligible member	Not enrolled in Medicaid before 2014 May be enrolled in a CCO or FFS coverage	Eligible for Medicare and Medicaid May be enrolled in CCO or Medicaid FFS
Analyses	Pre-post, subgroup, high and low CCO, comparison group	Pre-post only	Pre-post only (2014-2015 change)	Pre-post only

*See *Data Appendix Tables 2A, 2B, and 2C* for demographic information about these populations.

Due to their different characteristics, the waiver may have affected these populations differently:

- **CCO members:** CCO members comprise people eligible for Medicaid based on criteria that existed before ACA expansion, including people eligible for cash assistance, children eligible for Medicaid, pregnant women, and adults below the federal poverty line. Over half of CCO members were under age 18 in 2015.
- **Fee-for-service members:** Like CCO members, FFS members comprise people eligible for Medicaid based on criteria that existed before ACA expansion. Unlike CCO members, they include Medicaid members who were not required to enroll in CCOs under the waiver, such as members of Indian tribes and people with special health needs.
- **Post-expansion members:** Expansion members include people eligible for Medicaid under the ACA expansion criteria, as well as some people eligible for Medicaid based on preexisting criteria who first enrolled in 2014 or 2015. They are likely to have higher incomes than other groups of Medicaid members.
- **Dual-eligible members:** Over half of dual-eligible members are age 65 and over. They are substantially more likely than other Medicaid members to have multiple physical health conditions or behavioral health conditions, and they account for a disproportionately large share of Medicare and Medicaid spending.²⁷

The populations differ substantially in age, race and ethnicity, and sex, as well as percentage of members who have severe and persistent mental illness, who are in non-English-speaking households, and who are children and youth with special health needs. See **Data Appendix, Tables 2A, 2B, and 2C** for details about the populations' demographics.

INTERPRETING THE RESULTS

The following information should be considered when interpreting the results:

- *Due to a nationwide change in health care billing codes that occurred in October 2015, we defined 2015 as Q4 2014 through Q3 2015 for claims-based measures.*
- *Due to data limitations, we were unable to report results for some measures for some populations and subgroups:*
 - » *We were unable to calculate measures based on CAHPS survey data for post-expansion and dual-eligible members because CAHPS survey data exclude information needed to identify these members.*
 - » *We did not calculate measures requiring behavioral health claims, dental claims, and CAHPS data for Washington Medicaid members because we did not receive these data from Washington's Medicaid program.*
 - » *We were unable to evaluate 2014-2015 change on some measures for post-expansion members because data prior 2014 were needed to calculate rates in the baseline year.*
- *Results for dual-eligible members and other populations are not directly comparable due to differences between Oregon All Payer, All Claims (APAC) data, which were used to calculate measures for dual-eligibles, and Oregon Medicaid data, used for other populations.*
- *OHA reports rates for many outcome measures in its Health System Transformation Reports. Changes in rates presented in OHA's reports may differ from changes presented in this report:*
 - » *Rates reported by OHA may differ from rates we calculated for the evaluation due to differences in populations, enrollment criteria, and measure definitions that OHA and CHSE used to calculate the measures.*
 - » *OHA presents change in rates without controlling for various factors that may affect outcomes. By contrast, we present change associated with the waiver after controlling for such factors, either through regression analysis or use of a comparison group.*

See Appendix F for details about calculation of outcome measures and analyses presented in this report.

OVERVIEW OF RESULTS

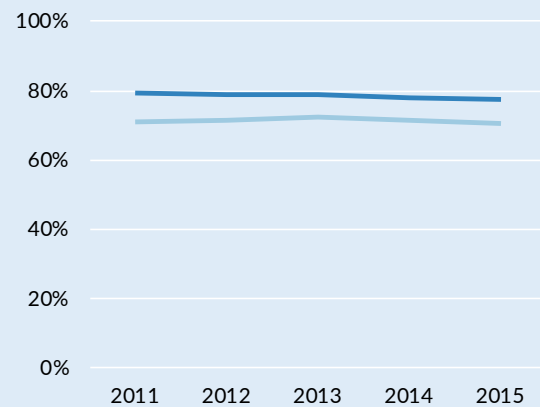
This section provides a high-level overview of the results. A detailed presentation of results begins on page 60.

MOST ACCESS TO CARE MEASURES DECREASED SLIGHTLY AMONG CCO MEMBERS.

Most access measures decreased slightly among CCO members and Washington Medicaid members, but decreased more among CCO members. Trends in the percentage of members with any primary care (Figure 4.3) were representative of most access measures.

Medicaid expansion likely contributed to decreased access among previously enrolled CCO members. In 2014, Oregon expanded eligibility for Medicaid. New Medicaid members who used benefits to access health care may have reduced the ability of existing CCO members to get appointments and services, "crowding out" existing members and contributing to reduced access. While both Washington and Oregon expanded Medicaid eligibility in 2014, enrollment increased much less in Washington relative to mid-2011.²⁴ This may help explain decreased access in Oregon relative to Washington.

Figure 4.3. Members with Any Primary Care
Oregon CCO vs Washington Medicaid members*



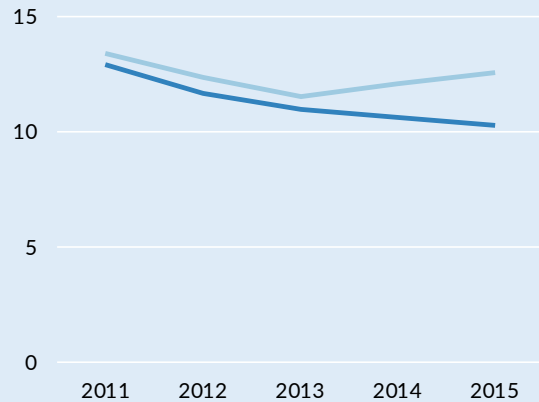
*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

IMPROVEMENT ON QUALITY MEASURES WAS MIXED AMONG CCO MEMBERS.

We evaluated changes in 41 quality measures categorized into seven domains, with 3 to 7 measures in each domain.

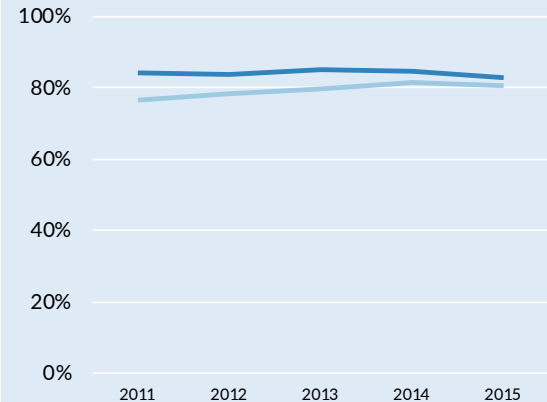
- **Quality measures generally improved in three domains:** Prevention and Wellness for Children and Adolescents, Emergency Department and Hospital Use, and Avoiding Low-Value Care. For example, the rate of avoidable emergency department visits among adults, a measure in the Emergency Department and Hospital Use domain, decreased relative to Washington Medicaid members (Figure 4.4).
- **More work was needed to improve quality in four domains:** Prevention and Wellness for Adults, Care Coordination, Physical, Behavioral, and Oral Health Care Integration, and Care for People with Chronic Conditions. For example, the percentage of members with diabetes who had an HbA1c test, a measure in the Prevention and Wellness for Adults domain, decreased slightly among CCO members but increased slightly among Washington Medicaid members (Figure 4.5).

Figure 4.4. Avoidable ED Visits (Adults) per 1,000 Member Months*
Oregon CCO vs Washington Medicaid members (a lower rate is better)*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

Figure 4.5. Glucose Testing for People with Diabetes*
Oregon CCO vs Washington Medicaid members*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

These results indicate that CCOs accomplished the 2012-2017 waiver's goal of improving health care quality in the first three years of the waiver, but that improvements were not uniform across domains. Table 4.5 describes factors that may help explain these results.

Table 4.5. Potential factors that may help explain quality measure results

Trend	Potential factors
<p>Domains where quality measures generally improved:</p> <ul style="list-style-type: none"> Prevention and Wellness for Children and Adolescents Emergency Department and Hospital Use Avoiding Low-Value Care 	<ul style="list-style-type: none"> Prevention and Wellness for Children and Adolescents included two measures that were CCO Incentive Measures in all three years of the evaluation. CCOs may have targeted ED and hospital use as a domain for improvement early in the waiver due to the potentially high cost of unnecessary use. Efforts to target members with complex health conditions using care coordinators may have contributed to improvements.²⁴ CCOs may have targeted low-value care for improvement early in the waiver. Reducing low-value care may have provided a means to reduce spending without fundamentally changing delivery and payment systems, which requires more time.
<p>Domains where more work was needed to improve quality:</p> <ul style="list-style-type: none"> Prevention and Wellness for Adults Care Coordination Physical, Behavioral, and Oral Health Care Integration Care for People with Chronic Conditions 	<ul style="list-style-type: none"> While existing studies showed that CCOs made substantial progress improving care coordination, more work may remain. For example, helping clinics use EHRs more effectively may improve measures of follow-up after hospitalization and testing for people with chronic conditions. As described in Chapter 2, existing studies suggest that preexisting payment systems and regulations created challenges with integration.^{9,13,19} Changing these factors may require additional time. Integration of dental care into CCOs' global budgets began a year after the waiver was executed. CCOs may need additional time to integrate dental care into the delivery system.

MOST EXPERIENCE OF CARE MEASURES IMPROVED AMONG CCO MEMBERS.

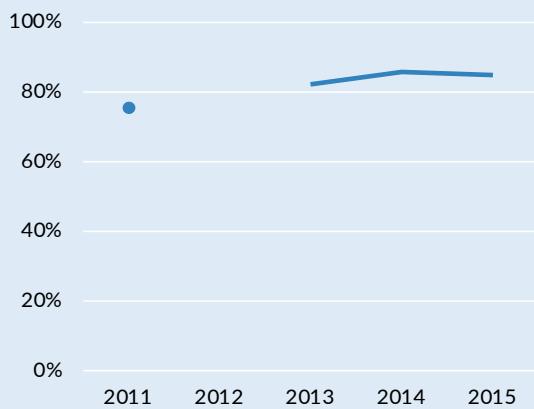
Four of five experience-of-care measures—including members' ratings of their overall health care, how well doctors communicate, ratings of specialists, and ratings of health plan information and customer service—improved from 2011 to 2013, 2014, and 2015. For example, the percentage of members who said health plan customer service usually or always gave them the information or help they needed and treated them with courtesy and respect increased by 10 percentage points from 2011 to 2014 and 2015 (Figure 4.6).

SELF-REPORTED HEALTH STATUS IMPROVED AMONG CCO MEMBERS.

The percentage of members who rated their overall health as "good," "very good," or "excellent" on a standardized survey increased from 2011 to 2013, 2014, and 2015 (Figure 4.7). Self-reported health status was the only indicator of members' health available for the evaluation. Additional indicators, such as data from members' health records, would be needed to evaluate with confidence whether the waiver was associated with changes in members' health.

Figure 4.6. How Members Rated their Health Plan

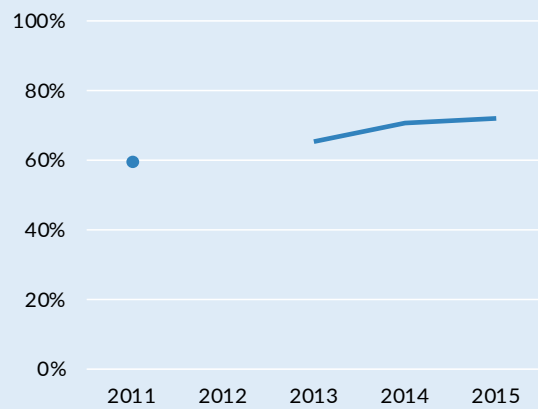
Percentage of members who said health plan customer service usually or always gave needed information or help and treated them with courtesy and respect*



*Not adjusted for member demographics and health status. 2012 data were unavailable for the evaluation.

Figure 4.7. Member Rating of Overall Health Plan

Percentage of members who rated their overall health as good, very good, or excellent*



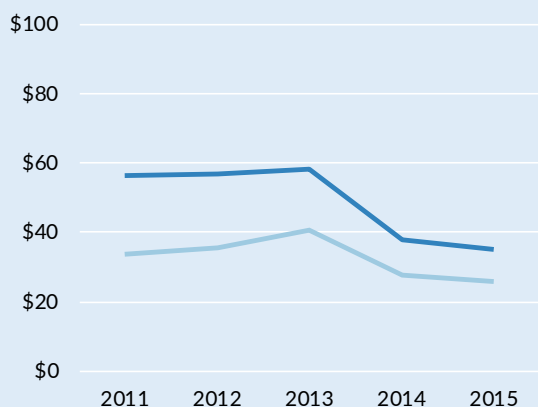
*Not adjusted for member demographics and health status. 2012 data were unavailable for the evaluation.

TOTAL SPENDING PER-MEMBER, PER MONTH (PMPM) AMONG CCO MEMBERS DECREASED RELATIVE TO WASHINGTON MEDICAID MEMBERS.

Total Spending PMPM decreased among CCO members relative to Washington Medicaid members from 2011 to 2014 and 2015. This measure decreased moderately among both groups, but decreased more among CCO members than among Washington Medicaid members. Inpatient Facility Spending PMPM decreased among both groups, but decreased much more among CCO members in 2014 and 2015, driving the decrease in total spending among CCO members (Figure 4.8). These measures indicate that CCOs helped achieve the waiver's goal of limiting increases in per capita spending.

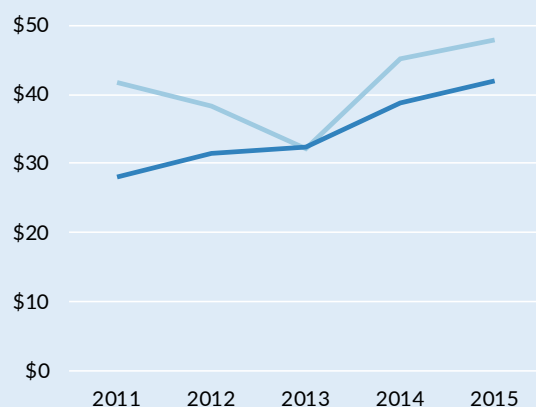
In contrast to Total Spending PMPM and Inpatient Facility Spending PMPM, Prescription Drug Spending PMPM increased substantially among CCO members and Washington Medicaid members from 2011 to 2014 and 2015 (Figure 4.9). Limiting prescription drug spending growth will be important for controlling the growth of total spending in the future.

Figure 4.8. Inpatient Facility Spending PMPM Oregon CCO vs Washington Medicaid members (a lower rate is better)*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

Figure 4.9. Prescription Drug Spending PMPM Oregon CCO vs Washington Medicaid members (a lower rate is better)*



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015.

FINANCIAL INCENTIVES WERE ASSOCIATED WITH IMPROVED PERFORMANCE.

Table 4.6 shows the percentage of measures used in this evaluation that improved significantly in at least two of three years from 2013 to 2015, as identified by pre-post analysis, by measure set.

Two-thirds of CCO Incentive Measures improved in at least two of three years; by contrast, about one-third of all measures improved (see *Data Appendix, Table 1* for a list of evaluation measures in each measure set).

Table 4.6. Percentage of measures that improved

Measure set	N	Improved in at least 2 of 3 years*
Quality and Access Test	23	30%
CCO Incentive, 2013-2015	6	67%
Core Performance	13	54%
Other	32	38%
Total†	63	35%

*As determined by pre-post analysis. P<0.05 †Total is less than the sum of measures in all categories because some measures are included in multiple measure sets. Total excludes measures that could not be analyzed using regression models.

IN GENERAL, CHANGES AMONG SUBGROUPS MIRRORED CHANGES AMONG THE CCO POPULATION OVERALL.

However, two groups of measures improved only among whites:

- While two measures of CCOs' efforts to help members quit tobacco improved substantially, gains were concentrated among white members and members age 35 to 64.
- While four of five experience of care measures improved on average, only white members, members age 35 to 64, and female members experienced improvement on all measures. Among race and ethnicity subgroups, How Members Rated their Health Plan improved only among white members. This may indicate the need for CCOs to continue working to improve experience of care across subgroups.

CHANGES IN OUTCOMES VARIED FOR OTHER MEDICAID POPULATIONS.

Changes associated with the waiver varied for Medicaid FFS members, post-expansion members, and dual-eligible members:

- **FFS members:** Changes among FFS members generally mirrored changes among CCO members. Where measures worsened, they generally worsened more for FFS members. Examples include Members with Any Primary Care, Well Child Visits in the First 15 Months, Effective Contraceptive Use, Alcohol or Other Drug Treatment, and Dental Sealants for Children. CCOs' efforts to improve care delivery and payment may have helped "insulate" CCO members from downturns in outcomes compared to FFS members.
- **Post-expansion members:** Access measures improved slightly from 2014 to 2015 while most spending measures worsened. There was no consistent improvement across quality measures. Importantly, we were unable to analyze changes in many measures for post-expansion members due to data limitations.
- **Dual-eligible members:** Measures of access to primary care generally improved among dual-eligible members, while most quality measures did not improve or worsen consistently.

HOW TO READ THE RESULTS

This section describes how to interpret the tables and graphs in the following sections and explains the significance of each table and graph. We use results from Prevention and Wellness for Children and Adolescents, one of our 13 domains, as an example.

Tables show results from pre-post and comparison group analysis. Results in the tables are adjusted for member's characteristics using regression analysis.

Numbers in the table show how much a measure changed from the baseline year, controlling for the effect of member characteristics. Color coding shows the magnitude of the change. Shades of **orange** indicate a measure worsened relative to the baseline, and shades of **blue** indicate a measure improved. Darker shades indicate larger changes relative to the baseline. **Gray** indicates the change was not statistically significant.

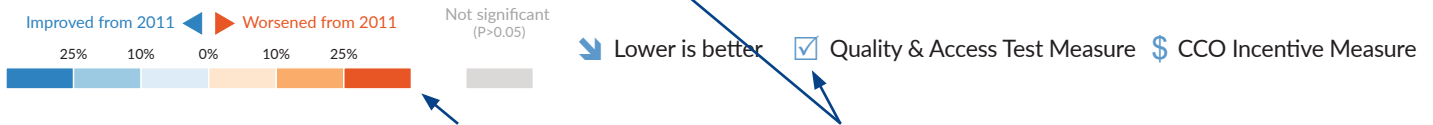
In this example, Well-Child Visits decreased by 3.4 percentage points from 2011 to 2015.

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Well-Child Visits decreased by 3.4 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Well-Child Visits in the First 15 Months <input checked="" type="checkbox"/>	57.6%	0.4	-2.5	-3.4
2 Developmental Screening in the First Three Years <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	20.3%	8.2	19.2	25.2
3 Adolescent Well-Care Visits <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	26.0%	2.5	5.2	7.1



A key at the bottom of the page explains the color coding.

Symbols next to some measures provide information about the measure.

Subgroup tables show results from pre-post analysis for specific subgroups of CCO members. They show how outcomes for subgroups changed from 2011 to the period 2013-2015, adjusted for members' characteristics.

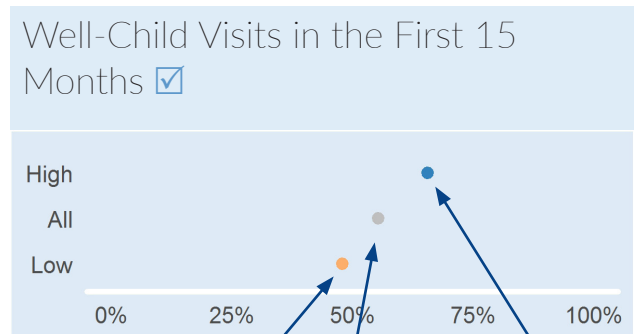
As with other tables, color coding shows whether measures improved or worsened and the magnitude of the change.

Dot graphs show predicted outcomes for all CCO members in the period 2013-2015 if all members had been enrolled in the highest and lowest-performing CCO on each measure. They illustrate differences in performance across CCOs.

	Well-Child Visits in the First 15 Months <input checked="" type="checkbox"/>	Developmental Screening, First 3 Years <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Adolescent Well-Care Visits <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Asian	-	+	+
Black	-	+	+
Hispanic	-	+	+
NH/PI	-	+	+
Tribal	-	+	+
White	-	+	+

For Asians, the rate of Well-Child Visits in the First 15 Months did not improve significantly. However, rates of Developmental Screening in the First Three Years and Adolescent Well-Child Visits improved significantly for this subgroup.

For Hispanics, the rate of Well-Child Visits in the First 15 Months decreased significantly. However, rates of Developmental Screening in the First Three Years and Adolescent Well-Child Visits improved significantly.



The **orange** dot represents the predicted outcome if all CCO members were enrolled in the lowest-performing CCO.

The **blue** dot represents the predicted outcome if all CCO members were enrolled in the highest-performing CCO.

For comparison, the **gray** dot represents the *actual* average outcome for all CCO members.

HOW TO READ THE RESULTS

The table below shows results from comparison group analysis.

Results from comparison group analysis can be thought of as the change in outcomes for CCO members from the baseline year *minus* the change in outcomes for Washington Medicaid members from the baseline year, adjusted for members' characteristics. In comparison group analysis, Washington Medicaid members provide an estimate of change that *would have occurred* for CCO members in the absence of Oregon's 2012-2017 waiver.

Some measures could not be evaluated using comparison group analysis because data needed to calculate the measures were unavailable for the comparison group. For example, date of birth is needed to calculate these measures, but was not available for Washington Medicaid members.

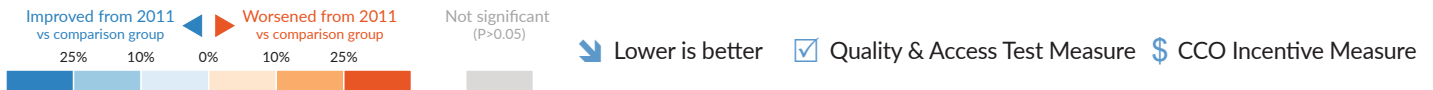
As with other tables in this section, color coding shows the magnitude of the change. Shades of **orange** indicate a measure worsened relative to the baseline, and shades of **blue** indicate a measure improved. Darker shades indicate larger changes relative to the baseline. **Gray** indicates the change was not statistically significant.

Comparison group analysis for CCO members

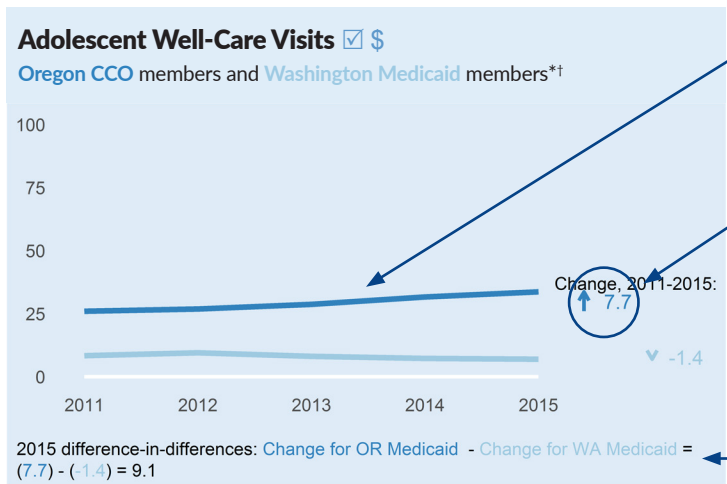
Change in measure rates from 2011 compared to Washington Medicaid members

Example: Adolescent Well-Care Visits increased by 8.5 percentage points from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 Well-Child Visits in the First 15 Months† <input checked="" type="checkbox"/>	NA	NA	NA	NA
2 Developmental Screening in the First Three Years† <input checked="" type="checkbox"/> \$	NA	NA	NA	NA
3 Adolescent Well-Care Visits <input checked="" type="checkbox"/> \$	26.0%	3.2	6.1	8.5



Line graphs compare outcomes for CCO members Washington Medicaid members. They provide a visual representation of comparison group analysis.



Outcomes in these graphs are weighted using propensity scores to help control for differences between groups.

Arrows show the change in outcomes for each group from 2011 to 2015.

Captions at the bottom shows change for CCO members *minus* change for Washington Medicaid members (the difference-in-differences) from 2011 to 2015. *The difference is not regression adjusted, and may differ slightly from results presented in the tables.*

ACCESS: Access to Care Overall

This domain reflects Oregon's progress improving access to health care overall. It includes six measures:

- 1 Members with Any Health Care:** Percentage of members with any physical or behavioral health care service
- 2 Getting Care Quickly (Adults):** Percentage of adult members who said they got care and appointments as soon as needed
- 3 Getting Needed Care (Adults):** Percentage of adult members who said it was easy to get needed care and appointments with specialists
- 4 Physicians Accepting New Medicaid Patients:** Percentage of Oregon physicians who said their practice was accepting new Medicaid patients
- 5 Physicians Caring for Medicaid Patients:** Percentage of Oregon physicians who said they had Medicaid patients under their care
- 6 Percentage of Physicians' Patients with Medicaid Coverage:** Average percentage of patients with Medicaid coverage reported by Oregon physicians

See **Appendix E** for measure details.

Key Findings:

- *Access to Any Care, a measure based on health care claims data, decreased slightly among CCO and Washington Medicaid members, but decreased slightly more among CCO members.*
- *FFS members experienced a larger decrease in Access to Any Care than CCO members in 2014 and 2015.*
- *By contrast with Access to Any Care, the percentage of adults who said it was easy to get needed care and appointments increased among CCO members and FFS members in at least 2 of 3 years.*
- *Physicians Accepting New Medicaid Patients and Physicians Caring for Medicaid Patients did not change substantially before and after execution of the waiver, although we were unable to control for the effect of member characteristics on these measures due to data limitations. This suggests that reductions in Access to Any Care were due to "crowding out" from Medicaid expansion, rather than physician restrictions on Medicaid members.*

ACCESS: Access to Care Overall

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Members with Any Care decreased by 1.9 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 Members with Any Health Care*	87.9%	0.0	-2.1	-1.9
2 Getting Care Quickly (Adults) [†] <input checked="" type="checkbox"/> \$	79.1%	2.3	1.6	1.7
3 Getting Needed Care (Adults) [†]	68.7%	10.5	8.1	4.3

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Members with Any Care decreased by 10.8 percentage points from 2011 to 2015.

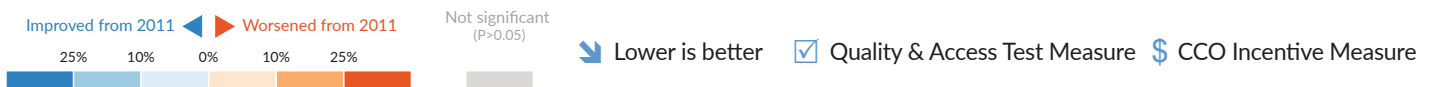
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 Members with Any Health Care*	82.6%	-0.4	-6.2	-10.8
2 Getting Care Quickly (Adults) [†] <input checked="" type="checkbox"/> \$	83.4%	-0.9	-3.8	3.7
3 Getting Needed Care (Adults) [†]	70.7%	14.3	6.9	12.9

2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Members with Any Care increased by 0.7 percentage points from 2014 to 2015.

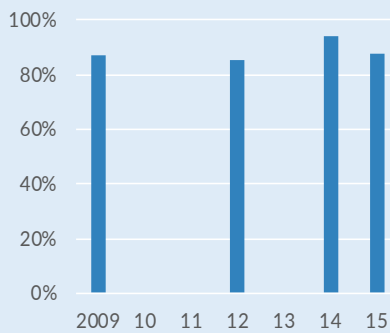
	2014 Baseline	2014-2015 Change
1 Members with Any Health Care*	71.7%	0.7
2 Getting Care Quickly (Adults) [†] <input checked="" type="checkbox"/> \$	NA	NA
3 Getting Needed Care (Adults) [†]	NA	NA



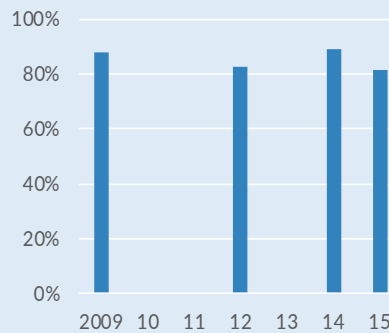
*2015 is defined as Q4 2014 to Q3 2015. [†]Measure is based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members. As a result, we were unable to calculate this measure for expansion members, and rates for CCO and FFS members may include data from expansion members. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates (including adult and child rates for CAHPS-based measures) and regression results.

ACCESS: Access to Care Overall

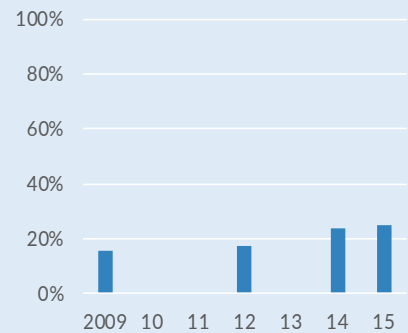
Physicians Accepting New Medicaid Patients*



Physicians Caring for Medicaid Patients*



Percentage of Physicians' Patients with Medicaid Coverage*

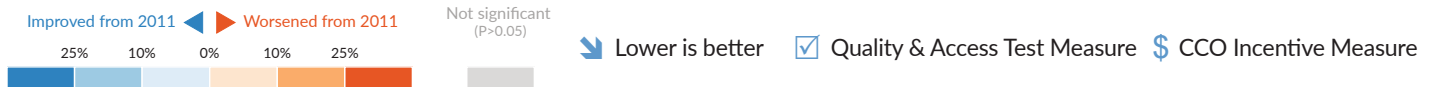
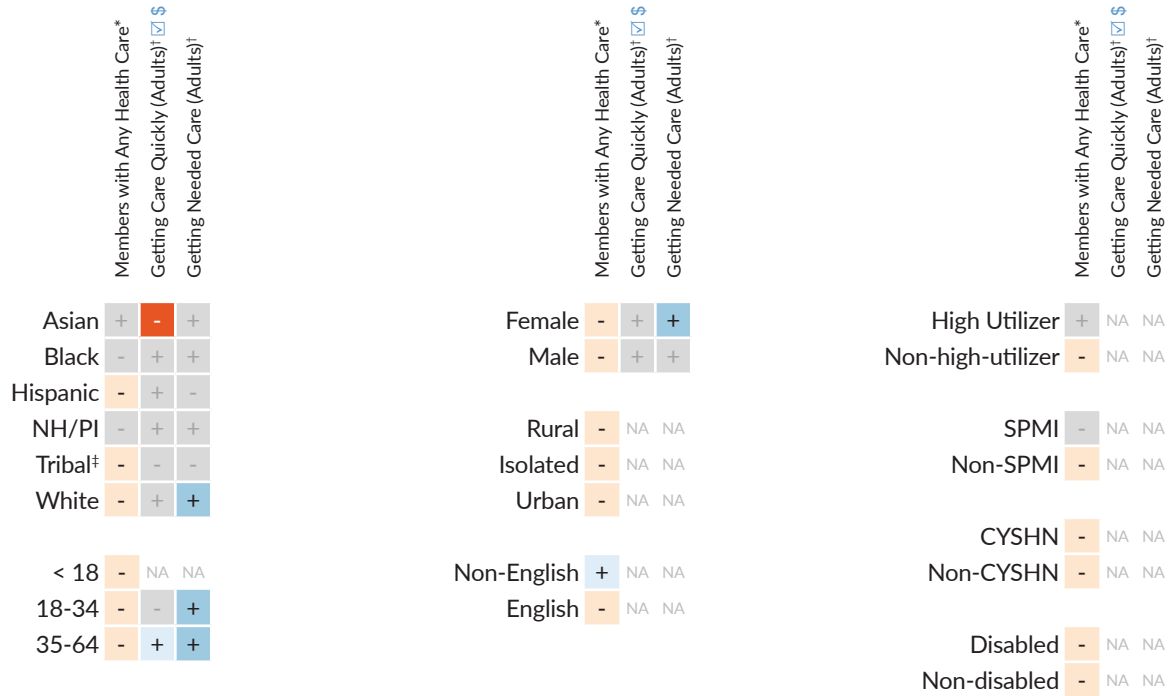


*Unadjusted rates based on Physician Workforce Survey data. The survey was not conducted in 2010, 2011, or 2013. Because responses were at the physician level, we were unable to control for the effects of member characteristics on outcomes using regression models. See [Appendix E](#) for measure details and [Data Appendix](#) for unadjusted measure rates.

ACCESS: Access to Care Overall

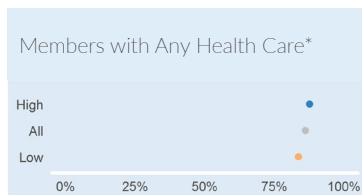
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure[§]



*2015 is defined as Q4 2014 through Q3 2015. †Measure is based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members and members of some subgroups. Rates for CCO members may include data from expansion members. ‡CAHPS survey data excludes information needed to identify Indian tribe members. As a result, we used self-reported American Indian/Alaska Native status to report results for CAHPS-based measures for this subgroup. Members who reported AI/AN status may differ from those with documented tribal status. §We were unable to calculate predicted rates for CAHPS-based measures because data needed to tie survey responses to CCOs were unavailable for the evaluation. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates (including adult and child rates for CAHPS-based measures) and regression results.

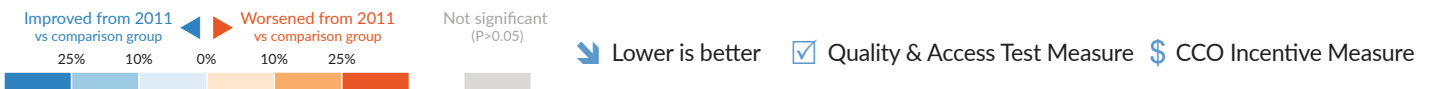
ACCESS: Access to Care Overall

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

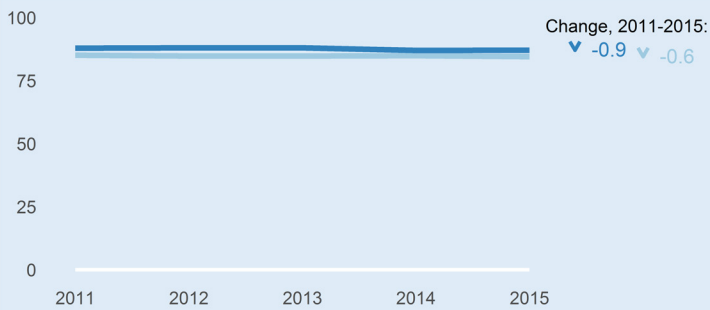
Example: Members with Any Care decreased by 0.3 percentage points from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 Members with Any Health Care*	87.9%	0.7	-0.5	-0.3
2 Getting Care Quickly (Adults) [†] <input checked="" type="checkbox"/> \$	NA	NA	NA	NA
3 Getting Needed Care (Adults) [†]	NA	NA	NA	NA



Members with Any Health Care

Oregon CCO vs Washington Medicaid members*



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-0.9) - (-0.6) = -0.3

*Propensity-score weighted outcomes, which may differ from outcomes used in pre-post and subgroup analysis. 2015 is defined as Q4 2014 to Q3 2015. †Data received from Washington's Medicaid program excluded CAHPS survey data, which are needed to calculate this measure. See Appendix F for details on regression models and Data Appendix for propensity-score weighted measure rates and regression results.

ACCESS: Access to Primary Care

This domain reflects Oregon's progress improving access to primary care. It includes five measures:

- 1 Members with Any Primary Care:** Percentage of members who had at least one visit to a primary care provider.
- 2 Children and Adolescents' Access to Primary Care (Age 1 to 6):** Percentage of children age 1 to 6 who had at least one visit to a primary care provider
- 3 Children and Adolescents' Access to Primary Care (Age 7 to 19):** Percentage of children and adolescents age 7 to 19 who had at least one visit to a primary care provider
- 4 Adults' Access to Primary Care (Age 20 to 44):** Percentage of adults age 20 to 44 who had an outpatient or preventive care visit
- 5 Adults' Access to Primary Care (Age 45 to 64):** Percentage of adults age 45 to 64 who had an outpatient or preventive care visit

See **Appendix E** for measure details.

Key Findings:

- *Most measures decreased slightly among CCO members, but decreased even less (or increased slightly) among Washington Medicaid members.*
- *Among CCO members with severe and persistent mental illness (SPMI), 4 of 5 measures increased from 2011 to 2013-2015.*
- *Among FFS members, all measures decreased in at least 2 of 3 years from 2013 to 2015, with larger decreases than CCO members relative to 2011 rates.*
- *Among post-expansion members, 2 of 3 measures applicable to this population increased from 2014 to 2015.*

ACCESS: Access to Primary Care

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Members with Any Primary Care decreased by 2.8 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Members with Any Primary Care	79.4%	-0.5	-2.9	-2.8
2 Children and Adolescents' Access to Primary Care (Age 1 to 6)	87.4%	-0.4	-2.4	-1.9
3 Children and Adolescents' Access to Primary Care (Age 7 to 19)	87.7%	0.2	0.3	0.4
4 Adults' Access to Primary Care (Age 20 to 44)	81.2%	-1.3	-3.8	-4.6
5 Adults' Access to Primary Care (Age 45 to 64)	87.9%	-0.3	-1.4	-1.6

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Members with Any Primary Care decreased by 11.3 percentage points from 2011 to 2015.

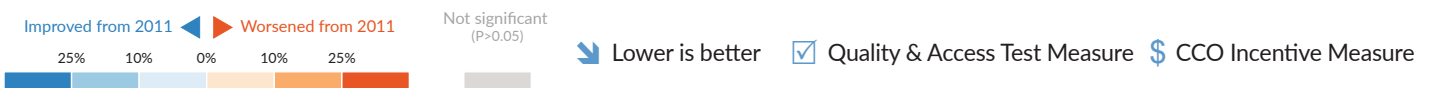
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Members with Any Primary Care	71.0%	-1.7	-7.9	-11.3
2 Children and Adolescents' Access to Primary Care (Age 1 to 6)	79.5%	-2.1	-6.2	-7.1
3 Children and Adolescents' Access to Primary Care (Age 7 to 19)	79.7%	-0.7	-2.0	-3.0
4 Adults' Access to Primary Care (Age 20 to 44)	75.8%	-3.5	-10.8	-15.2
5 Adults' Access to Primary Care (Age 45 to 64)	86.4%	1.4	-4.9	-8.4

2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Members with Any Primary Care increased by 0.4 percentage points from 2014 to 2015.

	2014 Baseline	2014-2015* Change
1 Members with Any Primary Care	62.7%	0.4
2 Children and Adolescents' Access to Primary Care (Age 1 to 6)	NA	NA
3 Children and Adolescents' Access to Primary Care (Age 7 to 19)	NA	NA
4 Adults' Access to Primary Care (Age 20 to 44)	57.8%	0.3
5 Adults' Access to Primary Care (Age 45 to 64)	70.0%	0.8

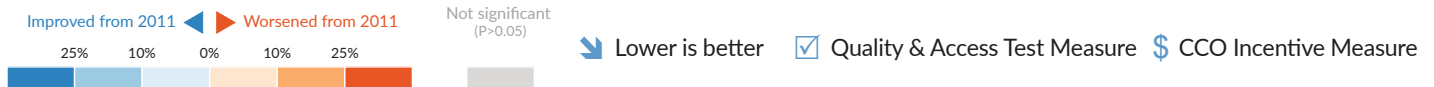
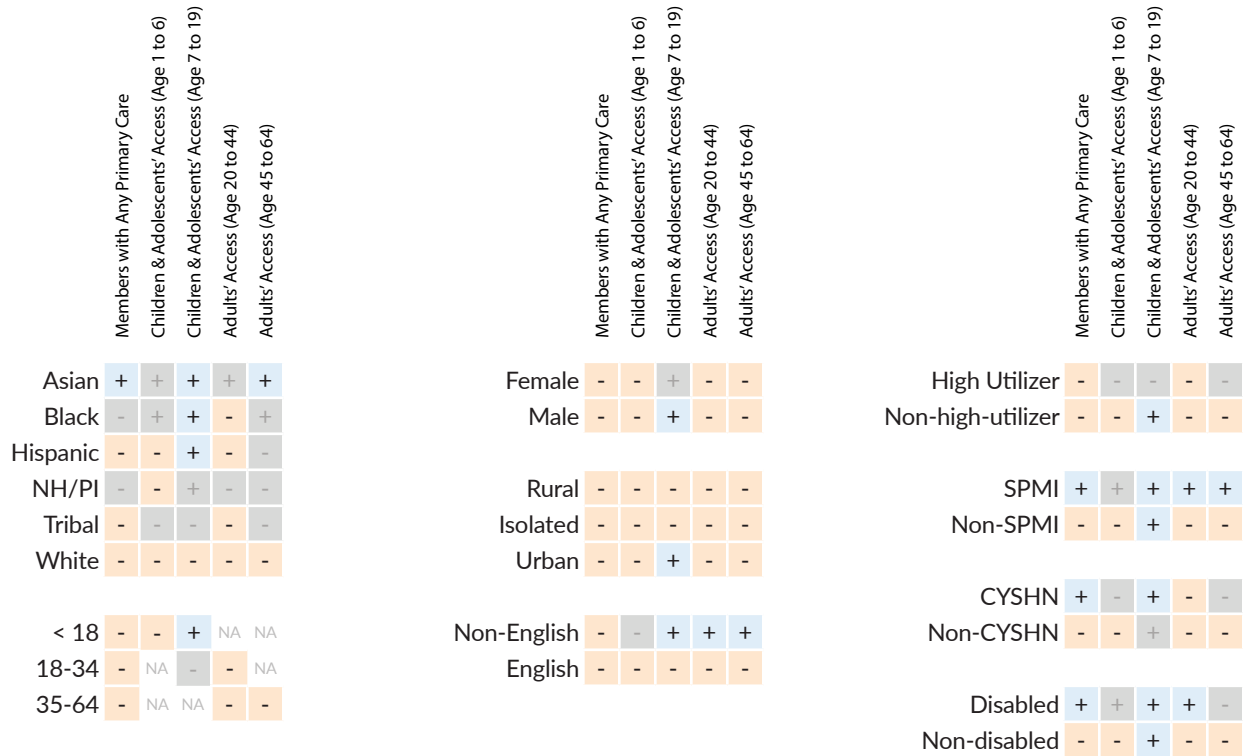


*2015 is defined as Q4 2014 to Q3 2015. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

ACCESS: Access to Primary Care

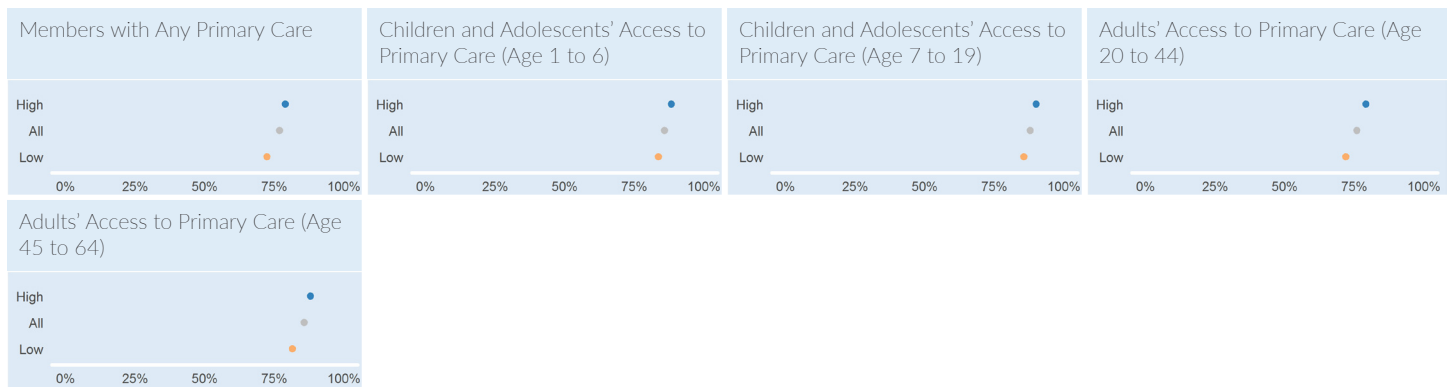
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



Notes: *2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

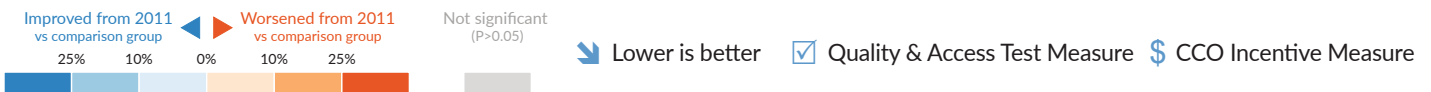
ACCESS: Access to Primary Care

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

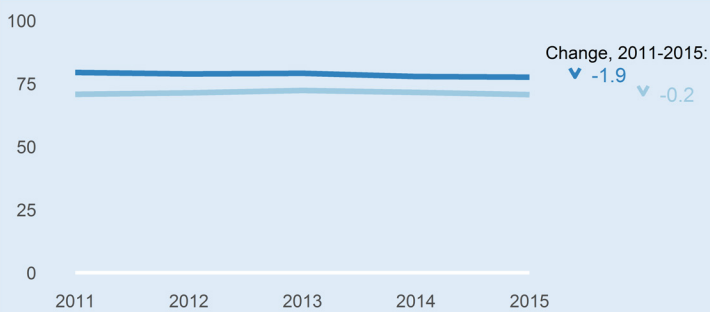
Example: Members with Any Care decreased by 1.4 percentage points from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 Members with Any Primary Care	79.4%	-0.9	-1.9	-1.4
2 Children and Adolescents' Access to Primary Care (Age 1 to 6)	87.4%	-0.6	-1.6	-0.5
3 Children and Adolescents' Access to Primary Care (Age 7 to 19)	87.7%	-0.9	-1.3	-0.9
4 Adults' Access to Primary Care (Age 20 to 44)	81.2%	-1.0	-2.8	-3.1
5 Adults' Access to Primary Care (Age 45 to 64)	87.9%	-1.1	-0.8	-0.2



Members with Any Primary Care

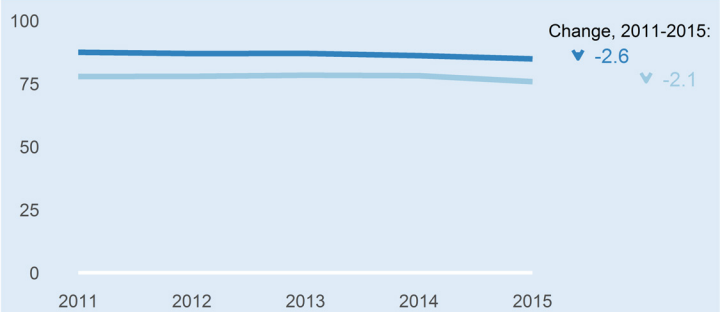
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-1.9) - (-0.2) = -1.7

Children & Adolescents' Access to Primary Care (Age 1 to 6)

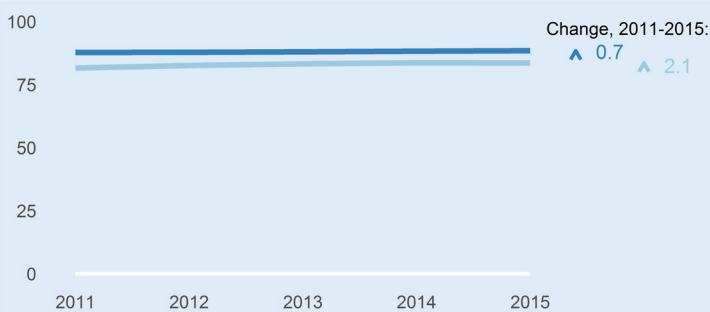
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-2.6) - (-2.1) = -0.5

Children & Adolescents' Access to Primary Care (Age 7 to 19)

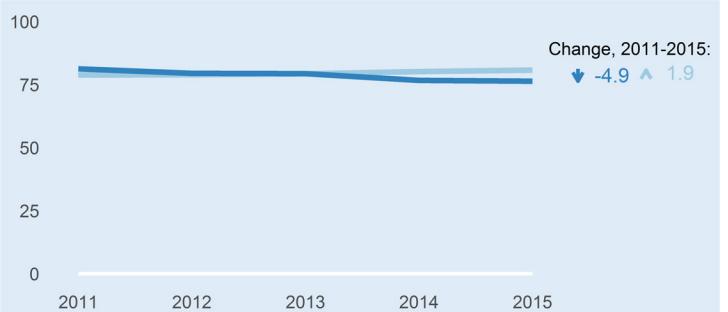
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (0.7) - (2.1) = -1.4

Adults' Access to Primary Care (Age 20 to 44)

Oregon CCO members and Washington Medicaid members*†



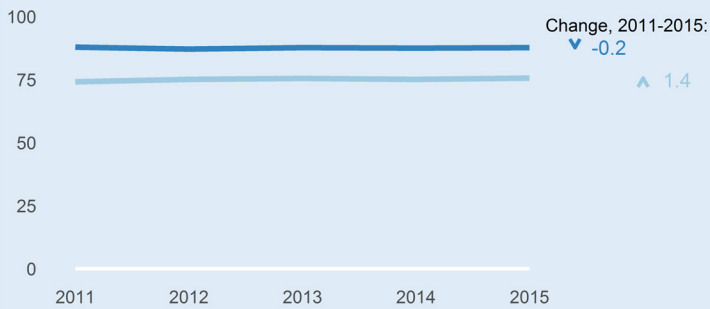
2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-4.9) - (1.9) = -6.8

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See Appendix F for details on regression models and Data Appendix for propensity-score weighted measure rates and regression results.

ACCESS: Access to Primary Care

Adults' Access to Primary Care (Age 45 to 64)

Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-0.2) - (1.4) = -1.6$

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See *Appendix F* for details on regression models and *Data Appendix* for propensity-score weighted measure rates and regression results.

ACCESS: Access to Behavioral Health Care

This domain reflects Oregon's progress improving access to behavioral health care. It includes two measures comparing access to behavioral and non-behavioral health care:

1 Outpatient Visits for Behavioral Health Care per 1,000 MM: Number of outpatient visits for behavioral health care per 1,000 member months

2 Outpatient Visits for Non-Behavioral Health Care per 1,000 MM: Number of outpatient visits for physical health care per 1,000 member months, reported for comparison with Outpatient Visits for Behavioral Health Care per 1,000 MM

A change in billing practices affected the methods we could use to evaluate behavioral health care access. Before 2013, behavioral health visits were often billed using codes that are not included in the definitions for our outpatient measures, which are based on codes from the National Council for Quality Assurance. Starting in 2013, health care providers were instructed to bill for behavioral health visits using codes that are included in the outpatient measure definitions. As a result, Outpatient Visits for Behavioral Health Care increased substantially between 2011 and 2013-2015. However, we cannot determine whether this reflects an *actual* increase in behavioral health visits.

Because Outpatient Visits for Behavioral Health Care in 2011 and 2013-2015 are not comparable, we could not use 2011 as baseline for regression analysis. As a result, we compare unadjusted rates of outpatient visits for behavioral and non-behavioral health care among CCO members. On the following page, we show the number of behavioral health care and non-behavioral health care visits per 1,000 member months. In addition, we show visit rates for both types of services *relative* to the 2013 rate, where the 2013 rate equals 1. This allows for easier comparison of the two measures on the same scale.

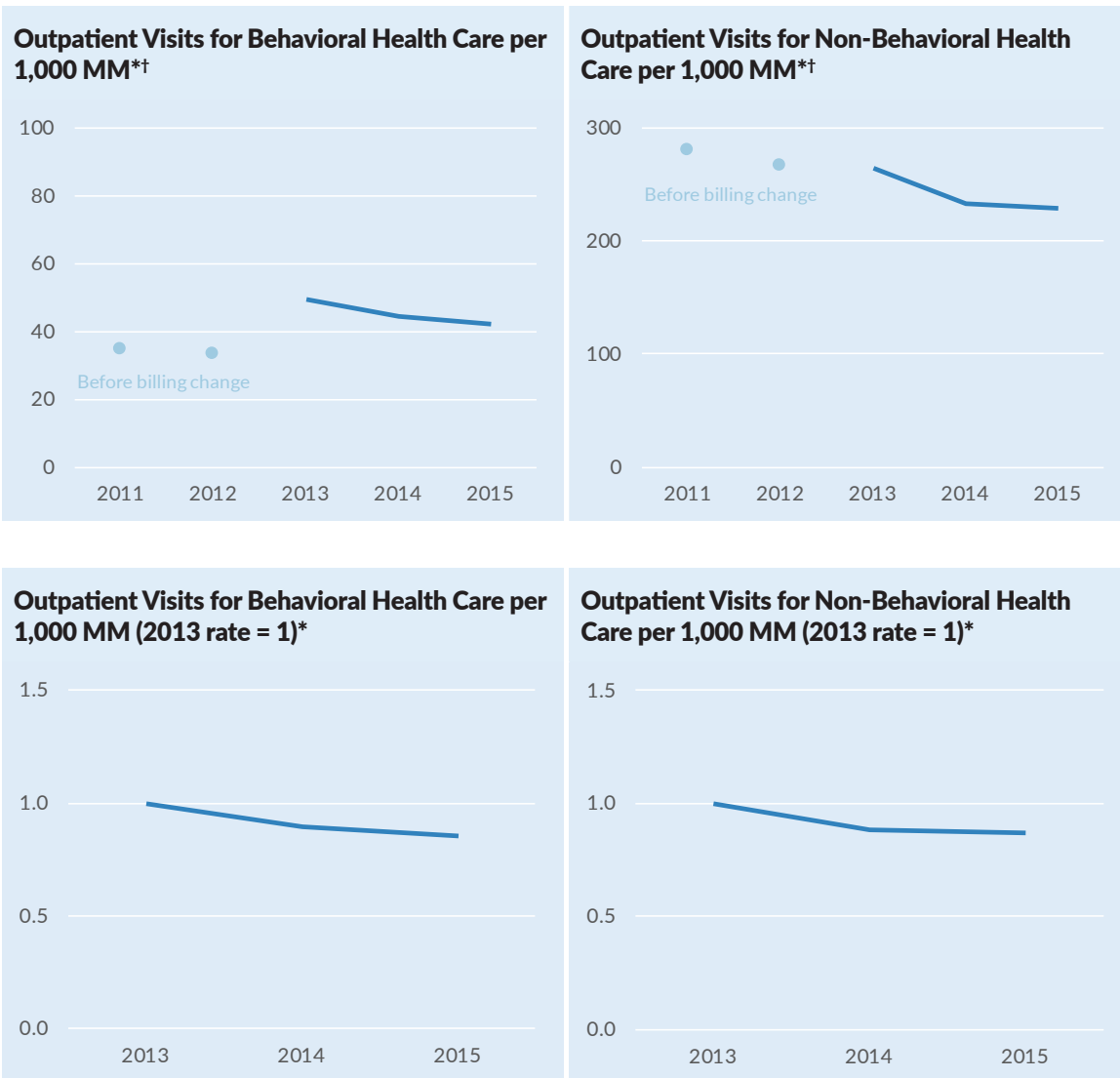
Data received from Washington's Medicaid program excluded behavioral health care claims. As a result, we were unable to evaluate change in access to behavioral health care using comparison group analysis.

See **Appendix E** for measure details.

Key Findings:

- *Among CCO members, rates of outpatient visits for behavioral and non-behavioral health care decreased from 2013 to 2014, and from 2014 to 2015, with a greater decrease from 2013 to 2014 for both measures.*
- *Rates of outpatient visits for behavioral and non-behavioral health care decreased by almost the same proportion, relative to 2013 rates. This suggests that access to behavioral health care kept pace with access to physical health care from 2013 to 2015.*

ACCESS: Access to Behavioral Health Care



*2015 is defined as Q4 2014 to Q3 2015. †Due to a change in billing practices for behavioral health visits starting in 2013, rates in 2011-2012 are not comparable to rates in 2013-2015. See *Appendix E* for measure details and *Data Appendix* for unadjusted measure rates.

QUALITY: Prevention and Wellness for Children and Adolescents

This domain reflects Oregon's progress improving preventive care and wellness for children and adolescents. It includes six measures:

- 1 Well-Child Visits in the First 15 Months:** Percentage of children age 15 months who had six or more well-child visits
- 2 Developmental Screening in the First Three Years:** Percentage of children age one, two, or three who were screened for risk of developmental, behavioral, and social delays
- 3 Adolescent Well-Care Visits:** Percentage of members age 12 to 21 who had at least one comprehensive well-care visit
- 4 Assessments for Children in DHS Custody:** Percentage of children in Oregon Department of Human Services custody who received physical, mental, and dental assessments
- 5 Immunizations for Children:** Percentage of children age two who received recommended vaccinations
- 6 Immunizations for Adolescents:** Percentage of members age 13 who received recommended vaccinations

The last three measures were reported using summarized data from OHA that excluded information on member characteristics. As a result, we could not evaluate these measures using regression models.

See **Appendix E** for measure details.

Key Findings:

- *Adolescent Well-Care Visits increased steadily over time among CCO members, while decreasing slightly among Washington Medicaid members.*
- *Developmental Screening in the First Three Years increased substantially among CCO members in all years from 2013 to 2015, and among FFS members in 2014 and 2015.*
- *Immunization for Adolescents increased by 14 percentage points among CCO members from 2011 to 2015, with increases ranging from 11 to 19 percent among subgroups.*
- *The highest-performing CCO had markedly higher performance on all measures than the lowest-performing CCO.*

QUALITY: Prevention and Wellness for Children and Adolescents

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Well-Child Visits decreased by 3.4 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Well-Child Visits in the First 15 Months <input checked="" type="checkbox"/>	57.6%	0.4	-2.5	-3.4
2 Developmental Screening in the First Three Years <input checked="" type="checkbox"/> \$	20.3%	8.2	19.2	25.2
3 Adolescent Well-Care Visits <input checked="" type="checkbox"/> \$	26.0%	2.5	5.2	7.1

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Well-Child Visits decreased by 13.8 percentage points from 2011 to 2015.

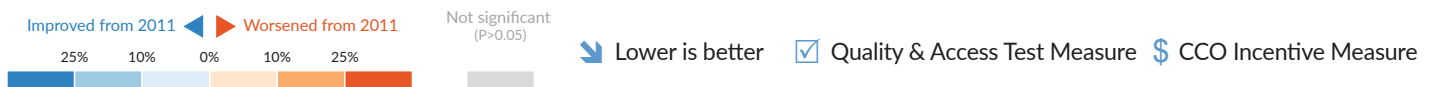
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Well-Child Visits in the First 15 Months <input checked="" type="checkbox"/>	46.6%	-5.6	-12.5	-13.8
2 Developmental Screening in the First Three Years <input checked="" type="checkbox"/> \$	17.7%	3.0	10.0	10.4
3 Adolescent Well-Care Visits	18.7%	-1.5	-2.9	-3.7

2014-2015 change for Medicaid expansion members

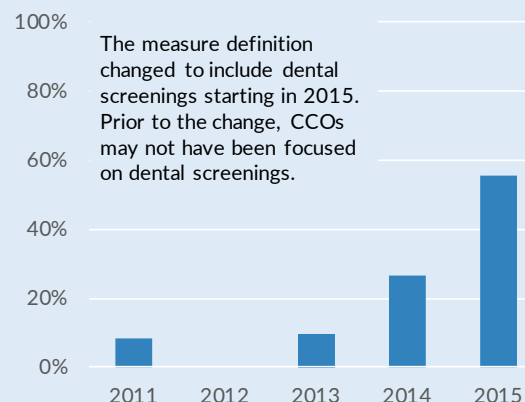
Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Change in Adolescent Well-Care Visits was not statistically significant from 2014 to 2015.

	2014 Baseline	2014-2015* Change
1 Well-Child Visits in the First 15 Months [†] <input checked="" type="checkbox"/>	NA	NA
2 Developmental Screening in the First Three Years [†] <input checked="" type="checkbox"/> \$	NA	NA
3 Adolescent Well-Care Visits <input checked="" type="checkbox"/> \$	12.7%	-0.4



Assessments for Children in DHS Custody[†] \$

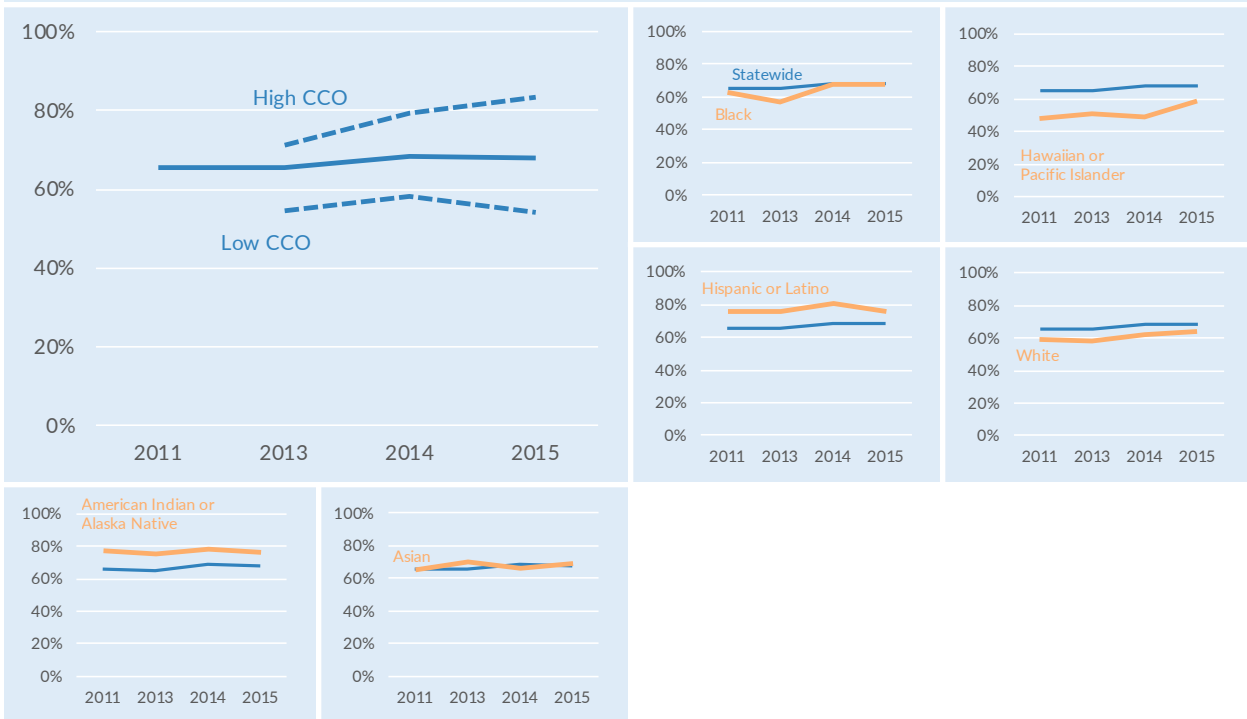


*2015 is defined as Q4 2014 to Q3 2015. [†]We could not analyze 2014-2015 change for this measure because the measure requires data prior to the measurement year to calculate, and these data were unavailable for expansion members for the 2014 (baseline) measurement year. [‡]Unadjusted rates based on summarized claims and administrative data provided by OHA. Data were unavailable for 2012. Because the data excluded information about members' demographics and health status, we were unable to control for the effects of member characteristics on outcomes using regression models. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

QUALITY: Prevention and Wellness for Children and Adolescents

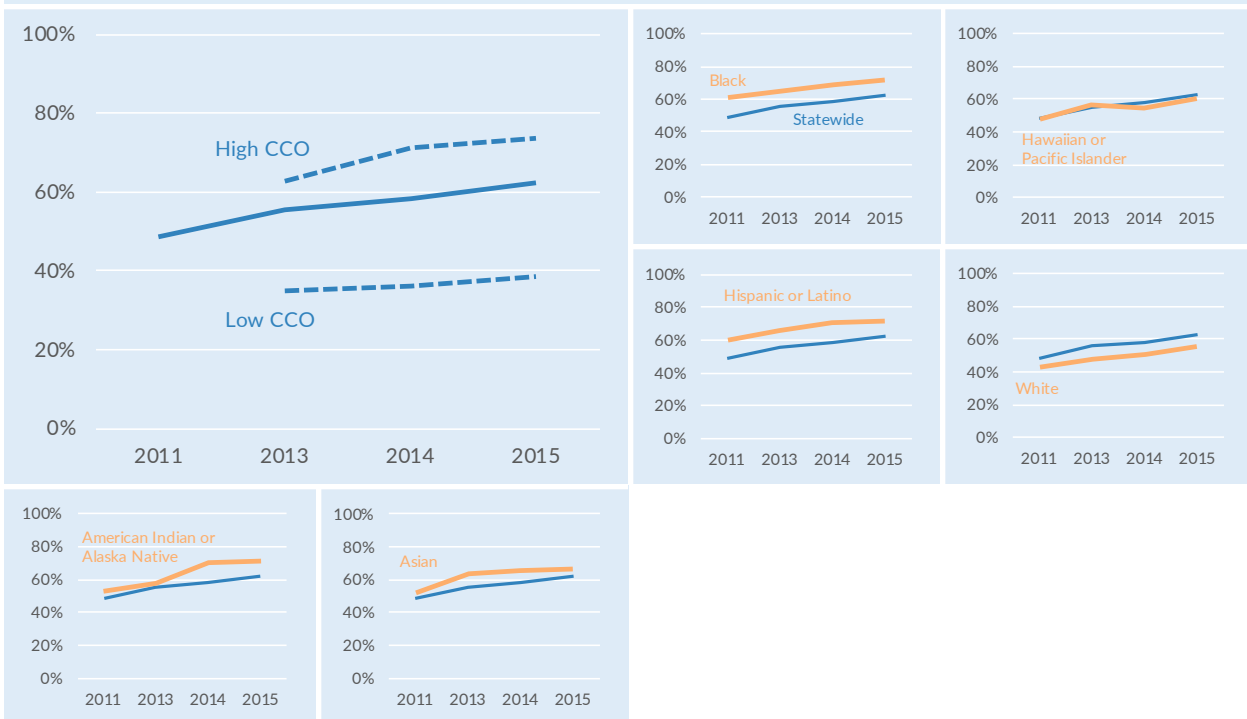
Immunizations for Children* \$

Statewide rate and rate by high and low CCO and race or ethnicity



Immunizations for Adolescents*

Statewide rate and rate by high and low CCO and race or ethnicity

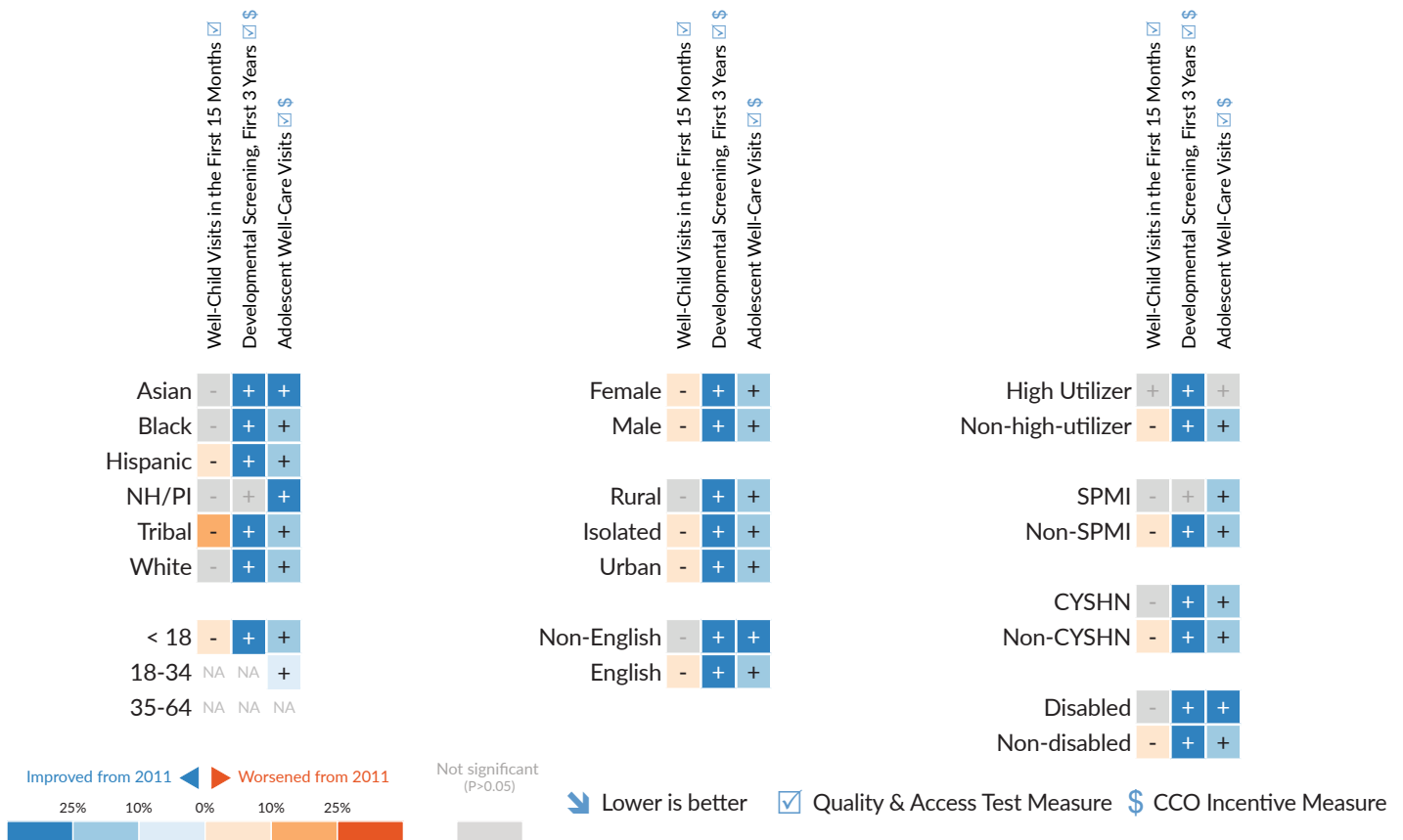


*Unadjusted rates provided by OHA based on state immunization registry data. Because the data were at the state or CCO level, we were unable to control for the effects of member characteristics on outcomes using regression models. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

QUALITY: Prevention and Wellness for Children and Adolescents

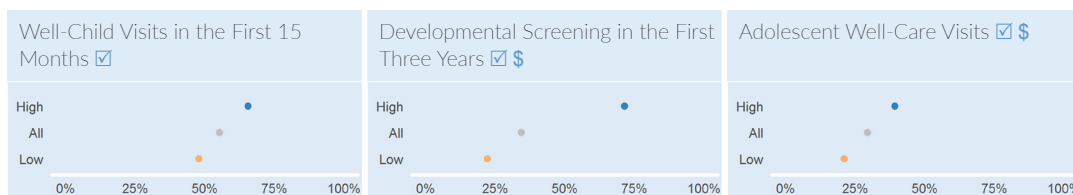
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



*2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

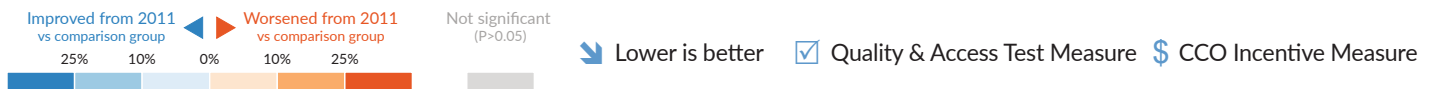
QUALITY: Prevention and Wellness for Children and Adolescents

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

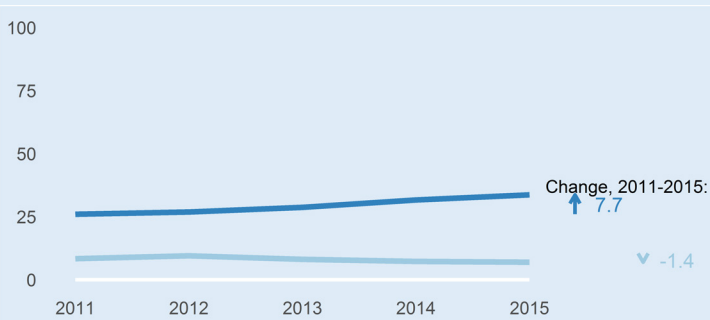
Example: Adolescent Well-Care Visits increased by 8.5 percentage points from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 Well-Child Visits in the First 15 Months‡ <input checked="" type="checkbox"/>	NA	NA	NA	NA
2 Developmental Screening in the First Three Years‡ <input checked="" type="checkbox"/> \$	NA	NA	NA	NA
3 Adolescent Well-Care Visits <input checked="" type="checkbox"/> \$	26.0%	3.2	6.1	8.5



Adolescent Well-Care Visits \$

Oregon CCO members and Washington Medicaid members†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (7.7) - (-1.4) = 9.1

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. ‡Data received from Washington's Medicaid program excluded data of birth, which was needed to calculate the measure. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for propensity-score weighted measure rates and regression results.

QUALITY: Prevention and Wellness for Adults

This domain reflects Oregon's progress improving preventive care and wellness for adults. It includes seven measures:

- 1 Chlamydia Screening for Women Age 16-20:** Percentage of women age 16 to 20 who received a chlamydia test
- 2 Effective Contraceptive Use:** Percentage of women age 15-44 who used contraception
- 3 Monitoring for Patients on Long-Term Medications:** Percentage of adults who received specific long-term medications and had a drug monitoring test
- 4 Tobacco Use:** Percentage of members age 18 and older who smoke cigarettes or use other tobacco products (lower is better)
- 5 Help Quitting Tobacco: Members Advised to Quit:** Percentage of members who use tobacco and were advised to quit by a doctor or other health care provider
- 6 Help Quitting Tobacco: Doctor Recommended Medication:** Percentage of members who use tobacco and whose health care provider recommended medication to help quit
- 7 Help Quitting Tobacco: Doctor Discussed Strategies:** Percentage of members who use tobacco and whose health care provider recommended strategies to help quit

See **Appendix E** for measure details.

Key Findings:

- *Effective Contraceptive Use declined by about 10 percentage points among Washington Medicaid members, but by only 2 percentage points among CCO members.*
- *In contrast to Effective Contraceptive Use, Chlamydia Screening for Women Age 16-20 and Monitoring for Patients on Long-Term Medications declined slightly among CCO members but increased slightly among Washington Medicaid members.*
- *Two of three measures related to counseling for quitting tobacco increased substantially among CCO members.*

QUALITY: Prevention and Wellness for Adults

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Chlamydia Screening for Women Age 16-20 decreased by 5.2 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 Chlamydia Screening for Women Age 16-20* <input checked="" type="checkbox"/>	47.7%	0.8	-4.6	-5.2
2 Effective Contraceptive Use* <input checked="" type="checkbox"/> \$	44.4%	-1.2	-3.7	-4.8
3 Monitoring for Patients on Long-Term Medications*	84.1%	-2.0	-2.7	-4.7
4 Tobacco Use† <input checked="" type="checkbox"/>	10.7%	1.6	-0.3	-1.0
5 Help Quitting Tobacco: Members Advised to Quit† <input checked="" type="checkbox"/>	49.1%	1.3	2.1	0.7
6 Help Quitting Tobacco: Doctor Recommended Medication† <input checked="" type="checkbox"/>	23.0%	6.8	7.5	7.3
7 Help Quitting Tobacco: Doctor Discussed Strategies† <input checked="" type="checkbox"/>	21.0%	1.1	5.3	4.3

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Chlamydia Screening for Women Age 16-20 decreased by 11.1 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 Chlamydia Screening for Women Age 16-20* <input checked="" type="checkbox"/>	39.5%	-1.4	-7.0	-11.1
2 Effective Contraceptive Use* <input checked="" type="checkbox"/> \$	45.5%	-5.9	-13.2	-16.3
3 Monitoring for Patients on Long-Term Medications*	74.4%	-2.4	-6.4	-8.2
4 Tobacco Use† <input checked="" type="checkbox"/>	9.3	4.7	-0.1	-2.1
5 Help Quitting Tobacco: Members Advised to Quit† <input checked="" type="checkbox"/>	54.0	-0.7	-3.5	-22.9
6 Help Quitting Tobacco: Doctor Recommended Medication† <input checked="" type="checkbox"/>	29.1	10.0	6.5	-8.1
7 Help Quitting Tobacco: Doctor Discussed Strategies† <input checked="" type="checkbox"/>	26.2	5.3	2.0	-10.8

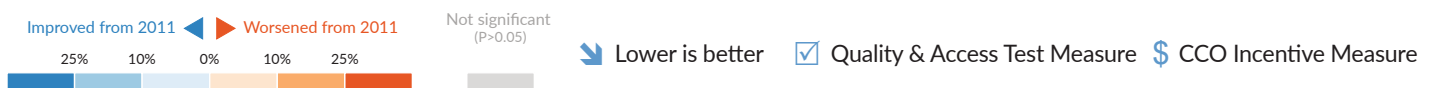
2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Change in Chlamydia Screening for Women Age 16-20 from 2011 to 2015 was not significant.

	2014 Baseline	2014-2015 Change
1 Chlamydia Screening for Women Age 16-20* <input checked="" type="checkbox"/>	33.6%	0.1
2 Effective Contraceptive Use* <input checked="" type="checkbox"/> \$	27.3%	1.8
3 Monitoring for Patients on Long-Term Medications*	83.1%	-6.1
4 Tobacco Use† <input checked="" type="checkbox"/>	NA	NA
5 Help Quitting Tobacco: Members Advised to Quit† <input checked="" type="checkbox"/>	NA	NA
6 Help Quitting Tobacco: Doctor Recommended Medication† <input checked="" type="checkbox"/>	NA	NA
7 Help Quitting Tobacco: Doctor Discussed Strategies† <input checked="" type="checkbox"/>	NA	NA

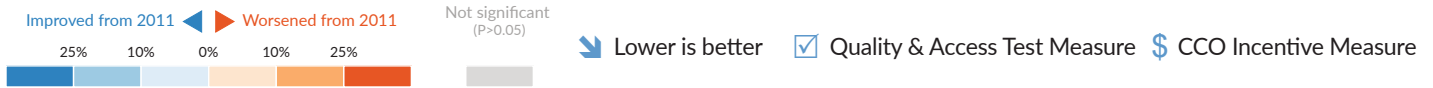
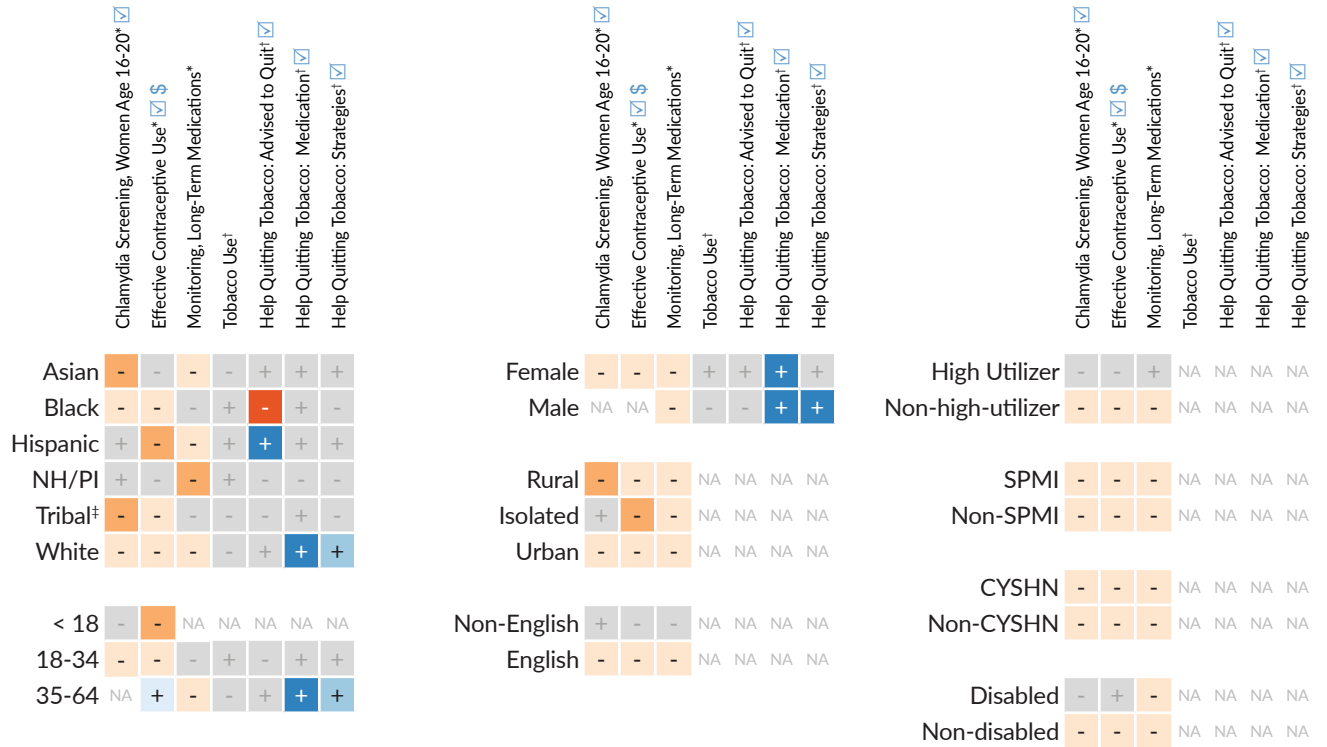
*2015 is defined as Q4 2014 to Q3 2015. †Measure is based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members. As a result, we were unable to calculate this measure for expansion members and rates for CCO and FFS members may include data from expansion members. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.



QUALITY: Prevention and Wellness for Adults

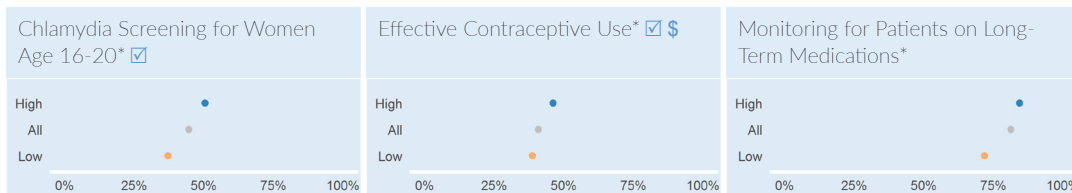
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure⁵



⁵2015 is defined as Q4 2014 to Q3 2015. ¹Measure is based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members and members of some subgroups. Rates for CCO members may include data from expansion members. ²CAHPS survey data excludes information needed to identify Indian tribe members. As a result, we used self-reported American Indian/Alaska Native status to report results for CAHPS-based measures for this subgroup. Members who reported AI/AN status may differ from those with documented tribal status. ³We were unable to calculate predicted rates for CAHPS-based measures because data needed to tie survey responses to CCOs were unavailable for the evaluation. See *Appendix E* for measure details, *Appendix F* for details on regression models, and *Data Appendix* for unadjusted measure rates and regression results.

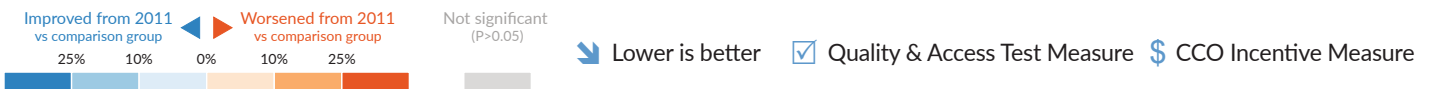
QUALITY: Prevention and Wellness for Adults

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

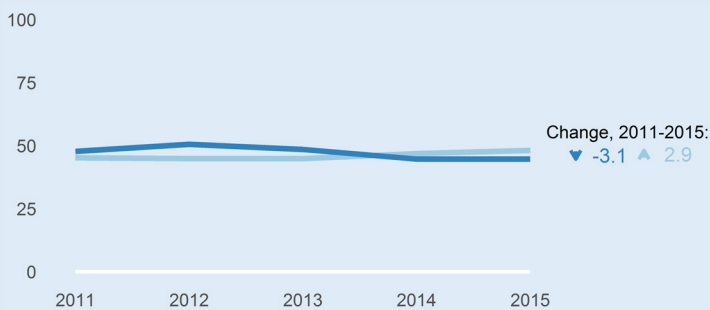
Example: Chlamydia Screening for Women Age 16-20 decreased by 5.9 percentage points from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 Chlamydia Screening for Women Age 16-20 [†] <input checked="" type="checkbox"/>	47.7%	1.4	-5.0	-5.9
2 Effective Contraceptive Use [†] <input checked="" type="checkbox"/> \$	44.4%	1.8	5.5	8.1
3 Monitoring for Patients on Long-Term Medications [†]	84.1%	-2.2	-3.3	-5.5
4 Tobacco Use [†] <input type="checkbox"/>	NA	NA	NA	NA
5 Help Quitting Tobacco: Members Advised to Quit [†] <input checked="" type="checkbox"/>	NA	NA	NA	NA
6 Help Quitting Tobacco: Doctor Recommended Medication [†] <input checked="" type="checkbox"/>	NA	NA	NA	NA
7 Help Quitting Tobacco: Doctor Discussed Strategies [†] <input checked="" type="checkbox"/>	NA	NA	NA	NA



Chlamydia Screening for Women Age 16-20

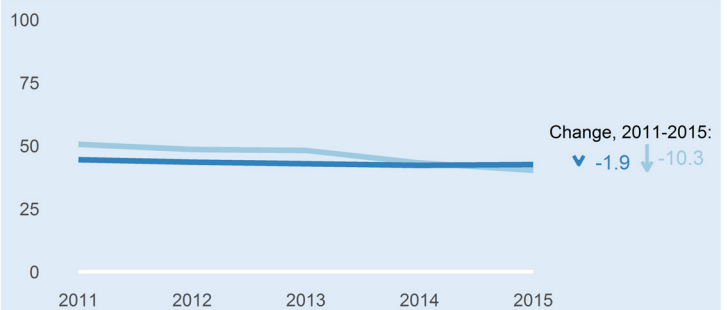
Oregon CCO members and Washington Medicaid members*[†]



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-3.1) - (2.9) = -6$

Effective Contraceptive Use \$

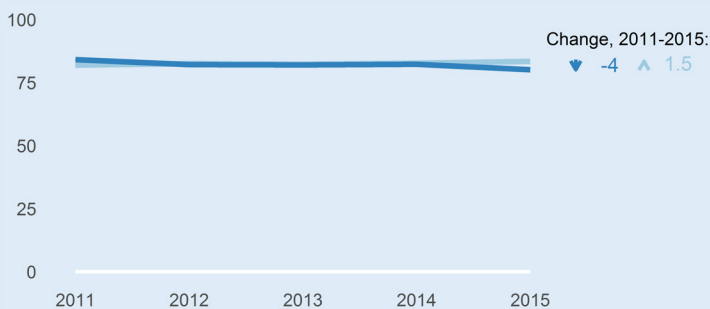
Oregon CCO members and Washington Medicaid members*[†]



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-1.9) - (-10.3) = 8.4$

Monitoring for Patients on Long-Term Medications

Oregon CCO members and Washington Medicaid members*[†]



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-4) - (1.5) = -5.4$

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. [†]2015 is defined as Q4 2014 to Q3 2015. [‡]Data received from Washington's Medicaid program excluded CAHPS survey data, which were needed to calculate this measure. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for propensity-score weighted measure rates and regression results.

QUALITY: Care Coordination

This domain reflects Oregon's progress improving care coordination. It includes five measures:

- 1 30-Day Follow-Up after Hospitalization for Heart Attack:** Percentage of hospital discharges after heart attack where the patient received a follow-up visit within 30 days
- 2 30-Day Follow-Up after Hospitalization for Heart Failure:** Percentage of hospital discharges after heart failure where the patient received a follow-up visit within 30 days
- 3 30-Day Follow-Up after Hospitalization for Pneumonia:** Percentage of hospital discharges after pneumonia where the patient received a follow-up visit within 30 days
- 4 Alcohol or Other Drug Treatment: Initiation:** Percentage of members age 13 and over diagnosed with alcohol or drug dependence who started treatment within 14 days
- 5 Alcohol or Other Drug Treatment: Engagement:** Percentage of members age 13 and over diagnosed with alcohol or drug dependence who started treatment, and who received at least two services for alcohol or other drug abuse within 30 days of starting treatment

See **Appendix E** for measure details.

Key Findings:

- *30-Day Follow-Up after Hospitalization for Pneumonia among CCO member decreased moderately in 2014 and 2015 relative to Washington Medicaid members.*
- *Alcohol and Other Drug Treatment measures decreased among CCO and FFS members in all three years relative to 2011, with larger decreases among FFS members.*
- *The highest-performing CCO had markedly higher performance on all 30-day follow-up after hospitalization measures, with differences in the 30 to 50 percentage-point range.*

QUALITY: Care Coordination

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in 30-Day Follow-Up after Hospitalization for Heart Attack from 2011 to 2015 was not statistically significant.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 30-Day Follow-Up after Hospitalization for Heart Attack	78.2%	1.5	4.2	2.2
2 30-Day Follow-Up after Hospitalization for Heart Failure	77.0%	5.8	4.9	3.9
3 30-Day Follow-Up after Hospitalization for Pneumonia	80.1%	0.9	-6.6	-8.9
4 Alcohol or Other Drug Treatment: Initiation	38.5%	-2.5	-2.7	-5.3
5 Alcohol or Other Drug Treatment: Engagement	23.3%	-2.6	-3.2	-5.4

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in 30-Day Follow-Up after Hospitalization for Heart Attack from 2011 to 2015 was not statistically significant.

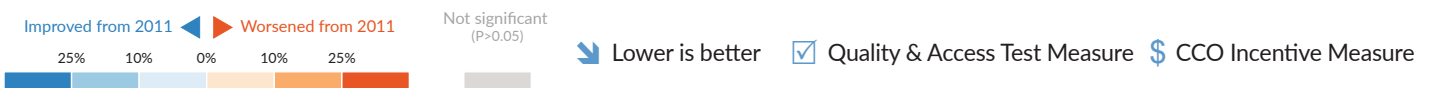
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 30-Day Follow-Up after Hospitalization for Heart Attack	72.2	19.8	-30.0	-20.8
2 30-Day Follow-Up after Hospitalization for Heart Failure	69.4	-6.8	17.0	1.0
3 30-Day Follow-Up after Hospitalization for Pneumonia	70.7	-8.4	10.9	-6.5
4 Alcohol or Other Drug Treatment: Initiation	41.9	-4.5	-5.4	-4.9
5 Alcohol or Other Drug Treatment: Engagement	25.3	-4.5	-5.1	-7.0

2014-2015 change for Medicaid expansion members

Change in measure rates from 2011 to 2015 controlling for member characteristics

Example: Change in 30-Day Follow-Up after Hospitalization for Heart Attack from 2014 to 2015 was not statistically significant.

	2014 Baseline	2014-2015* Change
1 30-Day Follow-Up after Hospitalization for Heart Attack	73.0	-0.1
2 30-Day Follow-Up after Hospitalization for Heart Failure	73.7	2.8
3 30-Day Follow-Up after Hospitalization for Pneumonia	66.7	4.0
4 Alcohol or Other Drug Treatment: Initiation [†]	NA	NA
5 Alcohol or Other Drug Treatment: Engagement [†]	NA	NA

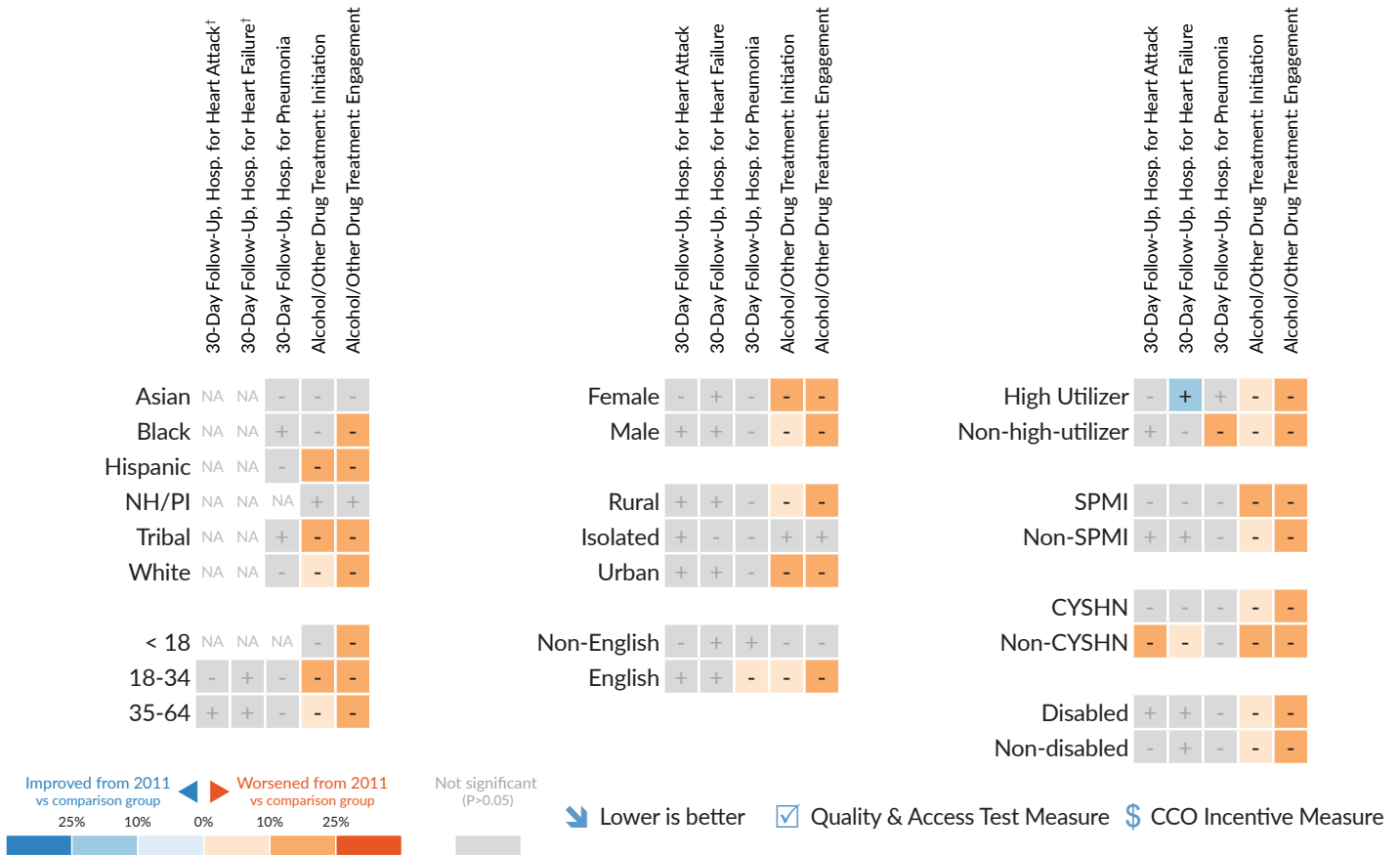


*2015 is defined as Q4 2014 to Q3 2015. [†]We could not analyze 2014-2015 change for this measure because the measure requires data prior to the measurement year to calculate, and these data were unavailable for expansion members for 2014 (the baseline year). See Appendix E for details on measures, Appendix F for details on regression models, and Data Appendix for regression results.

QUALITY: Care Coordination

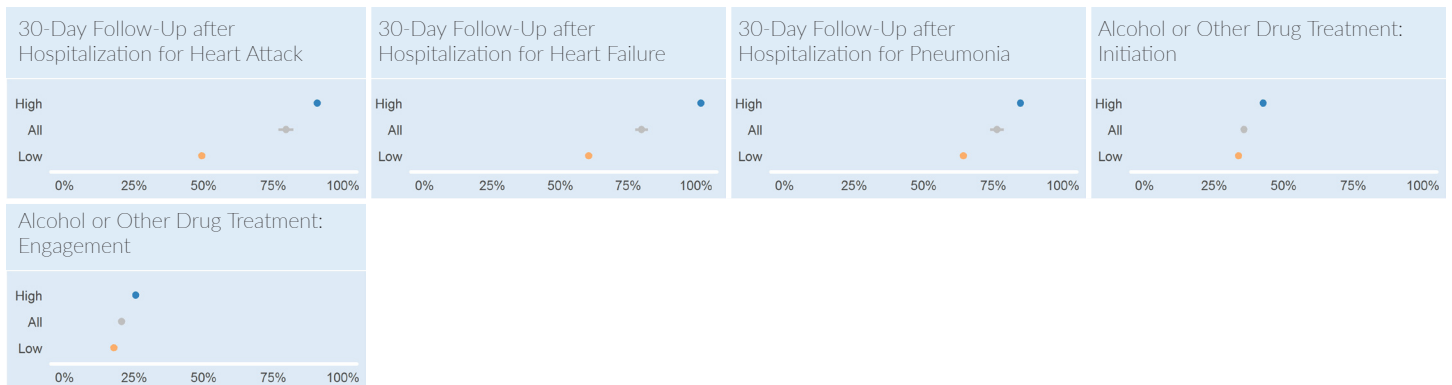
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



*2015 is defined as Q4 2014 through Q3 2015. †The number of people who met the inclusion criteria for this measure was too small to report results by race/ethnicity. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

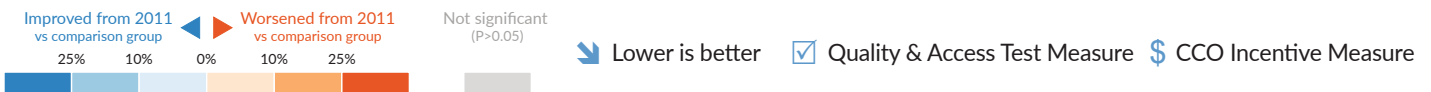
QUALITY: Care Coordination

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

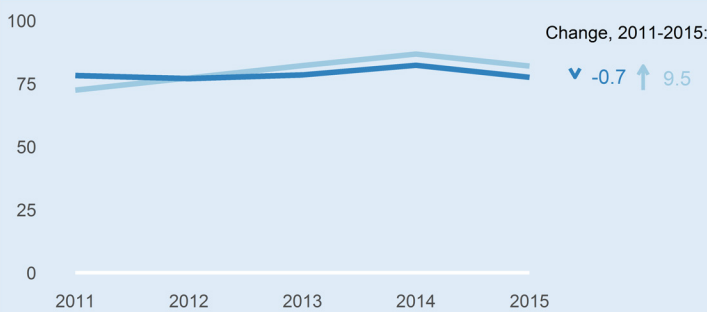
Example: Change in 30-Day Follow-Up after Hospitalization for Heart Attack from 2011 to 2015 was not statistically significant.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 30-Day Follow-Up after Hospitalization for Heart Attack	78.2%	-3.2	-5.1	-5.5
2 30-Day Follow-Up after Hospitalization for Heart Failure	77.0%	2.6	3.2	-1.3
3 30-Day Follow-Up after Hospitalization for Pneumonia	80.1%	1.8	-10.7	-9.8
4 Alcohol or Other Drug Treatment: Initiation‡	NA	NA	NA	NA
5 Alcohol or Other Drug Treatment: Engagement‡	NA	NA	NA	NA



30-Day Follow-Up after Hospitalization for Heart Attack

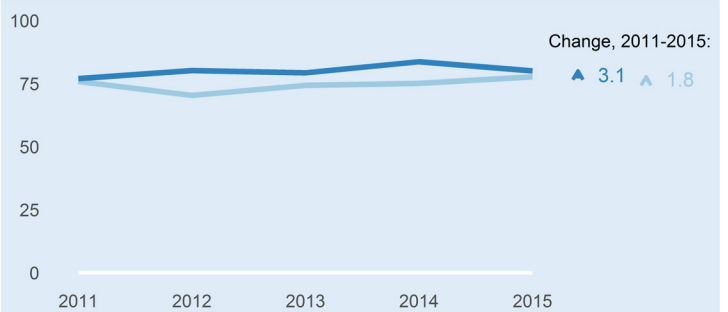
Oregon CCO vs Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-0.7) - (9.5) = -10.2$

30-Day Follow-Up after Hospitalization for Heart Failure

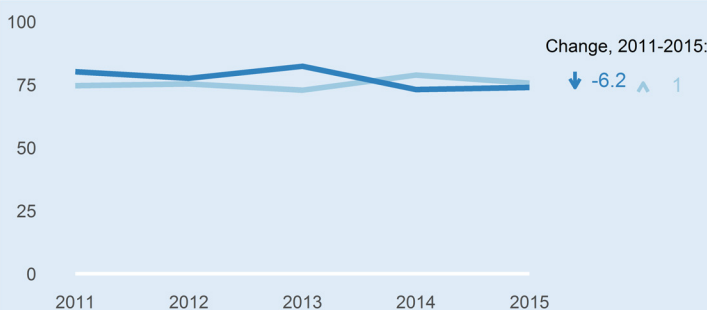
Oregon CCO vs Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(3.1) - (1.8) = 1.2$

30-Day Follow-Up after Hospitalization for Pneumonia

Oregon CCO vs Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-6.2) - (1) = -7.3$

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. ‡Data received from Washington's Medicaid program excluded behavioral health data, which are needed to calculate this measure. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for propensity-score weighted measure rates and regression results.

QUALITY: Physical, Behavioral, and Oral Health Care Integration

This domain reflects Oregon's progress integrating physical, behavioral, and oral health care. It includes seven measures:

- 1 Follow-Up for Children with ADHD Medication: Initiation:** Percentage of children prescribed ADHD medication who had a follow-up visit within 30 days
- 2 Follow-Up for Children with ADHD Medication: Engagement:** Percentage of children prescribed ADHD medication who had two follow-up visits and stayed on medication
- 3 30-Day Follow-Up after Hospitalization for Mental Illness:** Percentage of discharges after hospitalization for mental illness where the patient received follow-up within 30 days
- 4 Glucose Testing for Members with Antipsychotic Medications:** Percentage of members with antipsychotic medication who had an HbA1c test
- 5 Cholesterol Testing for Members with Antipsychotic Medications:** Percentage of members with antipsychotic medication who had a cholesterol test
- 6 Members with Any Dental Care:** Percentage of members who received at least one dental service
- 7 Dental Sealants for Children:** Percentage of children age 6 to 14 who received a sealant on a permanent molar

Behavioral and dental health care claims for Washington Medicaid members were unavailable for the evaluation. As a result, we were unable to evaluate changes in behavioral and oral health care integration using comparison group analysis.

See **Appendix E** for measure details.

Key Findings:

- *None of the behavioral health integration measures improved for CCO or FFS members relative to 2011.*
- *Oral health integration measures worsened in all three years from 2013 to 2015 among CCO and FFS members. Oregon's 2014 Medicaid expansion, which may have reduced access to primary care previously enrolled CCO members by "crowding out" primary care visits, may also have reduced access to oral health care for these populations.*
- *The highest-performing CCO had markedly higher performance than the lowest-performing CCO on Follow-Up for Children with ADHD Medication: Engagement and 30-Day Follow-Up after Hospitalization for Mental Illness, with differences in the 20 to 30 percentage-point range.*

QUALITY: Physical, Behavioral, and Oral Health Care Integration

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in Follow-Up for Children with ADHD Medication: Initiation from 2011 to 2015 was not statistically significant.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Follow-Up for Children with ADHD Medication: Initiation <input checked="" type="checkbox"/> \$	58.5%	-3.3	-2.7	-1.2
2 Follow-Up for Children with ADHD Medication: Engagement <input checked="" type="checkbox"/> \$	66.9%	-4.0	-3.8	-5.4
3 30-Day Follow-Up after Hospitalization for Mental Illness <input checked="" type="checkbox"/> \$	82.2%	-0.7	-0.5	-3.3
4 Glucose Testing for Members with Antipsychotic Medications	88.1%	-0.4	-0.6	-0.6
5 Cholesterol Testing for Members with Antipsychotic Medications	61.8%	-0.3	-0.6	-1.0
6 Members with Any Dental Care	47.3%	-0.4	-1.9	-1.0
7 Dental Sealants for Children \$	13.7%	-1.0	-2.6	-2.0

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in Follow-Up for Children with ADHD Medication: Initiation from 2011 to 2015 was not statistically significant.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Follow-Up for Children with ADHD Medication: Initiation <input checked="" type="checkbox"/> \$	45.8%	0.8	-1.1	3.0
2 Follow-Up for Children with ADHD Medication: Engagement <input checked="" type="checkbox"/> \$	48.5%	-7.5	-11.5	-2.4
3 30-Day Follow-Up after Hospitalization for Mental Illness <input checked="" type="checkbox"/> \$	78.6%	-8.0	-10.5	-15.8
4 Glucose Testing for Members with Antipsychotic Medications	79.6%	-2.7	-2.5	-3.8
5 Cholesterol Testing for Members with Antipsychotic Medications	50.0%	0.2	-2.7	-5.6
6 Members with Any Dental Care	41.0%	-1.8	-7.3	-10.4
7 Dental Sealants for Children \$	9.8%	-1.4	-2.9	-3.7

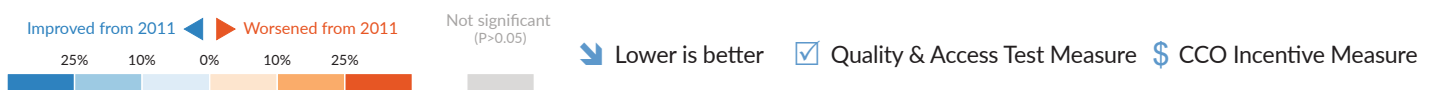
2014-2015 change for Medicaid expansion members

Change in measure rates from 2011 to 2015 controlling for member characteristics

Example: Change in 30-Day Follow-Up after Hospitalization for Mental Illness from 2014 to 2015 was not statistically significant.

	2014 Baseline	2014-2015* Change
1 Follow-Up for Children with ADHD Medication: Initiation [†] <input checked="" type="checkbox"/> \$	NA	NA
2 Follow-Up for Children with ADHD Medication: Engagement [†] <input checked="" type="checkbox"/> \$	NA	NA
3 30-Day Follow-Up after Hospitalization for Mental Illness <input checked="" type="checkbox"/> \$	69.7%	-0.8
4 Glucose Testing for Members with Antipsychotic Medications [†]	NA	NA
5 Cholesterol Testing for Members with Antipsychotic Medications [†]	NA	NA
6 Members with Any Dental Care	26.9%	1.4
7 Dental Sealants for Children \$	NA	NA

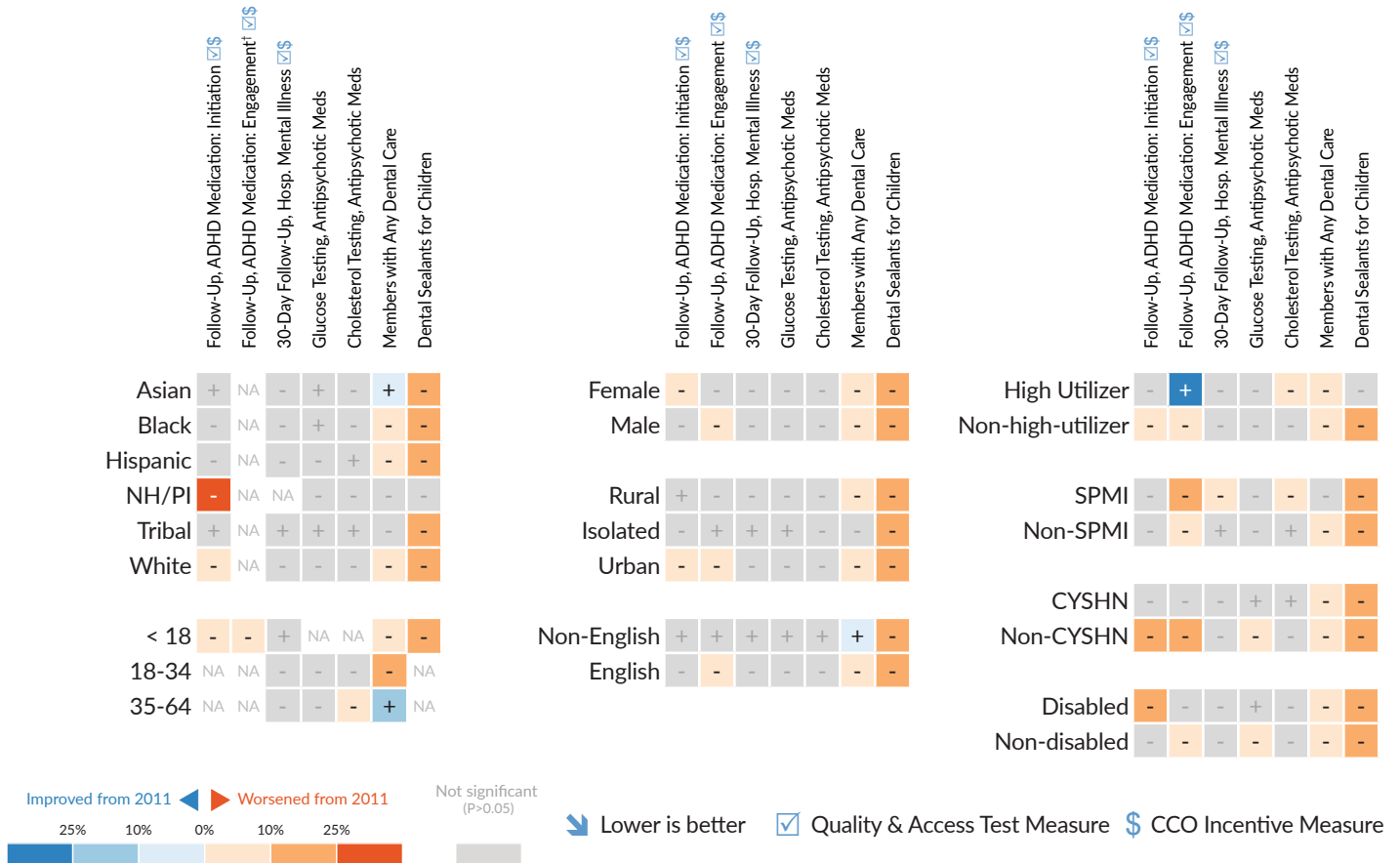
*2015 is defined as Q4 2014 to Q3 2015. †We could not analyze 2014-2015 change for this measure because the measure requires data prior to the measurement year to calculate, and these data were unavailable for expansion members for 2014 (baseline) measurement year. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.



QUALITY: Physical, Behavioral, and Oral Health Care Integration

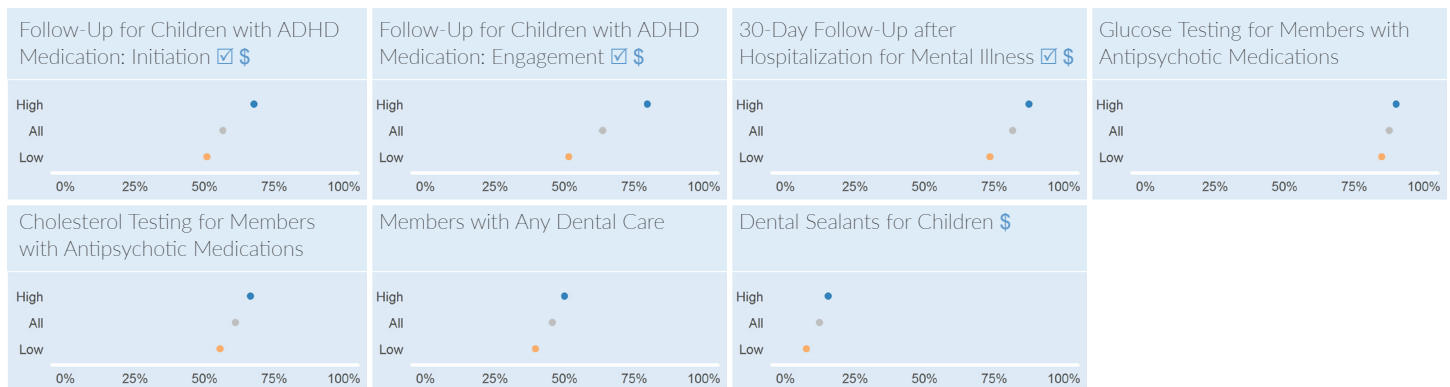
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



*2015 is defined as Q4 2014 to Q3 2015. †The number of people who met the inclusion criteria for this measure was too small to report results by race/ethnicity. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

QUALITY: Care for People with Chronic Conditions

This domain reflects Oregon's progress improving care for people with chronic conditions. It includes five measures:

- 1 Appropriate Medications for Children with Asthma:** Percentage of members age 5 to 17 with persistent asthma who received appropriate medication
- 2 Appropriate Medications for Adults with Asthma:** Percentage of members age 18 to 64 with persistent asthma who received appropriate medication
- 3 Glucose Testing for People with Diabetes:** Percentage of members age 18 to 75 with diabetes who had at least one HbA1c test
- 4 Cholesterol Testing for People with Diabetes:** Percentage of members age 18 to 75 with diabetes who had a cholesterol test
- 5 Cholesterol Testing for People with Cardiovascular Conditions:** Percentage of members age 18 to 75 with cardiovascular conditions who had a cholesterol test

See *Appendix E* for measure details.

Key Findings:

- *Asthma care measures decreased among CCO and Washington Medicaid members, with larger decreases among Washington Medicaid in 2015.*
- *In contrast to asthma care measures, diabetes care measures and Cholesterol Testing for People with Cardiovascular Conditions decreased among CCO members while improving slightly or not changing among Washington Medicaid members.*
- *Decreases in cholesterol testing measures relative to 2011 were greater for FFS members than for CCO members.*
- *The highest-performing CCO had markedly higher performance than the lowest-performing CCO on all measures, with differences in the 25 percentage-point range.*

QUALITY: Care for People with Chronic Conditions

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Appropriate Medications for Children with Asthma decreased by 8.0 percentage points from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Appropriate Medications for Children with Asthma	90.0%	0.3	-0.8	-8.0
2 Appropriate Medications for Adults with Asthma	83.4%	-0.2	-1.4	-10.8
3 Glucose Testing for People with Diabetes <input checked="" type="checkbox"/>	84.4%	0.5	-0.1	-1.2
4 Cholesterol Testing for People with Diabetes <input checked="" type="checkbox"/>	74.2%	-0.8	-4.8	-8.4
5 Cholesterol Testing for People with Cardiovascular Conditions	75.8%	-3.7	-7.3	-12.3

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in Appropriate Medications for Children with Asthma from 2011 to 2015 was not statistically significant.

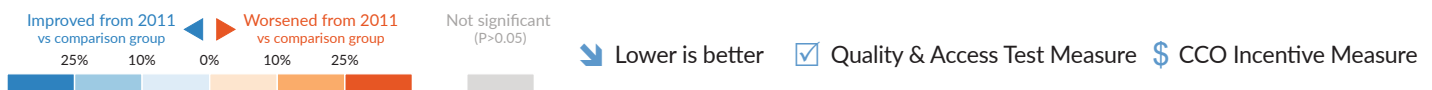
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Appropriate Medications for Children with Asthma	89.2%	-3.2	-2.9	-2.6
2 Appropriate Medications for Adults with Asthma	80.3%	-3.8	-1.8	-10.9
3 Glucose Testing for People with Diabetes <input checked="" type="checkbox"/>	71.8%	0.5	-8.2	-15.4
4 Cholesterol Testing for People with Diabetes <input checked="" type="checkbox"/>	62.0%	-5.0	-7.9	-17.5
5 Cholesterol Testing for People with Cardiovascular Conditions	71.8%	-15.2	-16.0	-21.8

2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Glucose Testing for People with Diabetes decreased 0.9 percentage points from 2014 to 2015.

	2014 Baseline	2014-2015* Change
1 Appropriate Medications for Children with Asthma [†]	NA	NA
2 Appropriate Medications for Adults with Asthma [†]	NA	NA
3 Glucose Testing for People with Diabetes <input checked="" type="checkbox"/>	85.1%	-0.9
4 Cholesterol Testing for People with Diabetes <input checked="" type="checkbox"/>	73.5%	-5.8
5 Cholesterol Testing for People with Cardiovascular Conditions [†]	NA	NA

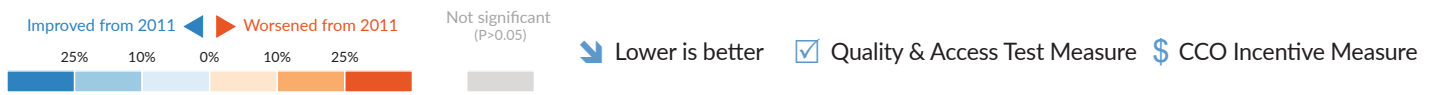


*2015 is defined as Q4 2014 to Q3 2015. [†]We could not analyze 2014-2015 change for this measure because the measure requires data prior to the measurement year to calculate, and these data were unavailable for expansion members for the 2014 (baseline) measurement year. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

QUALITY: Care for People with Chronic Conditions

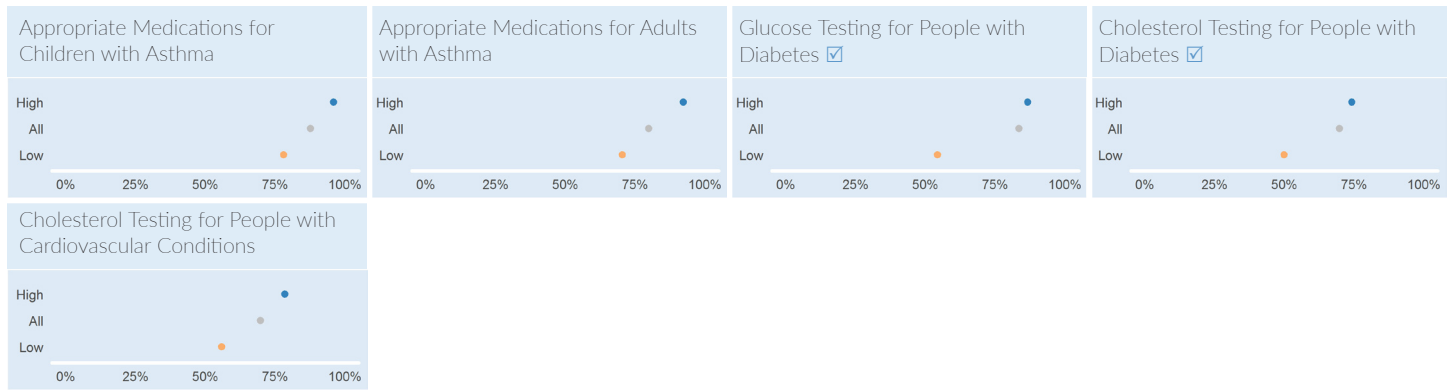
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



*2015 is defined as Q4 2014 to Q3 2015. †The number of people who met the inclusion criteria for this measure was too small to report results by race/ethnicity. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

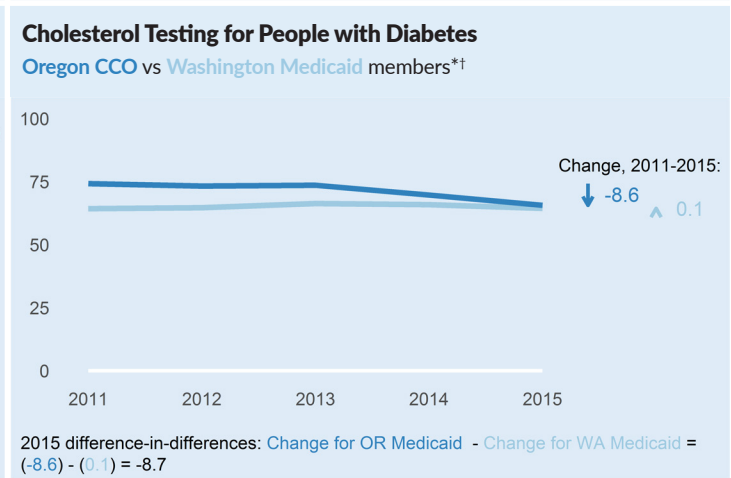
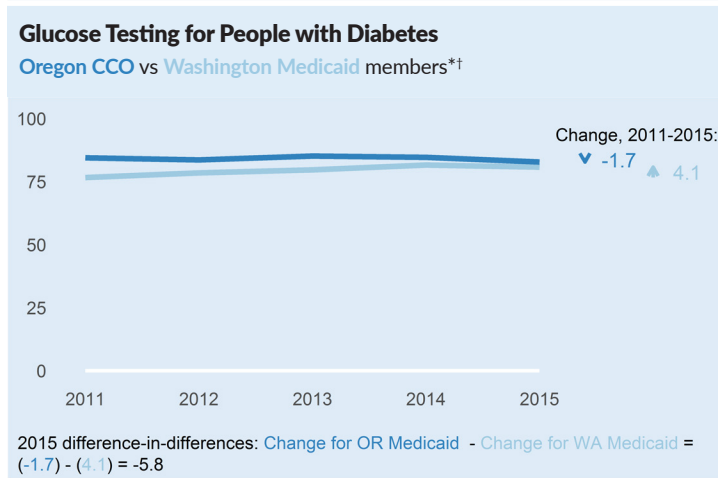
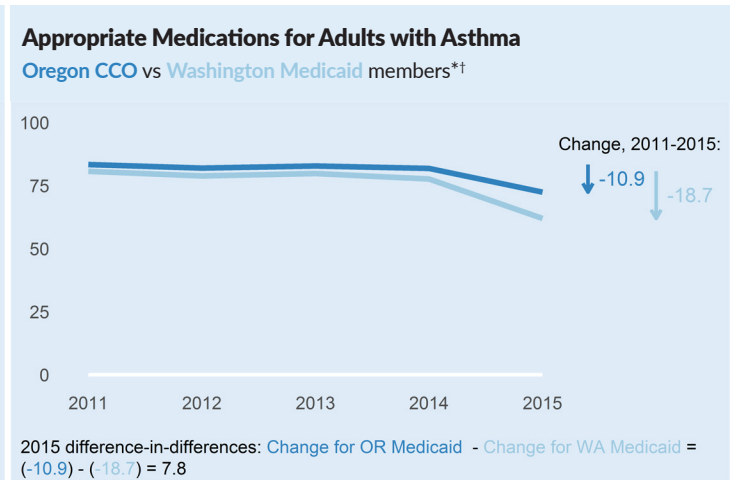
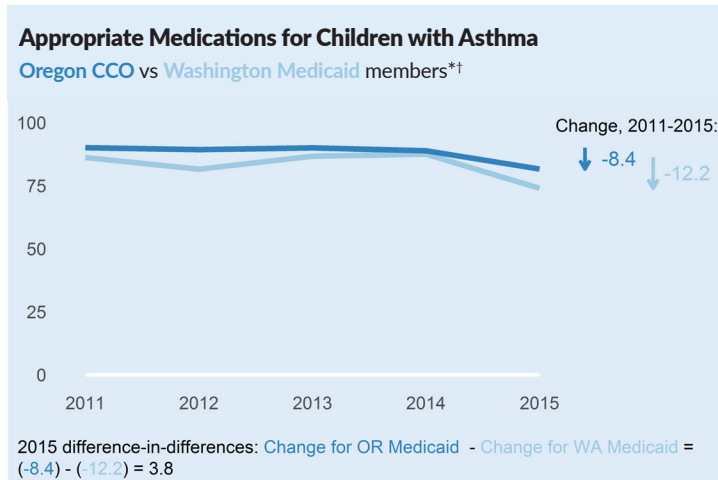
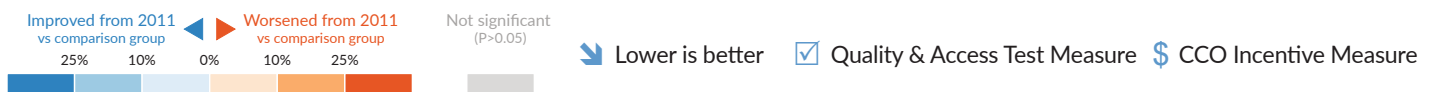
QUALITY: Care for People with Chronic Conditions

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

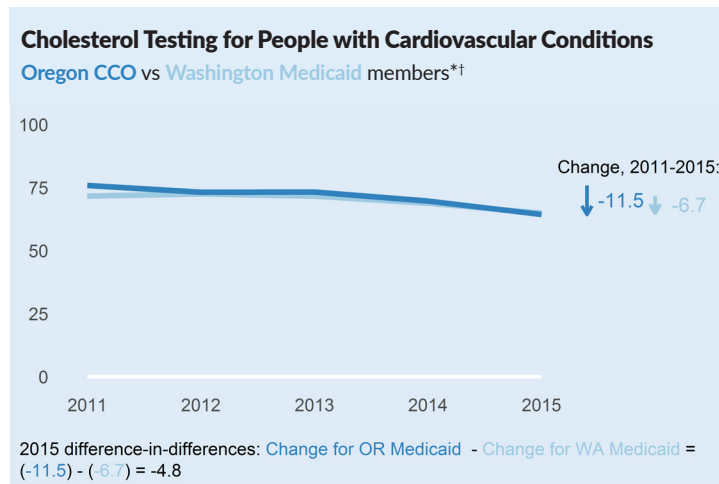
Example: Change in Appropriate Medications for Children with Asthma from 2011 to 2015 was not statistically significant.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 Appropriate Medications for Children with Asthma	90.0%	-0.8	-2.7	4.2
2 Appropriate Medications for Adults with Asthma	83.4%	-0.5	1.5	7.0
3 Glucose Testing for People with Diabetes <input checked="" type="checkbox"/>	84.4%	-1.2	-2.8	-3.4
4 Cholesterol Testing for People with Diabetes <input checked="" type="checkbox"/>	74.2%	-1.9	-5.1	-7.3
5 Cholesterol Testing for People with Cardiovascular Conditions	75.8%	-2.5	-4.1	-4.5



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for propensity-score weighted measure rates and regression results.

QUALITY: Care for People with Chronic Conditions



*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See *Appendix E* for measure details, *Appendix F* for details on regression models, and *Data Appendix* for propensity-score weighted measure rates and regression results.

QUALITY: Emergency Department and Hospital Use

This domain reflects Oregon's progress optimizing emergency department and hospital use. It includes eight measures (lower rates are better for all measures):

- 1 Emergency Department (ED) Visit Rate:** Emergency department visits per 1,000 months of enrollment
- 2 Avoidable ED Visit Rate (Age 1 to 17):** Emergency department visits that were preventable or treatable with appropriate primary care per 1,000 months of enrollment among children
- 3 Avoidable ED Visit Rate (Age 18 and Over):** Emergency department visits that were preventable or treatable with appropriate primary care per 1,000 months of enrollment among adults
- 4 Avoidable Hospitalization Rate: Short-Term Complications from Diabetes:** Hospitalizations for short-term complications from diabetes that are potentially avoidable per 100,000 years of enrollment
- 5 Avoidable Hospitalization Rate: Asthma in Younger Adults:** Hospitalizations for asthma in adults age 18 to 39 that are potentially avoidable per 100,000 years of enrollment
- 6 Avoidable Hospitalization Rate: COPD or Asthma in Older Adults:** Hospitalizations for chronic obstructive pulmonary disease or asthma in adults age 40 and over that are potentially avoidable per 100,000 years of enrollment
- 7 Avoidable Hospitalization Rate: Heart Failure:** Hospitalizations for heart failure that are potentially avoidable per 100,000 years of enrollment
- 8 Readmissions to the Hospital within 30 Days:** Percentage of hospital stays among adults with unplanned readmissions to the hospital within 30 days

See **Appendix E** for measure details.

Key Findings:

- *ED Visit Rate and Avoidable ED Visit Rate for children and adults improved more than among CCO members than Washington Medicaid members.*
- *Differences in performance between the highest and lowest-performing CCO were especially large for Avoidable ED Visit Rate (children and adults), and for avoidable hospitalization rates for diabetes and asthma.*

QUALITY: Emergency Department and Hospital Use

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: ED Visit Rate decreased by 4.0 visits per 1,000 member months from 2011 to 2015.

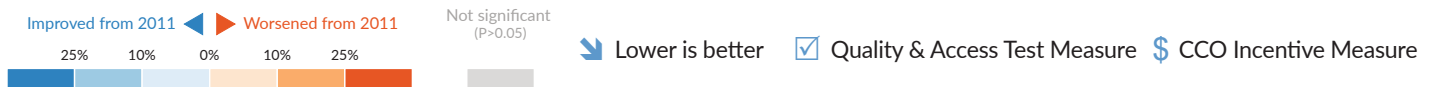
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 ED Visit Rate per 1,000 MM	57.1	-1.8	-4.4	-4.0
2 Avoidable ED Visit Rate per 1,000 MM (Age 1 to 17)	6.2	-0.2	-0.9	-0.3
3 Avoidable ED Visit Rate per 1,000 MM (Age 18 and Over)	12.9	-1.8	-2.4	-2.5
4 Avoidable Hosp. Rate: Complications, Diabetes per 100,000 MY	254.2	56.3	53.6	69.7
5 Avoidable Hosp. Rate: Asthma, Younger Adults per 100,000 MY	90.7	2.3	-0.7	-6.7
6 Avoidable Hosp Rate: COPD/Asthma, Older Adults per 100,000 MY	573.3	-62.4	-17.1	9.2
7 Avoidable Hosp. Rate: Heart Failure per 100,000 MY	390.2	19.9	55.3	111.7
8 Readmissions to the Hospital within 30 Days	13.8%	<0.1	-0.2	0.0

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: ED Visit Rate decreased by 4.5 visits per 1,000 member months from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 ED Visit Rate per 1,000 MM	50.2	-0.3	-4.5	-4.5
2 Avoidable ED Visit Rate per 1,000 MM (Age 1 to 17)	5.1	-0.1	-0.8	-0.4
3 Avoidable ED Visit Rate per 1,000 MM (Age 18 and Over)	11.2	-1.2	-2.1	-2.2
4 Avoidable Hosp. Rate: Complications, Diabetes per 100,000 MY	219.0	115.7	50.3	139.4
5 Avoidable Hosp. Rate: Asthma, Younger Adults per 100,000 MY	125.1	-16.3	-24.2	-19.2
6 Avoidable Hosp Rate: COPD/Asthma, Older Adults per 100,000 MY	495.3	-83.9	-33.6	-22.1
7 Avoidable Hosp. Rate: Heart Failure per 100,000 MY	427.5	145.8	207.9	235.3
8 Readmissions to the Hospital within 30 Days	15.3%	-1.5	-0.9	-0.3



*2015 is defined as Q4 2014 to Q3 2015. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

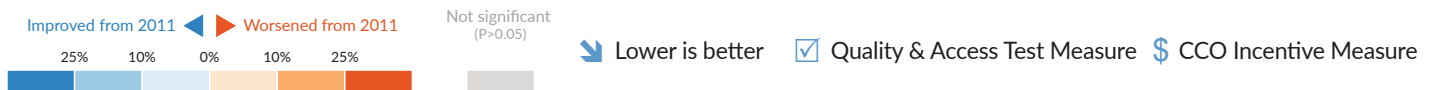
QUALITY: Emergency Department and Hospital Use

2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Change in ED Visit Rate from 2014 to 2015 was not statistically significant.

	2014 Baseline	2014-2015* Change
1 ED Visit Rate per 1,000 MM	42.5	0.2
2 Avoidable ED Visit Rate per 1,000 MM (Age 1 to 17)	NA	NA
3 Avoidable ED Visit Rate per 1,000 MM (Age 18 and Over)	4.6	<0.1
4 Avoidable Hosp. Rate: Complications, Diabetes per 100,000 MY	128.4	10.9
5 Avoidable Hosp. Rate: Asthma, Younger Adults per 100,000 MY	29.2	3.3
6 Avoidable Hosp Rate: COPD/Asthma, Older Adults per 100,000 MY	189.0	20.0
7 Avoidable Hosp. Rate: Heart Failure per 100,000 MY	233.9	49.7
8 Readmissions to the Hospital within 30 Days	10.2%	0.1

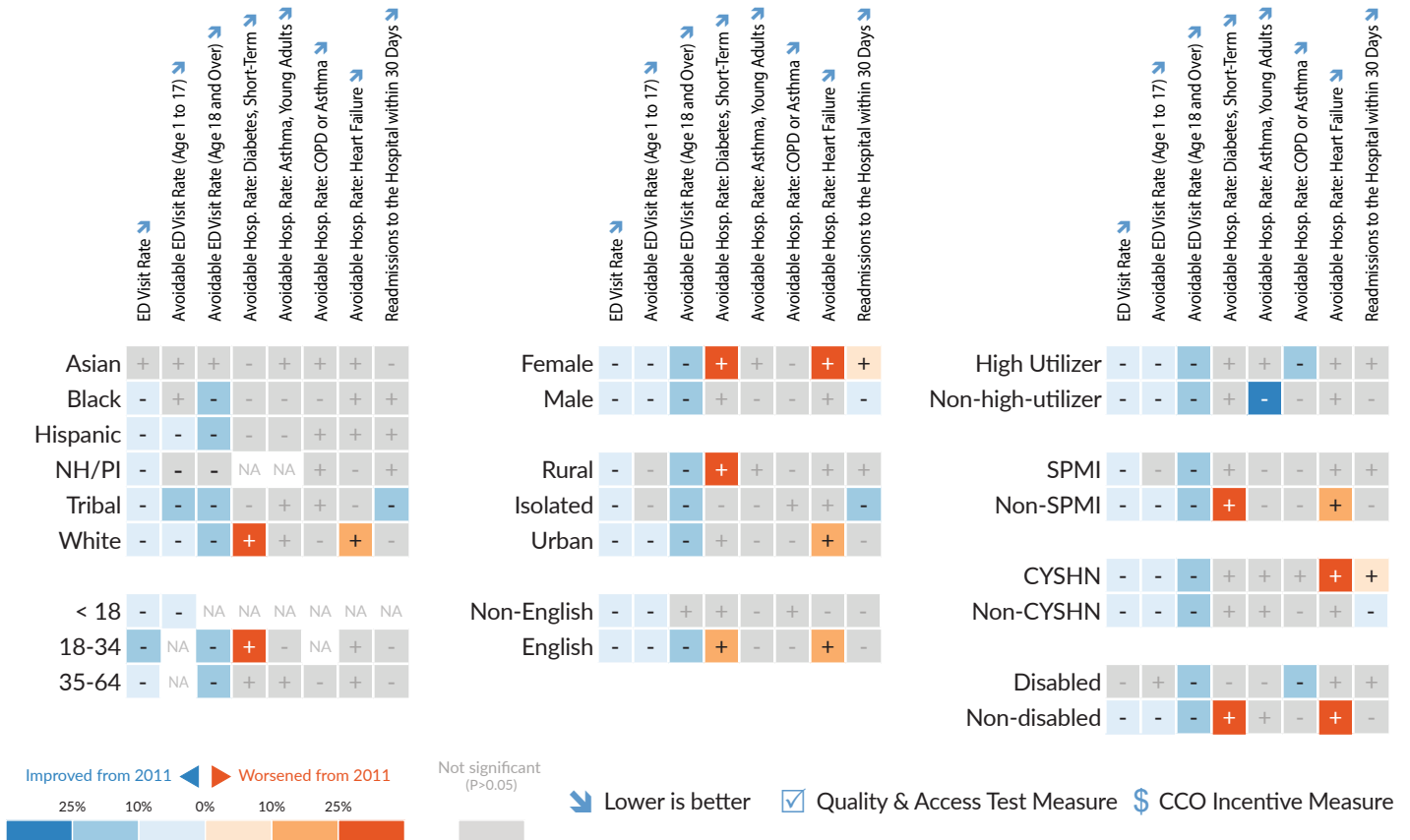


*2015 is defined as Q4 2014 to Q3 2015. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

QUALITY: Emergency Department and Hospital Use

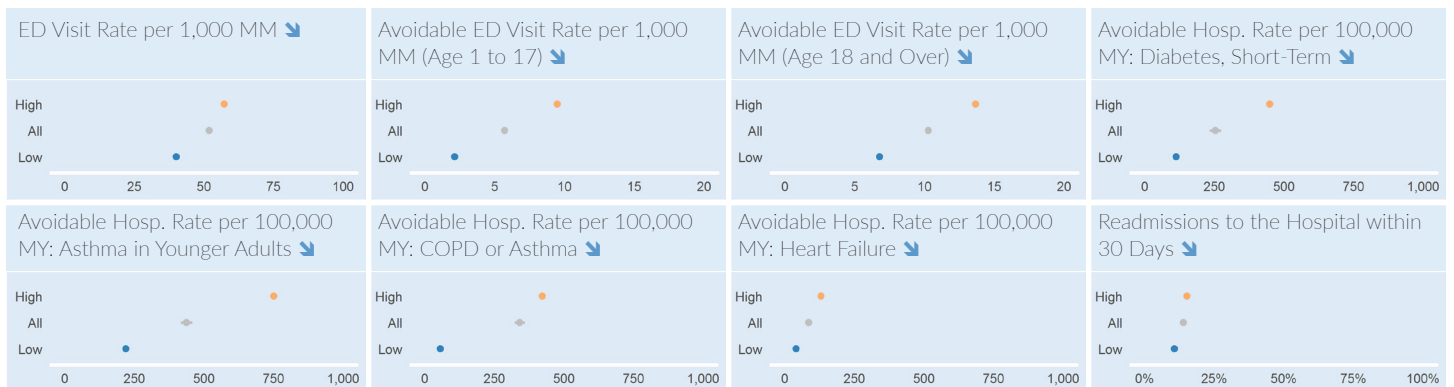
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



*2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

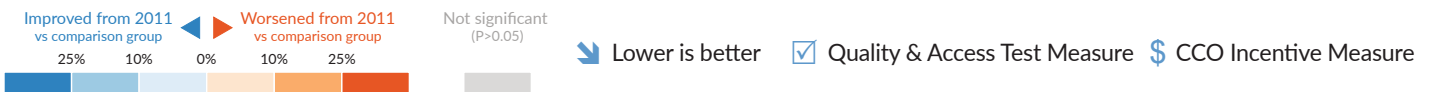
QUALITY: Emergency Department and Hospital Use

Comparison group analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

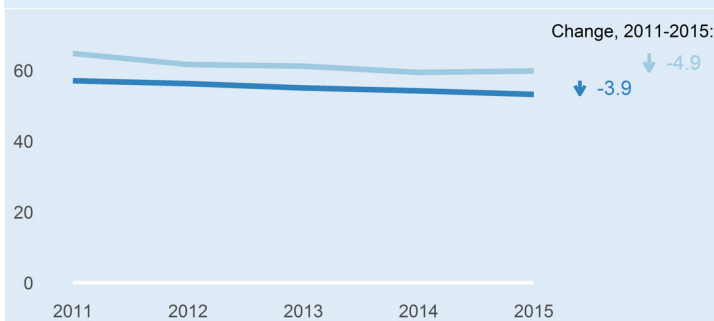
Example: ED Visit Rate decreased by 3.5 visits per 1,000 member months from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 ED Visit Rate per 1,000 MM \$	57.1	1.2	-1.9	-3.5
2 Avoidable ED Visit Rate per 1,000 MM (Age 1 to 17)	6.2	0.2	-0.5	-1.0
3 Avoidable ED Visit Rate per 1,000 MM (Age 18 and Over)	12.9	-0.2	-0.8	-1.1
4 Avoidable Hosp. Rate: Complications, Diabetes per 100,000 MY	254.2	<0.1	<0.1	<0.1
5 Avoidable Hosp. Rate: Asthma, Younger Adults per 100,000 MY	90.7	<0.1	<0.1	<0.1
6 Avoidable Hosp Rate: COPD/Asthma, Older Adults per 100,000 MY	573.3	<0.1	<0.1	<0.1
7 Avoidable Hosp. Rate: Heart Failure per 100,000 MY	390.2	<0.1	<0.1	<0.1
8 Readmissions to the Hospital within 30 Days	13.8%	1.1	1.1	1.4



ED Visit Rate

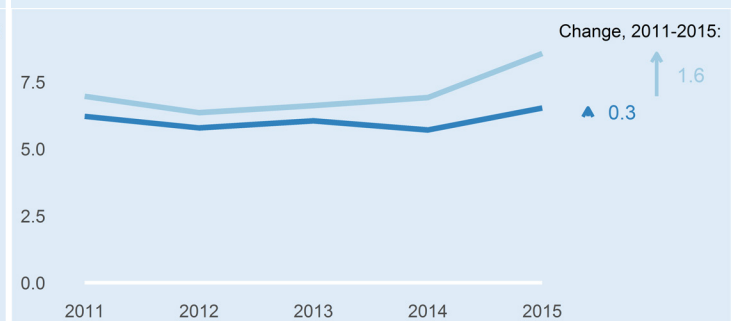
Oregon CCO vs Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-3.9) - (-4.9) = 1

Avoidable ED Visit Rate (Age 1 to 17)

Oregon CCO vs Washington Medicaid members**



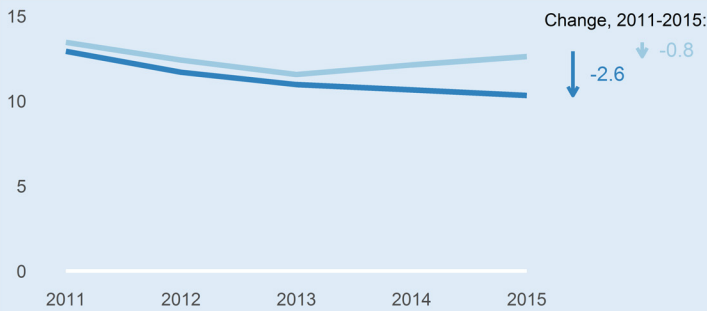
2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (0.3) - (1.6) = -1.3

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

QUALITY: Emergency Department and Hospital Use

Avoidable ED Visit Rate (Age 18 and Over) ↘

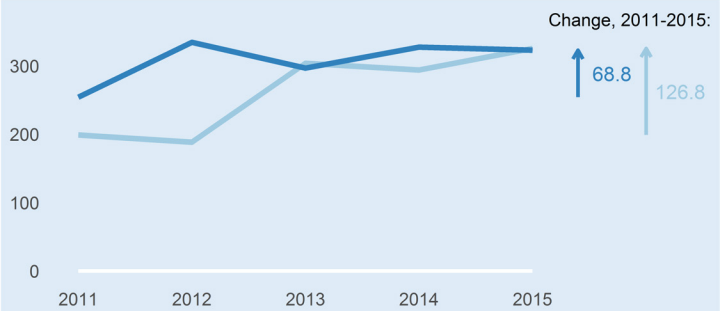
Oregon CCO vs Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-2.6) - (-0.8) = -1.8$

Avoidable Hosp. Rate: Short-Term Complications, Diabetes ↘

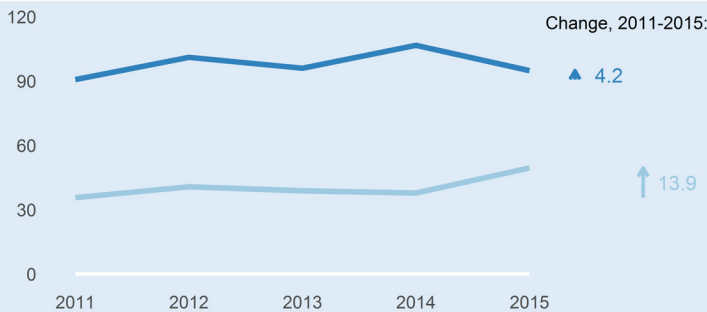
Oregon CCO vs Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(68.8) - (126.8) = -58$

Avoidable Hospitalization Rate: Asthma in Younger Adults ↘

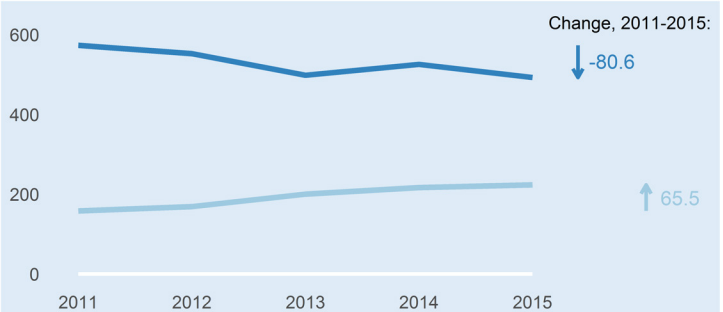
Oregon CCO vs Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(4.2) - (13.9) = -9.7$

Avoidable Hosp. Rate: COPD or Asthma in Older Adults ↘

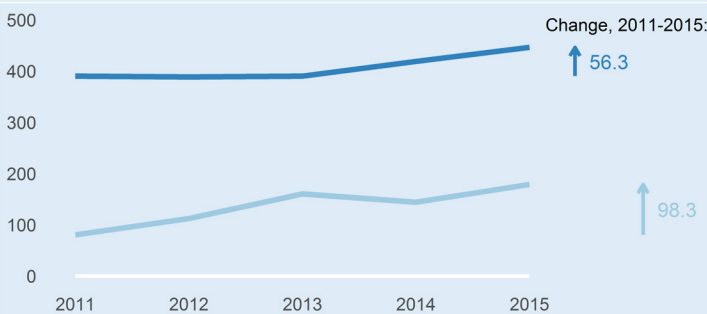
Oregon CCO vs Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-80.6) - (65.5) = -146$

Avoidable Hospitalization Rate: Heart Failure ↘

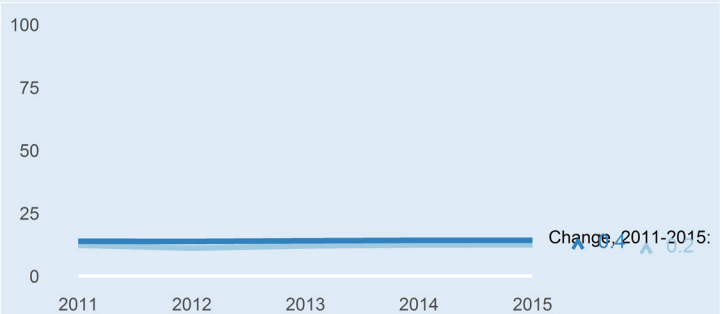
Oregon CCO vs Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(56.3) - (98.3) = -42$

Readmissions to the Hospital within 30 Days ↘

Oregon CCO vs Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(0.4) - (0.2) = 0.1$

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for propensity-score weighted measure rates and regression results.

QUALITY: Avoiding Low-Value Care

This domain reflects Oregon's progress avoiding the use of unnecessary health care services. It includes six measures (because the measures reflect avoidance of unnecessary care, higher rates are better):

- 1 Appropriate Use of Imaging Tests for Low Back Pain:** Percentage of members with a new diagnosis of low back pain who did not receive an imaging study within 28 days
- 2 Avoidance of Imaging Tests for Headache:** Percentage of members with a diagnosis of uncomplicated headache who did not receive a CT or MRI
- 3 Avoidance of Antibiotics for Adults with Acute Bronchitis:** Percentage of members with acute bronchitis who were not dispensed an antibiotic
- 4 Avoidance of CT Scan without Ultrasound for Appendicitis:** Percentage of children with appendicitis who had a CT scan, but not an ultrasound, prior to the diagnosis
- 5 Avoidance of Unnecessary Cervical Cancer Screening:** Percentage of females age 16-20 who were not screened unnecessarily for cervical cancer
- 6 Appropriate Testing for Children with Sore Throat:** Children with a sore throat who were dispensed an antibiotic and who received a strep test for the episode

See **Appendix E** for measure details.

Key Findings:

- *Among CCO members, 5 of 6 measures improved compared to Washington Medicaid members, with two measures improving over 25 percent in 2014 and 2015.*
- *Among FFS members, 3 of 6 measures improved from relative to 2011, with one measure improving over 25 percent relative to the 2011 rate.*
- *Differences in performance between the highest and lowest-performing CCOs were especially large for Avoidance of CT Scan without Ultrasound for Appendicitis, Avoidance of Antibiotics for Adults with Acute Bronchitis, and Appropriate Testing for Children with Sore Throat.*

QUALITY: Avoiding Low-Value Care

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in Appropriate Use of Imaging Tests for Low Back Pain from 2011 to 2015 was not statistically significant.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Appropriate Use of Imaging Tests for Low Back Pain	79.6%	0.4	-0.1	0.8
2 Avoidance of Imaging Tests for Headache	16.3%	-0.5	1.3	1.9
3 Avoidance of Antibiotics for Adults with Acute Bronchitis	22.5%	9.4	12.4	16.4
4 Avoidance of CT Scan without Ultrasound for Appendicitis	26.5%	-5.4	-5.2	-7.8
5 Avoidance of Unnecessary Cervical Cancer Screening in Adolescents	90.4%	6.1	7.6	8.0
6 Appropriate Testing for Children with Sore Throat <input checked="" type="checkbox"/>	61.6%	1.3	5.0	8.5

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 controlling for member characteristics

Example: Change in Appropriate Use of Imaging Tests for Low Back Pain from 2011 to 2015 was not statistically significant.

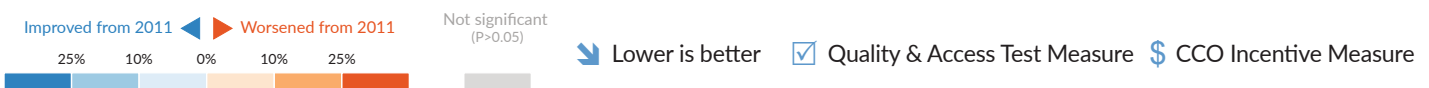
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Appropriate Use of Imaging Tests for Low Back Pain	80.8%	3.8	1.3	0.8
2 Avoidance of Imaging Tests for Headache	14.2%	0.4	0.9	2.6
3 Avoidance of Antibiotics for Adults with Acute Bronchitis	23.5%	10.4	11.7	12.2
4 Avoidance of CT Scan without Ultrasound for Appendicitis	34.0%	-10.9	-5.0	-13.8
5 Avoidance of Unnecessary Cervical Cancer Screening in Adolescents	92.9%	4.9	6.1	6.3
6 Appropriate Testing for Children with Sore Throat <input checked="" type="checkbox"/>	56.7%	-5.8	1.7	-4.0

2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015 controlling for member characteristics

Example: Change in Appropriate Use of Imaging Tests for Low Back Pain from 2014 to 2015 was not statistically significant.

	2014 Baseline	2014-2015* Change
1 Appropriate Use of Imaging Tests for Low Back Pain	77.3%	1.8
2 Avoidance of Imaging Tests for Headache	24.4%	0.3
3 Avoidance of Antibiotics for Adults with Acute Bronchitis	25.0%	4.1
4 Avoidance of CT Scan without Ultrasound for Appendicitis [†]	NA	NA
5 Avoidance of Unnecessary Cervical Cancer Screening in Adolescents	98.0%	0.1
6 Appropriate Testing for Children with Sore Throat [†] <input checked="" type="checkbox"/>	NA	NA

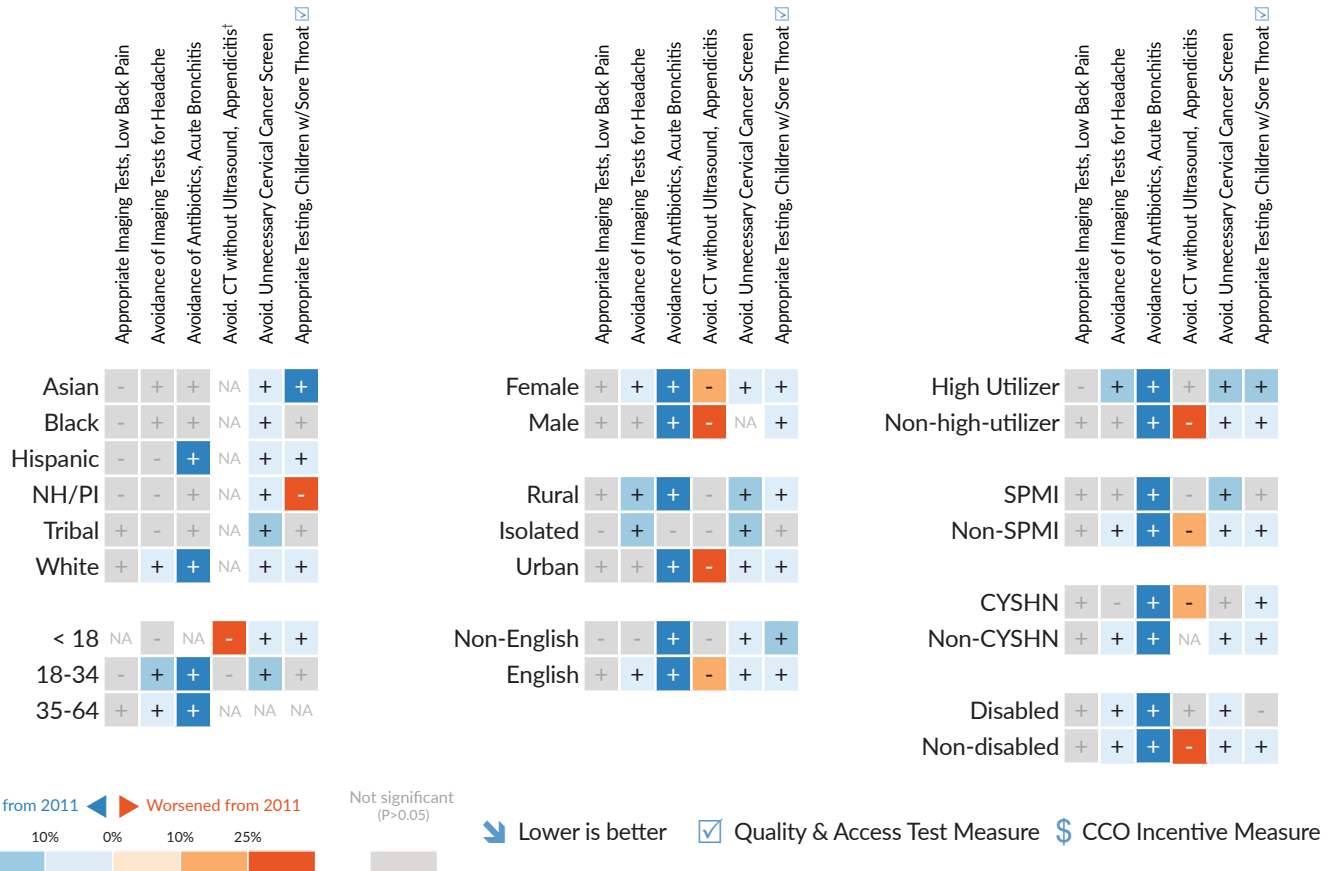


*2015 is defined as Q4 2014 to Q3 2015. [†]We could not analyze 2014-2015 change for this measure because the measure requires data prior to the measurement year to calculate, and these data were unavailable for expansion members for the 2014 (baseline) measurement year. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

QUALITY: Avoiding Low-Value Care

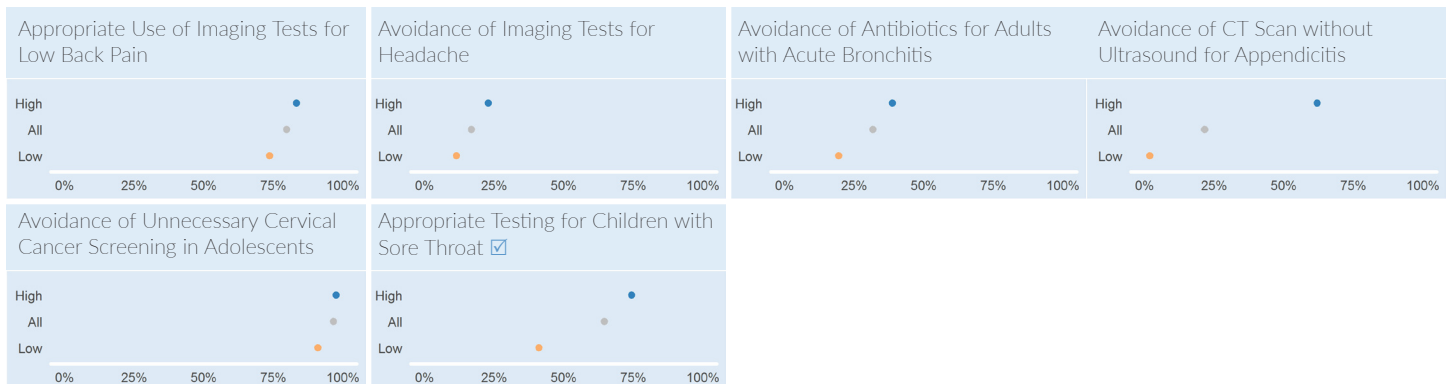
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



Notes: *2015 is defined as Q4 2014 to Q3 2015. [†]The number of people who met the inclusion criteria for this measure was too small to report results by race/ethnicity. See [Appendix D](#) for measure details, [Appendix E](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

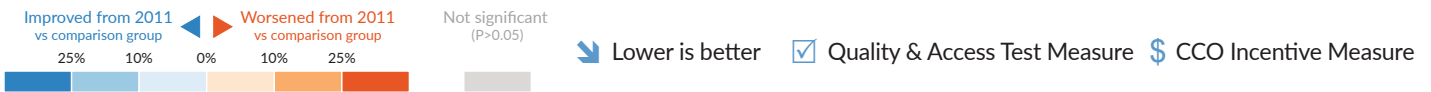
QUALITY: Avoiding Low-Value Care

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

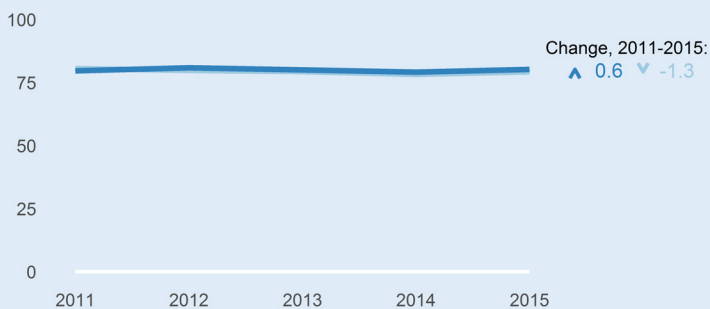
Example: Appropriate Use of Imaging Tests for Low Back Pain increased by 2.6 percentage points from 2011 to 2015 relative to Washington Medicaid members.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 Appropriate Use of Imaging Tests for Low Back Pain	79.6%	1.5	2.1	2.6
2 Avoidance of Imaging Tests for Headache	16.3%	0.9	2.5	3.4
3 Avoidance of Antibiotics for Adults with Acute Bronchitis	22.5%	-6.3	12.4	14.0
4 Avoidance of CT Scan without Ultrasound for Appendicitis	26.5%	2.3	7.1	7.3
5 Avoidance of Unnecessary Cervical Cancer Screening	90.4%	0.3	0.7	0.5
6 Appropriate Testing for Children with Sore Throat <input checked="" type="checkbox"/>	61.6%	-4.0	-0.4	1.9



Appropriate Use of Imaging Tests for Low Back Pain

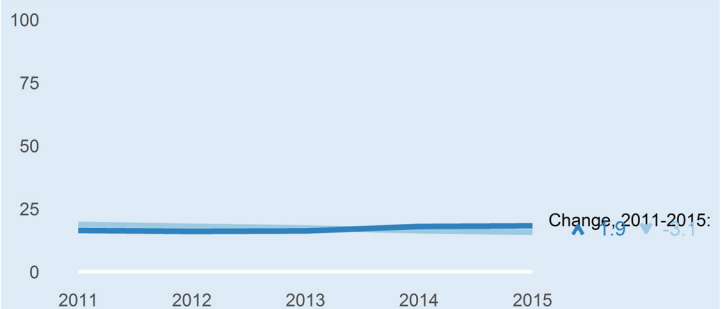
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(0.6) - (-1.3) = 1.8$

Avoidance of Imaging Tests for Headache

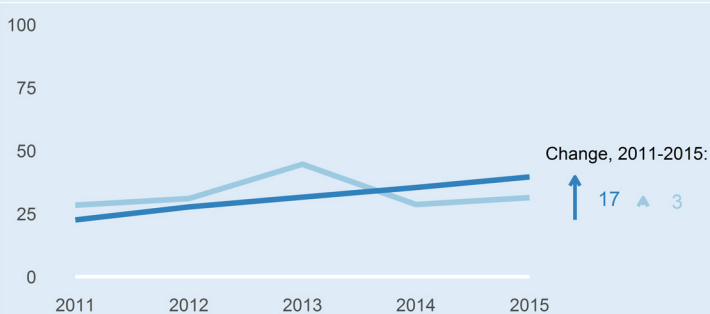
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(1.9) - (-3.1) = 5$

Avoidance of Antibiotics for Adults with Acute Bronchitis

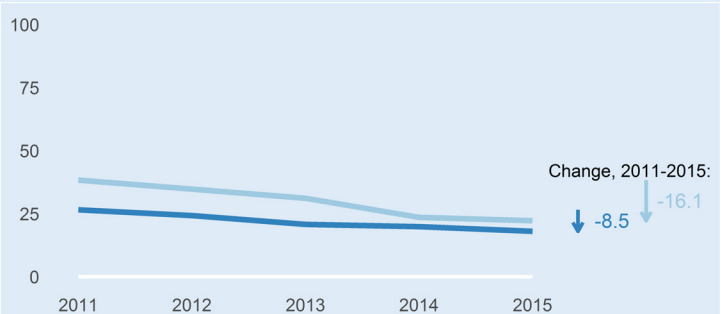
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(17) - (3) = 14$

Avoidance of CT Scan without Ultrasound for Appendicitis

Oregon CCO members and Washington Medicaid members*†



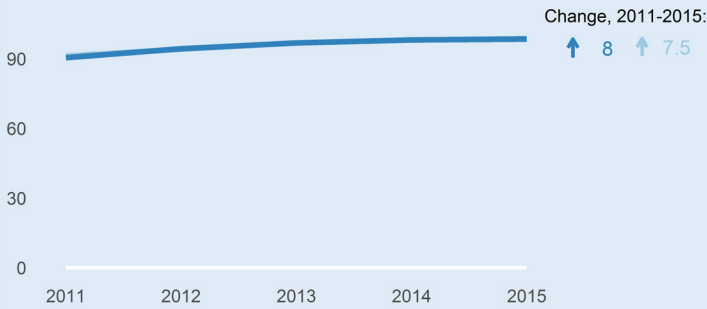
2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-8.5) - (-16.1) = 7.6$

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for propensity-score weighted measure rates and regression results.

QUALITY: Avoiding Low-Value Care

Avoidance of Unnecessary Cervical Cancer Screening

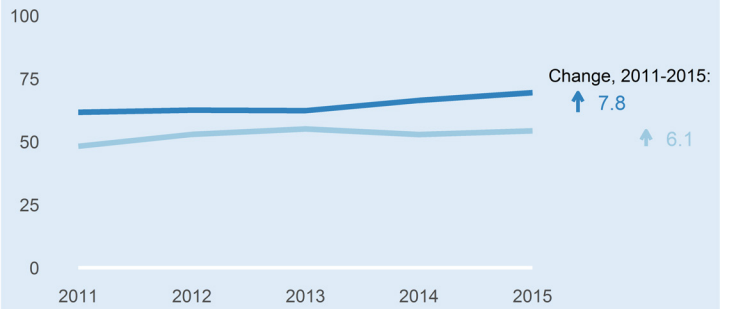
Oregon CCO members and Washington Medicaid members**†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(8) - (7.5) = 0.5$

Appropriate Testing for Children with Sore Throat

Oregon CCO members and Washington Medicaid members**†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(7.8) - (6.1) = 1.6$

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. See *Appendix E* for measure details, *Appendix F* for details on regression models, and *Data Appendix* for propensity-score weighted measure rates and regression results.

EXPERIENCE OF CARE

This domain reflects Oregon's progress improving members' experience of care. It includes five measures based on questions from the CAHPS survey:

- 1 How Members Rated their Health Care:** Percentage of members who rated their health care an 8, 9, or 10 on a 10-point scale
- 2 How Members Rated their Doctor:** Percentage of members who rated their personal doctor an 8, 9, or 10 on a 10-point scale
- 3 How Well Doctors Communicate:** Percentage of members who said their doctor explained things in an easy-to-understand way, listened to them carefully, showed respect for what they had to say, and spent enough time with them
- 4 How Members Rated their Specialist:** Percentage of members who rated the specialist they saw most often an 8, 9, or 10 on a 10-point scale
- 5 How Members Rated their Health Plan:** Percentage of members who said health plan customer service gave them the information or help they needed and treated them with courtesy and respect

We were unable to calculate these measures for Medicaid expansion members because CAHPS survey data exclude information needed to identify expansion members. Rates for CCO and FFS members may include data from expansion members. In addition, we were unable to calculate the measures for Washington Medicaid members because data received from Washington's Medicaid program excluded CAHPS data.

See **Appendix E** for measure details.

Key Findings:

- *Among CCO members, 4 of 5 measures improved in all years from 2013 to 2015. All measures improved among white, female, and age 35-64 subgroups.*
- *In contrast, none of the measures changed significantly among FFS members from 2013 to 2015.*

EXPERIENCE OF CARE

Pre-post analysis for CCO members*

Change in measure rates from 2011 controlling for member characteristics

Example: How Members Rated their Health Care increased by 4.3 percentage points from 2011 to 2015.

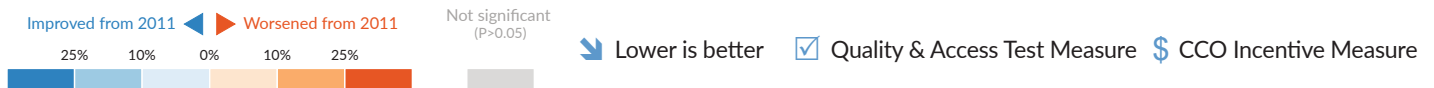
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 How Members Rated their Health Care	61.5%	4.9	3.5	4.3
2 How Members Rated their Doctor	72.6%	1.8	1.9	1.8
3 How Well Doctors Communicate	85.8%	2.3	3.7	3.6
4 How Members Rated their Specialist	72.3%	5.7	3.6	4.8
5 How Members Rated their Health Plan <input checked="" type="checkbox"/>	75.1%	6.6	10.1	9.7

Pre-post analysis for Medicaid fee-for-service members*

Change in measure rates from 2011 controlling for member characteristics

Example: Change in How Members Rated their Health Care from 2011 to 2015 was not statistically significant.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 How Members Rated their Health Care	62.0%	2.8	-2.1	4.5
2 How Members Rated their Doctor	76.2%	2.8	1.8	-6.1
3 How Well Doctors Communicate	88.1%	5.3	-1.8	-0.1
4 How Members Rated their Specialist	67.0%	4.5	6.5	-0.1
5 How Members Rated their Health Plan <input checked="" type="checkbox"/>	75.2%	0.2	<0.1	0.2

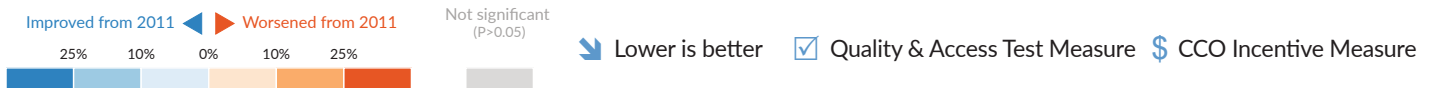
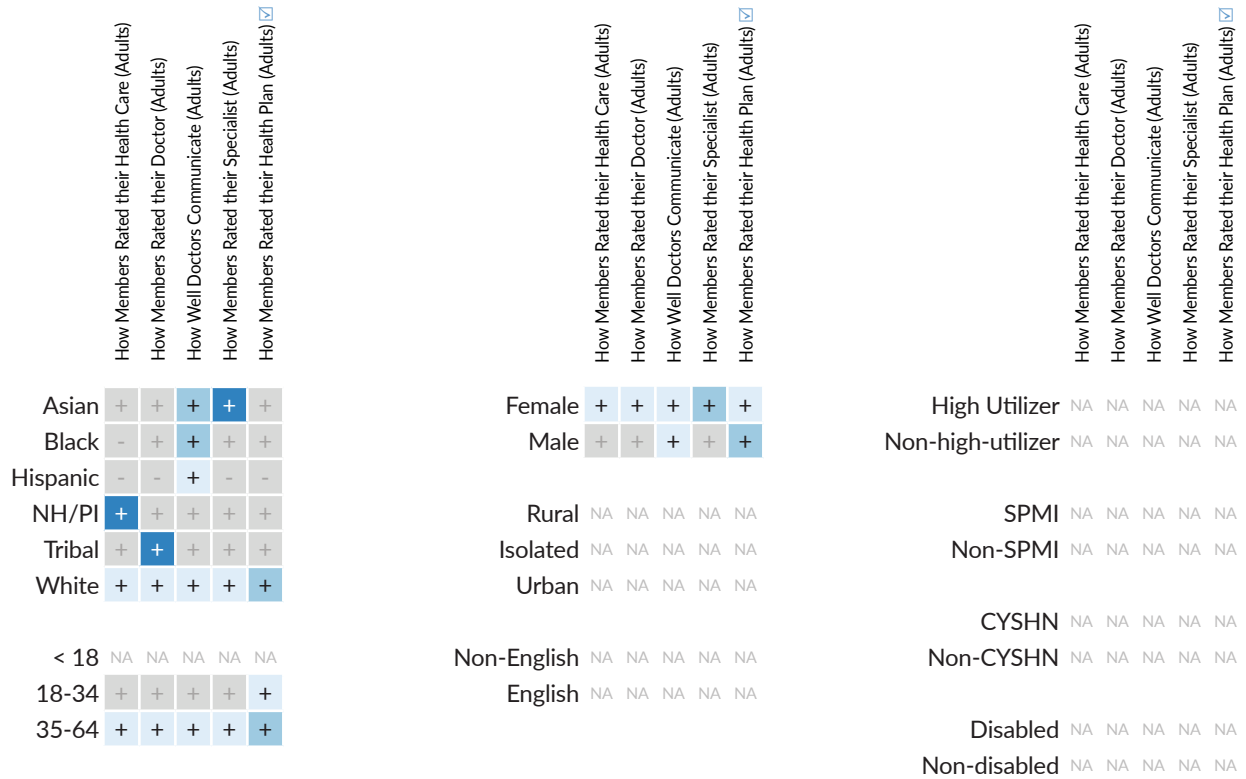


*All measures are based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members. Rates for CCO and FFS members may include data from expansion members. See Appendix E for measure details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

EXPERIENCE OF CARE

Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



*All measures are based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members and members of some subgroups. Rates for CCO members may include data from expansion members. †CAHPS survey data excludes information needed to identify Indian tribe members. As a result, we used self-reported American Indian/Alaska Native status to report results for CAHPS-based measures for this subgroup. Members who reported AI/AN status may differ from those with documented tribal status. See *Appendix E* for measure details, *Appendix F* for details on regression models, and *Data Appendix* for unadjusted measure rates and regression results.

HEALTH STATUS

This domain reflects Oregon's progress improving members' health status. It includes one measure based on the CAHPS survey:

1 Member Rating of Overall Health: Percentage of members who rated their overall health as good, very good, or excellent

CAHPS survey data exclude information needed to identify Medicaid expansion members. As a result, we were unable to calculate this measure for expansion members, and rates for CCO and FFS members may include data from expansion members. In addition, CAHPS survey data were unavailable for Washington Medicaid members. As a result, we were unable to include this measure in comparison group analysis.

See **Appendix E** for measure details.

Key Findings:

- *Self-reported health status increased among CCO and FFS members from 2011 to each year in the period from 2013 to 2015. Among FFS members, it increased more than 25 percent from the 2011 rate in 2 of the 3 years.*

HEALTH STATUS

Pre-post analysis, Member Rating of Overall Health*

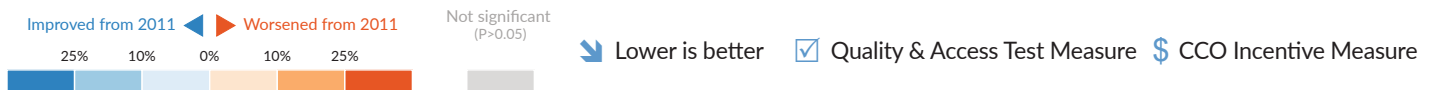
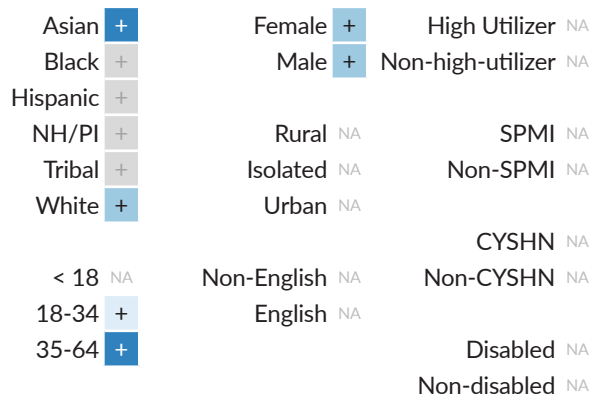
Change in measure rate from 2011 controlling for member characteristics

Example: Member Rating of Overall Health increased by 12.7 percentage points among CCO members from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015 Change
1 CCO members	59.3%	6.8	11.7	12.7
2 Medicaid fee-for-service members	53.7%	14.0	13.1	19.0

Subgroup analysis for CCO members*

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics



*Measure is based on CAHPS survey data, which exclude information needed to identify Medicaid expansion members and members of some subgroups. As a result, we were unable to calculate this measure for expansion members and rates for CCO and FFS members may include data from expansion members. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

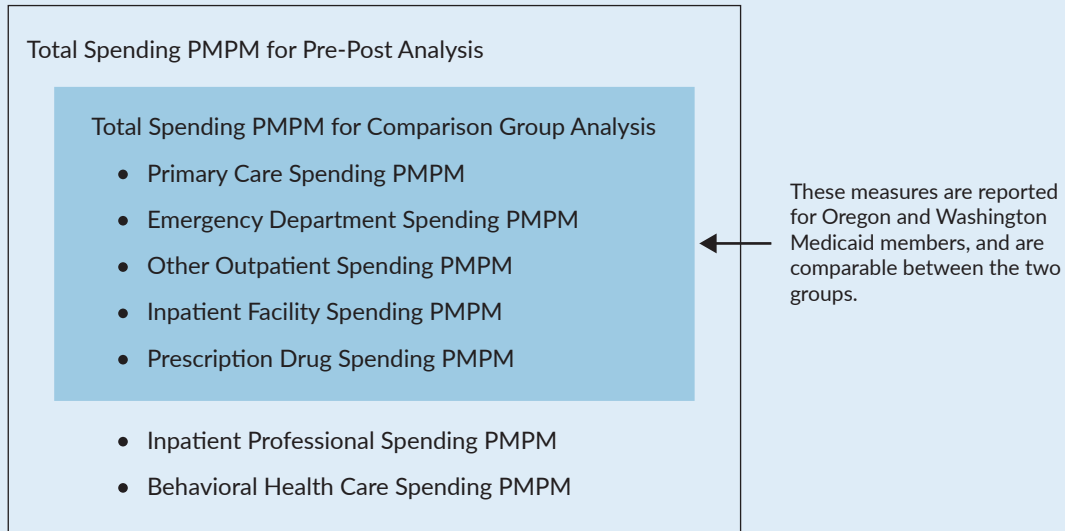
SPENDING

This domain reflects Oregon's progress optimizing health care spending. It includes eight measures. Most measures were reported for Oregon and Washington Medicaid members, and could be compared between the two states. Due to data limitations, some measures were reported for Oregon Medicaid members only.

- 1 Primary Care Spending Per Member, Per Month (PMPM):** Total spending on primary care services common to Oregon and Washington Medicaid, excluding behavioral health services, divided by months of enrollment
- 2 Emergency Department Spending Per Member, Per Month (PMPM):** Total spending on emergency department services common to Oregon and Washington Medicaid, excluding behavioral health services, divided by months of enrollment (lower is better)
- 3 Other Outpatient Spending Per Member, Per Month (PMPM):** Total spending on outpatient services common to Oregon and Washington Medicaid, excluding primary care, emergency department, and behavioral health services, divided by months of enrollment (lower is better)
- 4 Inpatient Facility Spending Per Member, Per Month (PMPM):** Total spending on the facility component of inpatient services, excluding behavioral health services, divided by months of enrollment (lower is better)
- 5 Inpatient Professional Spending Per Member, Per Month (PMPM), Oregon only:** Total spending on the professional component of inpatient services, excluding behavioral health services, divided by months of enrollment (lower is better). This measure was not reported for Washington Medicaid members because validation checks suggested we did not receive complete data on inpatient professional claims from Washington's Medicaid program.
- 6 Prescription Drug Spending Per Member, Per Month (PMPM):** Total spending on prescription drugs, excluding mental health drugs "carved out" of CCO coverage and paid for by Oregon's Medicaid fee-for-service program, divided by months of enrollment
- 7 Behavioral Health Care Spending Per Member, Per Month (PMPM), Oregon only:** Total spending on behavioral health care services. This measure was not reported for Washington Medicaid members because data received from Washington's Medicaid program excluded behavioral health data.
- 8 Total Spending Per Member, Per Month (PMPM):** We calculated two versions of this measure:
 - » **Total Spending PMPM for Pre-Post Analysis:** Sum of all spending categories above. This measure provides a more complete picture of overall spending in Oregon but is not comparable between Oregon and Washington.
 - » **Total Spending PMPM for Comparison Group Analysis:** Sum of all spending categories except Inpatient Facility Spending and Behavioral Health Care Spending. This measure of total spending leaves out some types of spending that could not be calculated reliably for Washington Medicaid members, but is comparable between Oregon and Washington.

Figure 4.10, page 110 shows the relationship among the spending measures.

Figure 4.10. Spending measures



The following information should be considered when interpreting spending measures in this report:

- **The measures were calculated by “repricing” medical services using prices paid by Oregon’s Medicaid fee-for-service program.** Repricing helps account for differences in prices paid for services by different CCOs, and differences in prices paid by Oregon’s and Washington’s Medicaid programs. In addition, it provides spending amounts for services covered under capitation payment systems, in which providers receive a fixed payment per person (rather than a payment for each service) to provide care. However, repricing means that results for spending measures represent changes in spending that would have occurred *if all services were priced the same way*, rather than changes in spending that occurred with *actual prices*.
- **The measures exclude some types of Medicaid spending.** These include spending on some types of health care services paid for through claims, such as durable medical equipment and medical transportation; health-related services, such as individual and community-level flexible services paid for outside the claims system; incentive payments from CCOs to providers for achieving quality goals; and other types of non-claims-based spending.
- **Spending reported for the evaluation is defined differently than spending used for the waiver’s Quality and Access Test.** Oregon’s Medicaid waiver defines specific types of spending that may be considered when determining whether the State achieved the waiver’s goal of limiting spending growth. This definition of spending is different than the definitions used to calculate the evaluation spending measures, meaning the spending measures cannot be used to determine whether Oregon met the Quality and Access Test.

See **Appendix E, Section 5** for details on spending measures.

SPENDING

Key Findings:

- *Total Spending PMPM decreased moderately among CCO members and Washington Medicaid members, but decreased more among CCO members in 2014 and 2015.*
- *Inpatient Facility Spending PMPM decreased among CCO members and Washington Medicaid members, but decreased much more among CCO members in 2014 and 2015.*
- *Prescription Drug Spending PMPM increased among CCO members and Washington Medicaid members, with a much larger increase among CCO members in 2013.*
- *Predicted prescription drug spending for the lowest-performing CCO was more than twice that for the highest CCO (lower spending is better for this measure).*

SPENDING

Pre-post analysis for CCO members

Change in measure rates from 2011 controlling for member characteristics

Example: Primary Care Spending decreased by \$2.26 per member, per month from 2011 to 2015.

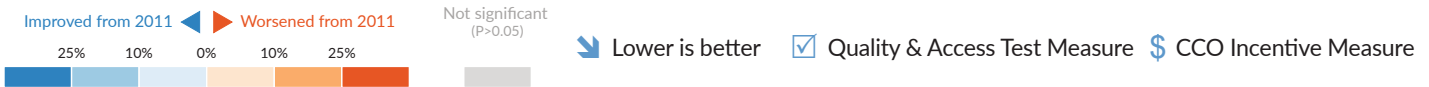
	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Primary Care Spending PMPM	\$17.14	-\$0.59	-\$2.24	-\$2.26
2 Emergency Department Spending PMPM ↓	\$6.66	-\$0.20	-\$0.41	-\$0.52
3 Other Outpatient Spending PMPM ↓	\$23.98	\$0.57	-\$1.50	-\$1.96
4 Inpatient Facility Spending, PMPM ↓	\$56.33	-\$0.20	-\$5.05	-\$7.06
5 Inpatient Professional Spending, PMPM ↓	\$9.48	-\$0.76	-\$2.10	-\$2.65
6 Prescription Drug Spending PMPM ↓	\$27.96	\$3.97	\$9.30	\$13.71
7 Behavioral Health Care Spending PMPM	\$22.14	\$4.91	\$3.65	\$2.60
8 Total Spending PMPM for Pre-Post Analysis† ↓	\$163.68	\$7.69	\$1.66	\$1.87

Pre-post analysis for Medicaid fee-for-service members

Change in measure rates from 2011 to each post-waiver year, controlling for other factors

Example: Primary Care Spending decreased by \$4.30 per member, per month from 2011 to 2015.

	2011 Baseline	2011-2013 Change	2011-2014 Change	2011-2015* Change
1 Primary Care Spending PMPM	\$14.24	-\$1.34	-\$3.50	-\$4.30
2 Emergency Department Spending PMPM ↓	\$5.58	-\$0.17	-\$0.57	-\$0.67
3 Other Outpatient Spending PMPM ↓	\$21.04	-\$0.63	-\$4.37	-\$6.07
4 Inpatient Facility Spending, PMPM ↓	\$64.42	\$5.13	-\$4.61	-\$7.85
5 Inpatient Professional Spending, PMPM ↓	\$10.17	-\$0.29	-\$1.96	-\$2.60
6 Prescription Drug Spending PMPM ↓	\$32.22	\$3.03	\$4.15	\$5.78
7 Behavioral Health Care Spending PMPM	\$26.22	\$2.78	\$2.15	\$1.66
8 Total Spending PMPM for Pre-Post Analysis† ↓	\$173.89	\$8.52	-\$8.72	-\$14.07



*2015 is defined as Q4 2014 to Q3 2015. †Includes Inpatient Professional Spending and Behavioral Health Care Spending, and differs from Total Spending measure for comparison group analysis. See Appendix E for measures details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

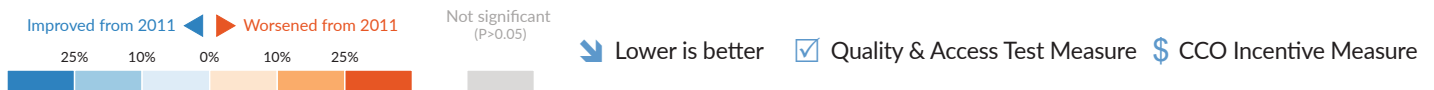
SPENDING

2014-2015 change for Medicaid expansion members

Change in measure rates from 2014 to 2015, controlling for other factors

Example: Change in Primary Care Spending per member, per month from 2014 to 2015 was not statistically significant.

	2014 Baseline	2014-2015* Change
1 Primary Care Spending PMPM	\$13.49	-\$0.02
2 Emergency Department Spending PMPM ↘	\$5.29	-\$0.04
3 Other Outpatient Spending PMPM ↘	\$29.56	-\$0.03
4 Inpatient Facility Spending, PMPM ↘	\$40.34	\$2.45
5 Inpatient Professional Spending, PMPM ↘	\$5.35	\$0.72
6 Prescription Drug Spending PMPM ↘	\$33.51	\$14.54
7 Behavioral Health Care Spending PMPM	\$28.34	-\$2.84
8 Total Spending PMPM for Pre-Post Analysis† ↘	\$155.86	\$14.77

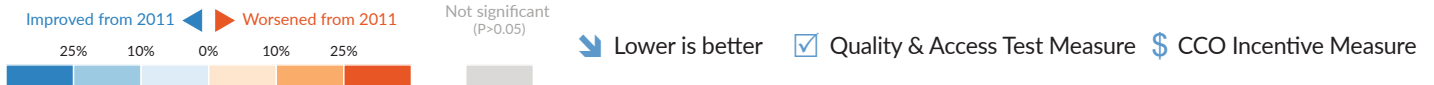
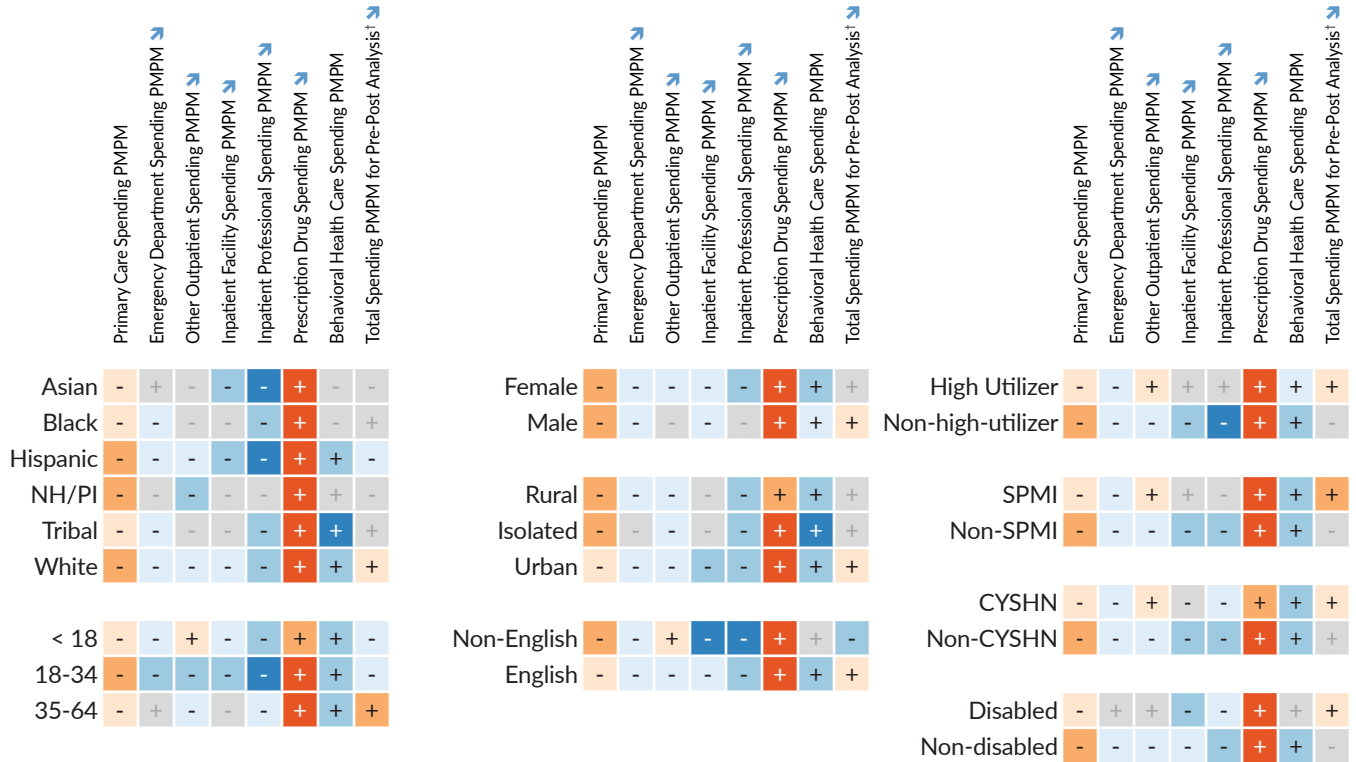


*2015 is defined as Q4 2014 to Q3 2015. †Includes Inpatient Professional Spending and Behavioral Health Care Spending, and differs from Total Spending measure for comparison group analysis. See [Appendix E](#) for measures details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for unadjusted measure rates and regression results.

SPENDING

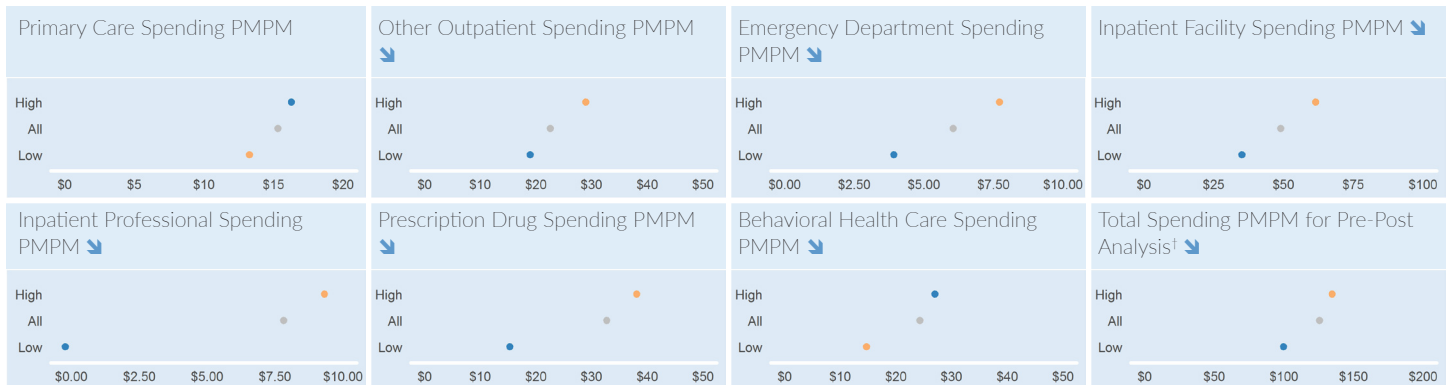
Subgroup analysis for CCO members

Change in measure rates from 2011 to 2013-2015 controlling for member characteristics*



Highest and lowest CCO

Predicted measure rates for all CCO members in 2013-2015 if enrolled in the highest and lowest-performing CCO on each measure*



*2015 is defined as Q4 2014 to Q3 2015. †Includes Inpatient Professional Spending and Behavioral Health Care Spending, and differs from Total Spending measure for comparison group analysis. See Appendix E for measures details, Appendix F for details on regression models, and Data Appendix for unadjusted measure rates and regression results.

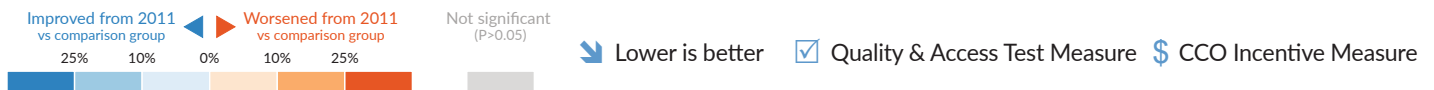
SPENDING

Comparison group analysis for CCO members

Change in measure rates from 2011 compared to Washington Medicaid members

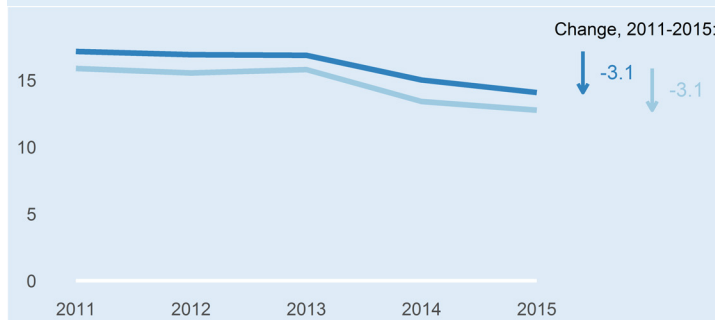
Example: Primary Care Spending per member, per month decreased by \$0.80 from 2011 to 2015.

	2011* Baseline	2011-2013 Change	2011-2014 Change	2011-2015† Change
1 Primary Care Spending PMPM	\$17.14	-\$0.30	-\$0.70	-\$0.80
2 Emergency Department Spending PMPM ↘	\$6.66	\$0.36	\$0.31	\$0.24
3 Other Outpatient Spending PMPM ↘	\$23.98	-\$1.86	\$0.50	\$2.18
4 Inpatient Facility Spending ↘	\$56.33	-\$7.50	-\$16.60	-\$16.95
5 Inpatient Professional Spending‡ ↘	NA	NA	NA	NA
6 Prescription Drug Spending PMPM ↘	\$27.96	\$11.94	\$1.36	\$2.25
7 Behavioral Health Spending PMPM§	NA	NA	NA	NA
8 Total Spending PMPM for Comparison Group Analysis¶ ↘	\$132.07	\$3.72	-\$14.73	-\$13.24



Primary Care Spending PMPM

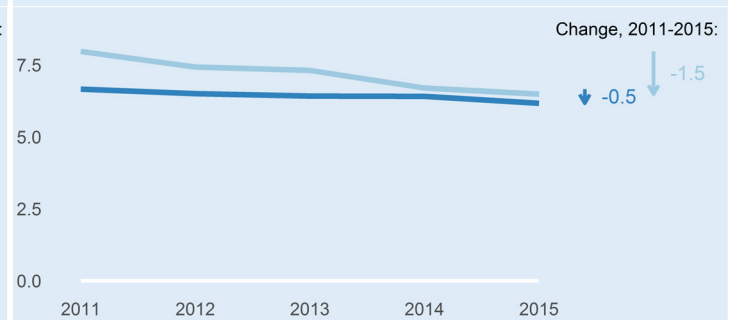
Oregon CCO members and Washington Medicaid members*†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-3.1) - (-3.1) = 0

Emergency Department Spending PMPM ↘

Oregon CCO members and Washington Medicaid members*†



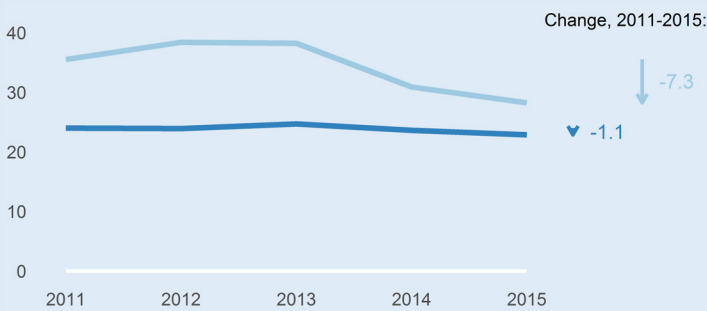
2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = (-0.5) - (-1.5) = 1

Notes: *Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. ‡ Not reported for Washington Medicaid members because validation checks suggested we did not receive complete data on inpatient professional claims from Washington's Medicaid program. § Not reported for Washington Medicaid members because data received from Washington's Medicaid program excluded behavioral health data. ¶ Excludes Inpatient Professional Spending and Behavioral Health Care Spending, and differs from Total Spending measure for pre-post analysis. See **Appendix E** for measure details, **Appendix F** for details on regression models, and **Data Appendix** for propensity-score weighted measure rates and regression results.

SPENDING

Other Outpatient Spending PMPM

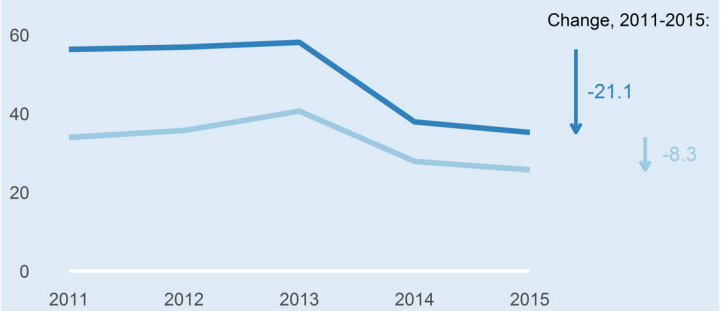
Oregon CCO members and Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-1.1) - (-7.3) = 6.2$

Inpatient Facility Spending PMPM

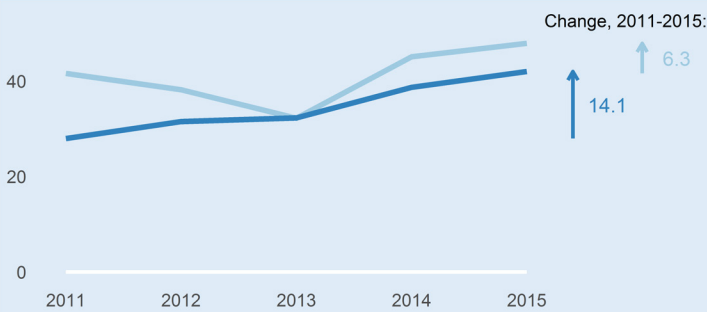
Oregon CCO members and Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-21.1) - (-8.3) = -12.8$

Prescription Drug Spending PMPM

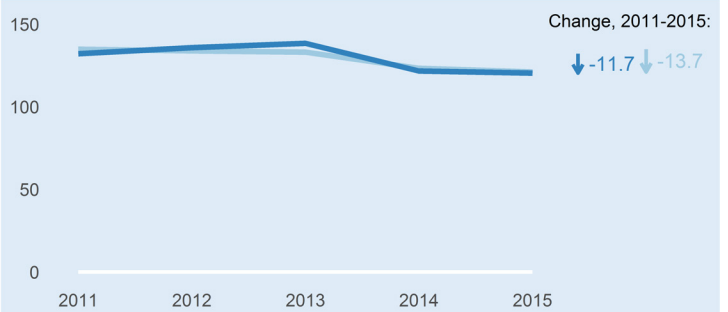
Oregon CCO members and Washington Medicaid members**



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(14.1) - (6.3) = 7.8$

Total Spending PMPM for Comparison Group Analysis

Oregon CCO members and Washington Medicaid members**†



2015 difference-in-differences: Change for OR Medicaid - Change for WA Medicaid = $(-11.7) - (-13.7) = 2$

 Lower is better Quality & Access Test Measure  CCO Incentive Measure

*Propensity-score weighted outcomes, which may differ from outcomes used for pre-post and subgroup analysis. †2015 is defined as Q4 2014 to Q3 2015. ‡ Excludes Inpatient Professional Spending and Behavioral Health Care Spending, and differs from Total Spending measure for pre-post analysis. See [Appendix E](#) for measure details, [Appendix F](#) for details on regression models, and [Data Appendix](#) for propensity-score weighted measure rates and regression results.

ACCESS AND QUALITY: Dual-Eligible Members

Dual-eligible members receive health care coverage through the federal Medicare and state Medicaid programs. Medicare is the primary payer for dual-eligibles, covering most major health care services, while Medicaid is the secondary payer, covering services not covered by Medicare. Dual-eligibles can receive Medicare coverage through the federal Medicare fee-for-service (FFS) program or a Medicare Advantage managed care plan from a commercial insurance company, and Medicaid coverage through a state Medicaid FFS program or a Medicaid managed care organization (MCO).

In a 2016 report for OHA, CHSE estimated the change in specific access and quality measures for dual-eligibles before and after execution of the waiver.²⁷ This section updates the earlier results, presenting changes in access and quality measures from 2011 to 2013, 2014, and 2015. **Data Appendix Table 6E** presents changes for dual-eligible members with different combinations of FFS and managed care coverage, relative to members with both Medicare and Medicaid coverage through FFS programs.

Dual-eligible members may receive coverage through *aligned plans*, where a single health insurance company provides both Medicare and Medicaid plans. Companies offering aligned plans may be able to improve outcomes by coordinating services paid for by Medicare and Medicaid. In addition to presenting changes in outcomes for all dual-eligible members, this section presents changes for members whose CCOs provide their Medicare Advantage plans, compared with changes for members whose CCOs do not provide their Medicare Advantage plans (see **Data Appendix Table 6E** for details).

We used data from OHA's All-Payer All-Claims Reporting Program (APAC) to evaluate specific access and quality measures for dual-eligibles. APAC collects data on claims paid for Oregonians by Medicare Advantage plans, the federal Medicare FFS program, Oregon's Medicaid program, and other payers, allowing us to obtain complete claims data for dual-eligibles. We selected a subset of outcome measures that would be applicable to dual-eligibles and could be calculated using APAC data. **Appendix F, Section 1** describes our criteria for selecting these measures.

Key Findings:

- *Measures of access to primary care generally improved among dual-eligible members.*
- *In contrast to access measures, most quality measures did not improve or worsen consistently.*

ACCESS AND QUALITY: Dual-Eligible Members

Pre-post analysis of access measures for dual-eligible members

Change in measure rates from 2011 controlling for member characteristics

Example: Members with Any Care increased by 2.3 percentage points from 2011 to 2015.

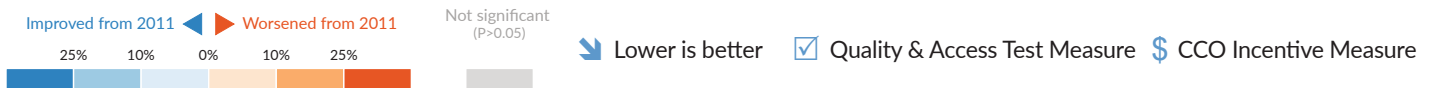
	2011	2013	2014	2015*
1 Members with Any Primary Care	84.6%	0.7	1.5	2.3
2 Adults' Access to Primary Care (Age 45 to 64)	91.9%	0.4	1.3	2.0
3 Adults' Access to Primary Care (Age 65 and over)	91.9%	-0.4	0.3	1.2

Pre-post analysis of quality measures for dual-eligible members

Change in measure rates from 2011 controlling for member characteristics

Example: ED Visit Rate increased by 2.3 visits per 1,000 member months from 2011 to 2015.

	2011	2013	2014	2015*
1 ED Visit Rate	78.3	-0.8	0.0	2.3
2 Avoidable ED Visit Rate (Age 18 and Over)	10.2	-0.2	0.1	0.6
3 Readmissions to the Hospital within 30 Days per 1,000 MM	65.0	4.5	3.2	1.0
4 Avoidance of Imaging Tests for Headache	29.6%	1.6	2.8	5.2



Change for dual-eligible members in aligned plans compared to non-aligned plans

Change in measure rates from 2011 compared to members in aligned plans

Example: Members with Any Care increased more among members in aligned plans compared with members in non-aligned plans from 2011 to 2015.

Access measures	2013	2014	2015*	Quality measures	2013	2014	2015*
Members with Any Primary Care	+	+	+	ED Visit Rate	+	+	+
Adults' Access to Primary Care (Age 45 to 64)	+	+	+	Avoidable ED Visit Rate (Age 18 and Over)	+	+	-
Adults' Access to Primary Care (Age 65 and over)	+	+	+	Readmissions to the Hospital within 30 Days	-	-	-
				Avoidance of Imaging Tests for Headache	-	+	-

*2015 is defined as Q4 2014 to Q3 2015. See Appendix E for measures details, Appendix F for details on regression models, and Data Appendix for regression results.

CONCLUSIONS

Within the first three years of Oregon's 2012-2017 waiver, CCOs performed well across multiple dimensions. CCOs were associated with reductions in spending growth, driven by reductions in inpatient facility spending. Quality measures generally improved in the domains of Prevention and Wellness for Children and Adolescents, Emergency Department and Hospital Use, and Avoiding Low-Value Care. Experience of care measures and self-reported health status for CCO members also improved. The measures we evaluated indicate that more work was needed to improve access to care and health care quality in some domains.

The final chapter presents our recommendations for continuing health care transformation and improving outcomes beyond the 2012-2017 waiver.

CHAPTER 5:

Recommendations for Continuing Medicaid Transformation in Oregon

OVERVIEW

This chapter presents our recommendations for continuing health system transformation beyond the 2012-2017 Medicaid waiver. The recommendations are based on our assessment of OHA's and CCOs' transformation activities in Chapters 2 and 3 and our evaluation of outcomes in Chapter 4.

CONTEXT: ENDING ONE WAIVER AND BEGINNING ANOTHER

It may be easy to forget the initial skepticism that met the CCO model in 2012. At the time, many expressed concerns that the CCO experiment was too ambitious and could not be sustainable over the long run.²⁸ Although challenges remain, CCOs have implemented innovative ways of providing care and performed well across multiple dimensions. Within the first three years of the 2012-2017 waiver, OHA and CCOs created the infrastructure for transforming health care delivery and payment systems. CCOs initiated reforms in challenging areas, including alternative payment methods (APMs), integrating physical and behavioral health care, and health-related flexible services. CCOs were associated with reductions in spending growth and improvement in some quality domains. Measures of experience of care and self-reported health status for CCO members also improved. Access to care decreased slightly among CCO members, likely due to Oregon's 2014 Medicaid expansion.

Oregon now looks to the next five years. In January 2017, Oregon executed an extension of the waiver through June 2022. The extension carried forward the key features of CCOs and included new provisions to encourage the use of APMs, spending on health-related services, and enrollment of dual-eligible members into CCOs.

We present two types of recommendations to help Oregon achieve the goals of better care, better health, and lower costs within the framework of the 2017-2022 waiver:

- **Recommended actions for the State:** Actions the State can take to support CCOs and health care providers as they work toward meeting the waiver's goals
- **Recommended additions to CCO contracts:** Requirements the State can add to CCOs' contracts with OHA, which OHA plans to renegotiate and execute with CCOs in 2019

We categorize the recommendations into four areas: Value-Based Payment for CCOs and Providers, Care Coordination and Integration, Health-Related Services and Social Determinants of Health, and Sustainable Spending.

Our recommendations include collecting more detailed data on APMs and health-related services. As part of this evaluation, we analyzed the relationship between these reforms and specific outcome measures. Our analyses indicated that more complete and detailed data are needed to measure progress and acquire evidence about effectiveness of APMs and flexible services (see **Appendix F, Section 6** for details).

VALUE-BASED PAYMENT FOR CCOS AND PROVIDERS

The 2012-2017 waiver included incentive payments for CCOs that met quality goals and directed CCOs to implement APMs that focus on value and pay providers for improved outcomes. The 2017-2022 waiver extends the CCO incentive payment system and includes new provisions to promote value-based payment (VBP) arrangements with providers. It requires the State to promote the use of VBP arrangements designed to improve quality and manage cost growth through its contracts with CCOs, and to develop a plan for achieving a set target of VBP arrangements by the end of the waiver. Our recommendations in this area focus on using CCO incentive payments to drive improvement in challenging areas, and on improving the State's ability to identify effective VBP arrangements.

1 CCO CONTRACTS: INCREASE THE PORTION OF TOTAL CCO PAYMENTS AWARDED FOR QUALITY AND ACCESS, AND RAISE THE BAR FOR AWARDS.

Under the 2012-2017 waiver, Oregon set aside a portion of CCO payments in a quality pool and awarded payments from the quality pool to CCOs based on their performance on quality measures. CCOs received the overwhelming majority of payments for which they were eligible from the 2016 quality pool: 14 CCOs received more than 90 percent of these payments, and the remaining two received 82 percent.²⁹ This suggests that the State has room to increase the size of the quality pool and raise the bar for receiving the full award.

The State should increase the portion of CCO payments awarded for performance on quality measures and increase the level of performance needed to receive the full award. To raise the bar, the State could increase the benchmarks and improvement targets for existing quality measures, introduce new quality measures, or both. The State should use the larger quality pool and higher performance standards to drive improvement in areas with relatively little progress—such as access to primary care and integration of physical, behavioral, and oral health care—by raising standards or introducing new measures in these areas.

2 CCO CONTRACTS: REQUIRE CCOS TO REPORT DETAILED DATA ON VALUE-BASED PAYMENT (VBP) ARRANGEMENTS.

CCOs reported wide variation in APM adoption, ranging from zero dollars paid through APMs to all dollars paid through APMs, in 2015. Self-reported financial data are insufficient to determine what kinds of APMs CCOs adopted. For example, these data may count capitation payments not tied to quality measures as APMs. More detailed data are needed to monitor meaningful progress toward achieving VBP targets set by the State, and to identify VBP arrangements that are most effective.

Through CCO contracts, the State should require CCOs to report more detailed data about their VBP arrangements with providers. These include data on members enrolled in capitation arrangements tied to quality measures; members served by providers participating in pay-for-performance arrangements and incentive payments made under those arrangements; and members with care paid for through episode-based payment arrangements. The data should include identifiers that can be linked to Medicaid claims data, allowing for analysis of the relationship between specific VBP arrangements, on the one hand, and claims-based cost and quality measures, on the other.

To collect data that will be useful for evaluation, the State should work with CCOs to establish detailed definitions of VBP arrangements and define a uniform reporting format for VBP data. The State should provide CCOs with sufficient time to upgrade their data systems for reporting and give CCOs flexibility with data completeness and quality as they implement and improve their data systems; as with other types of health care data, CCOs may need time and multiple iterations to submit usable VBP data. Reporting more detailed data will be challenging, but will

be essential for monitoring progress and steering CCOs and providers toward effective VBP arrangements in the future.

CARE COORDINATION AND INTEGRATION

Improving care coordination and integrating physical, behavioral, and oral health care were central levers for transforming health care under the 2012-2017 waiver. Oregon made substantial progress improving the infrastructure for care coordination by increasing patient-centered primary care home (PCPCH) enrollment and electronic health record (EHR) adoption. In addition, CCOs and clinics began co-locating physical and behavioral health care providers as a means to integrate care. However, CCOs were not associated with improvement on outcome measures selected to reflect care coordination and integration. Our recommendations in this area address barriers to coordination and integration identified by existing studies reviewed for this evaluation.

3 STATE ACTION: PROVIDE ADDITIONAL INCENTIVES AND RESOURCES TO INCREASE ELECTRONIC HEALTH RECORD (EHR) FUNCTIONALITY.

Advanced PCPCHs interviewed for the State's evaluation of OHA's PCPCH Program described EHRs as important for many aspects of care coordination. Under the 2012-2017 waiver, EHR adoption increased considerably and the gap between the highest and lowest CCOs narrowed. However, PCPCHs interviewed for the PCPCH Program evaluation reported challenges extracting and analyzing information from EHRs and using EHRs to exchange information with other clinics and hospitals.¹³

The State should provide additional incentives and resources for CCOs and clinics to increase the functionality of EHRs. These could include:

- Increasing requirements or incentives for improving EHR functionality. For example, the State could introduce an incentive measure requiring clinics in CCOs' networks to demonstrate they can accomplish key tasks with their EHRs. This could be coupled with a larger quality pool to improve care coordination.
- Providing targeted grants or in-kind assistance, such as a learning collaborative or technical assistance, to help CCOs and clinics use EHRs for key tasks.
- Providing incentives and resources for connecting EHRs among provider organizations through models such as regional health information exchanges.

4 STATE ACTION: INVENTORY REGULATIONS THAT IMPEDE PHYSICAL, BEHAVIORAL, AND ORAL HEALTH CARE INTEGRATION.

Under the 2012-2017 waiver, billing restrictions and regulations created challenges with integrating physical and behavioral health care, including challenges with funding integrated services.^{9,13,19} A comprehensive inventory of such regulations was beyond the scope of this evaluation, but will be important for addressing barriers to integration.

The State should inventory billing restrictions and regulations that create challenges for integration. Some regulations, such as those in state statutes or administrative rules, may be feasible for Oregon to reform in the short term; others, such as those at the federal level, may be difficult for Oregon to address alone. A comprehensive inventory of regulations will help Oregon determine where it can move forward with reforms to promote integration, and where to work with federal partners or other states on reforms.

HEALTH-RELATED SERVICES AND SOCIAL DETERMINANTS OF HEALTH

Under the 2012-2017 waiver, CCOs provided members with a wide variety of flexible services. However, total spending on flexible services was relatively low through 2015. The 2017-2022 waiver includes the following provisions to encourage use of health-related services by CCOs:

- **Definition:** The State will require CCOs to consider using “health-related services” as part of their contracts. Health-related services include flexible services, defined as cost-effective services to supplement health care services covered by Medicaid, and “community benefit initiatives,” defined as community-level interventions to improve population health and health care quality.
- **Medical loss ratio:** Health-related services may count toward CCOs’ medical loss ratio (MLR) if they meet the definition of “activities to improve health care quality” in federal rules.
- **Profit margin for high-performing CCOs:** The State will develop CCO capitation rates with a higher profit margin for CCOs that show quality improvement and cost reduction in previous years, with the intent of offsetting reduced rates resulting from use of health-related services (see *Flexible Services and Global Budgets*, page 39).
- **Reporting and evaluation:** The State will report on health-related services, including their effectiveness in improving health and deterring higher cost care.

Our recommendations in this area focus on increasing the use of health-related services and improving Oregon’s ability to evaluate their effects. They are based on our interviews with CCOs and challenges we experienced evaluating flexible services using existing data.

5 STATE ACTION: CREATE A “ONE-STOP SHOP” WHERE CCOs AND OTHER STAKEHOLDERS CAN FIND INFORMATION ABOUT HEALTH-RELATED SERVICES.

Under the 2012-2017 waiver, CCOs were confused about the definition of flexible services and how flexible services fit into OHA’s process for setting capitation rates. This resulted in inconsistent reporting of flexible services spending among CCOs, and may have contributed to relatively low flexible services spending. While most CCOs believed flexible services were effective at improving outcomes and reducing costs, they described evaluating the effects of flexible services as challenging.

The State should create a central source of information about health-related services, including:

- Guidance on the State’s definition of health-related services and how CCOs should report health-related services spending, with attention to areas of confusion under the 2012-2017 waiver, including community-level services, care coordination and disease management, and services provided using funds outside global budgets
- An explanation of how the State and its actuaries treat health-related services when setting capitation rates. If the State asks CCOs to demonstrate a link between health-related services and cost-effectiveness or quality improvement, it should provide information on acceptable data and methods for evaluating the link.
- A list of state and federal regulations pertaining to health-related services and an explanation of how these regulations shape state policy, actuarial assessments, and rate setting

The one-stop shop could be a designated web page with plain-language explanations and links to regulations pertaining to flexible services. Currently, this information is located in different places or not publicly available.

6 CCO CONTRACTS: REQUIRE CCOs TO REPORT PERSON-LEVEL DATA ON USE OF HEALTH-RELATED SERVICES.

At the time of this evaluation, some CCOs had begun to rigorously evaluate flexible services by linking data on members' use of flexible services with data on outcomes, such as spending from health care claims. Person-level data are needed to analyze the effects of health-related services with precision. However, only CCO-level data (i.e., spending across a CCO's members for each flexible services category) are available for all CCOs, and those data are not consistent across CCOs.

Through CCO contracts, the State should require CCOs to report person-level data on use of health-related services. At a minimum, these data should include the time period in which services were received, category of service from financial reports, and identifiers that can be linked to Medicaid claims data. This would allow for analysis of the relationship between use of health-related services and standardized cost or quality measures, with statistical controls for members' demographics and health status.

As with data on VBP arrangements, the State should work with CCOs to define a uniform reporting format, provide CCOs with sufficient time to upgrade their data systems for reporting, and give CCOs flexibility with data completeness and quality as they implement and improve their data systems.

7 CCO CONTRACTS: REQUIRE CCOs TO COMMIT ONE PERCENT OF THEIR GLOBAL BUDGET TO SPENDING ON SOCIAL DETERMINANTS OF HEALTH (SDOH).

CCOs viewed investments to improve SDOH as important to improving members' health and reducing health care costs. However, some CCOs expressed concern about allocating more resources to SDOH due to uncertainty about how that spending would be factored into rate setting, and were hesitant to make larger investments in this area.

The State should require CCOs to commit one percent of their global budget to SDOH. A targeted spending amount will provide additional incentives for CCOs to improve outcomes outside hospital and clinic walls.

SUSTAINABLE SPENDING

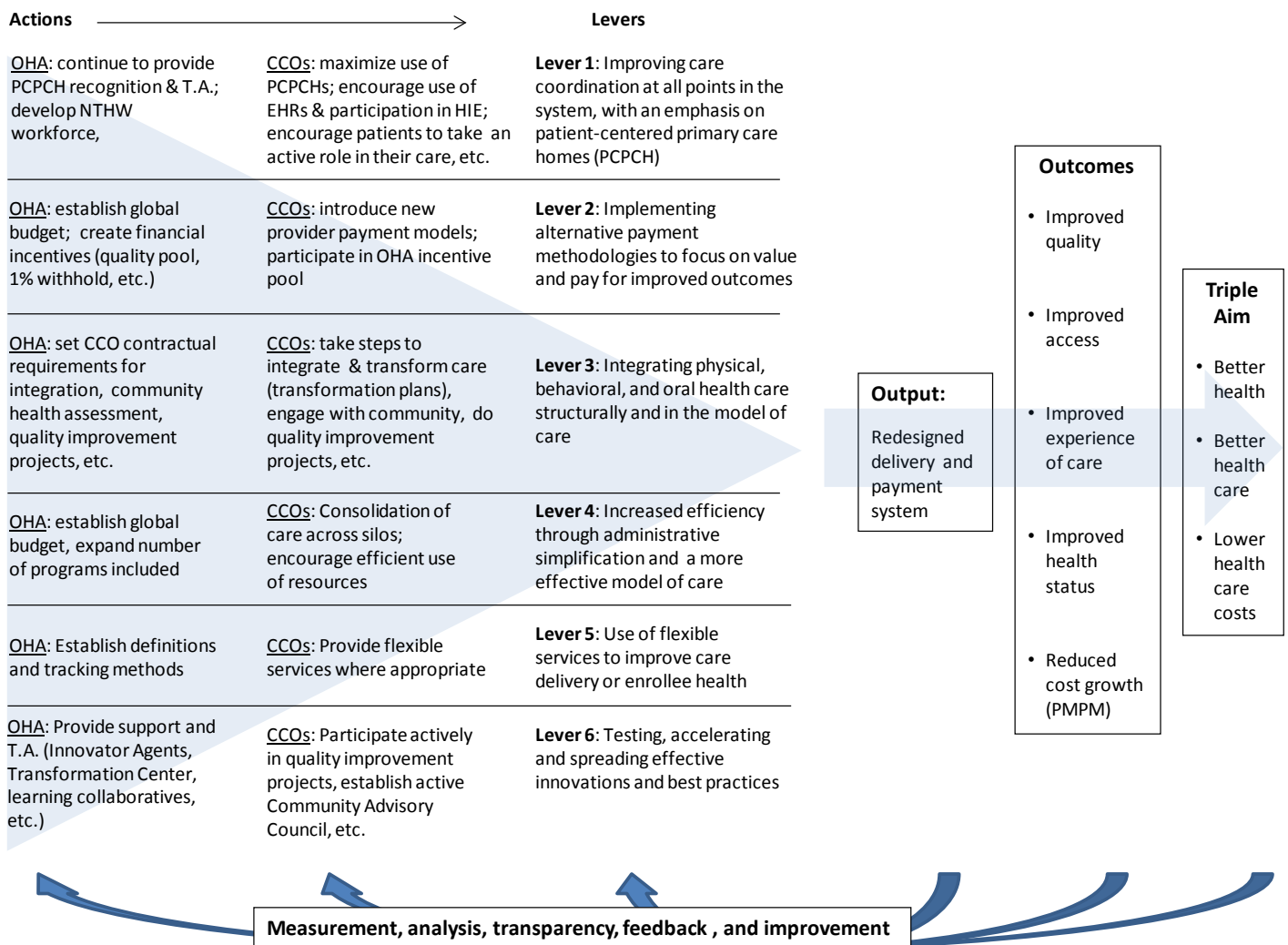
8 STATE ACTION: EVALUATE OPTIONS FOR LIMITING THE GROWTH OF PRESCRIPTION DRUG SPENDING.

The 2012-2017 waiver was associated with reductions in total spending per-member, per-month (PMPM) among CCO members compared to Washington Medicaid members, driven by reductions in inpatient facility spending PMPM. However, prescription drug spending increased substantially among both groups. The State may need to focus on limiting prescription drug spending growth in order to meet the 2017-2022 waiver's spending goals.

As a step toward limiting overall spending growth, the State should inventory and evaluate other options to reduce prescription drug spending growth. An evaluation of options for reducing prescription drug spending growth was beyond the scope of this evaluation, but may be important for meeting the waiver's spending goals.

APPENDIX A: 2012-2017 Medicaid Waiver Theory of Action Model

Oregon's Theory of Action Model, reproduced below from the Special Terms and Conditions for Oregon's Section 1115 Medicaid Demonstration amended July 5, 2012, describes OHA and CCO actions associated with six transformation levers.



October 30, 2012

APPENDIX B: Existing Studies of Oregon’s Medicaid Waiver

OVERVIEW

This appendix summarizes 11 existing studies about Oregon’s 2012-2017 Medicaid waiver that we reviewed for the evaluation. These include eight studies assessing OHA’s and CCOs’ activities to implement specific levers and four studies evaluating the waiver’s effects. The midpoint evaluation of Oregon’s Medicaid waiver, completed by Mathematica Policy Research in mid-2015, includes both types of analysis.

Table B1, page 127 summarizes the methods of each study, the number of CCOs included, and the time period covered by each study.

Table B1. Existing studies of Oregon's 2012-2017 Medicaid waiver

Study and methods	CCOs	Time period
<p>1 Irvin et al, <i>Midpoint Evaluation of Oregon's Medicaid Section 1115 Demonstration: Mid-2012 through Mid-2014</i></p> <p>Review OHA and CCO reports; interview OHA and CCO representatives; survey CCOs on progress in specific areas; conduct site visits at three CCOs</p>	16	Pre-waiver period: Jan 2009-Jun 2012; post-waiver period: Jul 2012-Mar 2014
<p>2 Gelmon et al, <i>Implementation of Oregon's PCPCH Program: Exemplary Practice and Program Findings</i></p> <p>Estimate program effects by comparing outcomes among PCPCHs and non-PCPCH clinics; interview staff at 20 "exemplary" PCPCHs</p>	NA	Program effects: Oct 2010-Sep 2014; interviews: Mar-Oct 2015
<p>3 Leoff et al, <i>Alternative Payment Methodologies in Oregon: The State of Reform</i></p> <p>Interview individuals involved in implementing APMs at four CCOs</p>	4	Mid-2014
<p>4 Broffman et al, "Funding Accountable Care Organizations in Oregon: Financial Models in Two Coordinated Care Organizations"*</p> <p>Review documents from OHA and CCOs; interview policymakers, CCO executives, and other stakeholders</p>	2	2012-2015
<p>5 Kroening-Roche et al, "Integrating Behavioral Health under an ACO Global Budget: Barriers and Progress in Oregon"*</p> <p>Interview leaders of five CCOs and clinicians</p>	5	Apr 2014-Oct 2014
<p>6 Wright et al, "Formerly Homeless People had Lower Overall Health Care Expenditures after Moving into Supportive Housing"*</p> <p>Compare change in outcomes for 58 Medicaid members who moved into a supportive housing facility</p>	NA	2011-2014
<p>7 Wright et al, <i>Health in Housing: Exploring the Intersection Between Housing & Health Care</i></p> <p>Compare change in outcomes for 1,625 members of HealthShare CCO who moved into affordable housing properties</p>	1	Jan 2011-Jun 2015
<p>8 OHA, <i>Oregon CCO Housing Supports: Survey Report</i></p> <p>Survey CCOs about use of housing-related services</p>	15	May 2015
<p>9 McConnell et al, "Oregon's Medicaid Reform and Transition to Global Budgets were Associated with Reductions in Expenditures"*</p> <p>Compare changes in quality, access, and spending among CCO members with changes among Washington State Medicaid members</p>	15	Pre-waiver period: 2011; post-waiver period: 2013-2014
<p>10 McConnell et al, "Early Performance in Medicaid Accountable Care Organizations: A Comparison of Oregon and Colorado"*</p> <p>Compare changes in quality, access, and spending among CCO members with changes among Colorado Medicaid members</p>	15	Pre-waiver period: Jul 2010-Dec 2011; Post-waiver period: 2013-2014
<p>11 Muoto et al, "Oregon's Coordinated Care Organizations Increased Timely Prenatal Care Initiation and Decreased Disparities"*</p> <p>Compare changes in prenatal care quality among Oregon and Washington Medicaid members</p>	16	Pre-waiver period: Jan 2008-Jun 2012; post-waiver period: 2013

*Peer-reviewed publication

STUDY 1: MIDPOINT EVALUATION OF OREGON'S MEDICAID SECTION 1115 DEMONSTRATION WAIVER: MID-2012 THROUGH MID-2014

Irvin et al carried out the midpoint evaluation of Oregon's Medicaid waiver for OHA as required by the 2012-2017 waiver.⁹ The evaluation included two components. First, Irvin et al assessed whether OHA and CCOs carried out activities to transform Oregon's Medicaid program as specified in the waiver. Second, they estimated the waiver's effect on health care quality by comparing changes in quality measures before and after the waiver.

Assessment of OHA's and CCOs' Activities to Transform Medicaid

To assess OHA's and CCOs' transformation activities, Irvin et al used information from existing documents, such as transformation plans and progress reports submitted to OHA by CCOs, interviews with staff from state agencies and CCOs, and site visits to a sample of CCOs. In addition, they developed a specialized survey to assess CCOs' perceptions of their progress in specific areas of health system transformation, administered the survey to CCOs, and validated the responses with innovator agents from OHA's Transformation Center. Results from the interviews and surveys reflect progress with transformation activities as of March 2014.

Overall, Irvin et al found that OHA had successfully supported transformation by establishing global budgets, a quality reporting system, and an incentive payment system for quality measures. In addition, OHA had successfully promoted recognition of clinics as patient centered primary care homes (PCPCHs) and adoption of electronic health records (EHRs).

Irvin et al found that CCOs had made the most progress in the areas of care coordination, integrating physical and behavioral health care, and spreading innovation through Transformation Center. However, they concluded that more work remained to promote adoption of EHRs, and that preexisting regulations and contracting systems had impeded integration of physical and behavioral health care. In addition, they observed that CCOs had just started to develop alternative payment methodologies (APMs) with providers and provide health-related flexible services.

- CCOs made more progress improving care coordination than in most other areas Irvin et al examined by assisting clinics with meeting the PCPCH model and enrolling members in PCPCHs. However, small clinics and rural clinics often lacked resources to become PCPCHs, and rural CCOs reported that PCPCHs were less available in their service areas. In addition, more work was needed by CCOs to promote health information technology, as evidenced by wide variation in EHR adoption among providers in CCOs' networks.
- As of March 2014, CCOs had just started to develop APMs for providers. CCOs described lack of provider readiness for APMs, including the inability of small providers to take on risk due to small margins and lack of infrastructure to collect and monitor needed data, as a barrier to developing APMs with providers.
- As with care coordination, Irvin et al found that CCOs had made more progress integrating physical and behavioral health care than in most other areas. CCOs' activities in this area included placing mental health and addiction counselors at an obstetric practice, locating primary care providers in community mental health sites, and making mental health counselors available at elementary schools and a YMCA. However, preexisting regulations and contracting systems designed for separate mental and physical health care impeded integration. These included regulations about documentation, provider certifications, and seeing patients for behavioral and physical health diagnoses on the same day. CCO

representatives interviewed by Irvin et al reported that global budgets do not lead to integration of care without significant work to change these systems.

- Some CCOs used their global budgets to pay for flexible services that would not have been supported by a traditional fee-for-services (FFS) system, such as community-based support for people with disabilities and mental illness and community health workers for preventive care. CCOs described lack of guidance on flexible services and inclusion of flexible services in the administrative part of the global budget as barriers to using flexible services. OHA and CCOs also acknowledged that more work was needed on paying for community health workers and other traditional health workers to provide health-related services such as care coordination and community-based prevention.
- CCOs described the Transformation Center as key to their success. It provided CCOs with useful technical assistance and learning collaboratives, and valuable assistance with community health assessments and community health improvement plans. CCOs described innovator agents as important contributors to transformation efforts and used them frequently to solve problems.

Assessment of the Waiver's Effects on Health Care Quality

To estimate the waiver's effect on health care quality, Irvin et al compared changes in quality measures from the 42 months preceding the waiver (January 2009 through June 2012) and the first 21 months of the waiver (July 2012 through March 2014). These included measures of primary care quality, ED visits and avoidable hospitalizations, coordination of behavioral and physical health care, and quality of care for people with diabetes. In addition, they assessed disparities in quality measures between white and non-white groups of Medicaid members, and between members in CCOs with different levels of transformation. All quality measures were based on health care claims from OHA.

The analysis included members enrolled in Medicaid managed care organizations and CCOs before and after the waiver, including new Medicaid members who gained coverage under the Affordable Care Act (ACA). It excluded members enrolled in fee-for-service (FFS) coverage, members age 65 and over, and members enrolled in Medicare and Medicaid (dual-eligibles). Regression analysis was used to control for member demographics, basis of Medicaid eligibility, county of residence, and each CCO's level of transformation as identified from Mathematica's CCO survey; however, member health status or conditions were not used as controls.

Irvin et al found that the waiver was not associated with widespread improvement in health care quality or reductions in disparities:

- Two of six primary care quality measures improved slightly; however, none of the remaining measures improved or worsened significantly.
- The disparity between white non-white groups decreased for three primary care measures and one avoidable hospitalization measure, but increased on one other measure in each area.
- The three most-transformed CCOs performed more favorably than the three least-transformed CCOs on two primary care measures and on reducing inpatient admissions. However, the least-transformed CCOs performed more favorably on two other primary care measures. Mathematica suggested that decisions by individual CCOs to focus on improving specific measures, rather than their overall progress on transformation, could explain these variations.

STUDY 2: IMPLEMENTATION OF OREGON'S PCPCH PROGRAM: EXEMPLARY PRACTICE AND PROGRAM FINDINGS

Gelmon et al evaluated the Patient Centered Primary Care Home (PCPCH) Program for OHA.¹³ First, they estimated the effects of a clinic becoming recognized as a PCPCH on patients' health care spending and use of health care services. Second, they interviewed 20 "exemplary" PCPCHs to understand the factors that helped and hindered their adherence to the PCPCH model.

Estimated Effects of PCPCHs

To estimate the effects of PCPCH recognition, Gelmon et al compared changes in spending and services among patients served by 510 clinics that became PCPCHs in the first three years of the Program with changes among patients of clinics that did not become PCPCHs. The second group of patients served as a comparison group, providing an estimate of changes that would have occurred at PCPCHs if they had not become recognized. Gelmon et al also controlled for the effects of patient demographics, insurance type, and health status at each clinic.

Gelmon et al found that PCPCH recognition reduced total spending per patient, increased primary care spending and use per patient, and reduced spending per patient on ED care, inpatient care, and specialty care. Most of these effects occurred in the second and third years after recognition and increased over time; that is, differences in spending and services use before and after recognition were greater in each subsequent year.

- Total spending per patient decreased moderately (by \$41 per person per quarter or 4.2 percent) from the year before recognition to the third year after recognition.
- Primary care spending per patient increased moderately (by \$6 per person per quarter, or 6.0 percent) from the year before recognition to the third year after recognition. The likelihood that patients used primary care increased slightly each year after recognition.
- ED spending and specialty care spending per patient decreased moderately (by \$3 and \$4, or 9.0 percent and 8.7 percent, respectively) from the year before recognition to the second year after recognition, and substantially (by \$7 and \$5, or 19.2 percent and 11.1 percent respectively) from the year before recognition to the third year after recognition.
- Inpatient spending decreased substantially from the year before recognition to each year after, with a larger decrease in each year. It decreased by \$49, or 26.4 percent, from the year before recognition to the third year after recognition.

These results suggest that increased "upstream" spending on primary care resulted in reduced "downstream" spending on ED care, inpatient care, and specialty care, and that the ability of PCPCHs to provide patient-centered care improved over time.

The following limitations may affect these results and their applicability to patients outside the study:

- The characteristics of PCPCHs and their patients differ substantially from those of other clinics. For example, PCPCHs include some of the largest clinics in the state, reflecting efforts by large health care systems to gain PCPCH recognition for their clinics; by contrast, most individual practitioners providing primary care are not recognized as PCPCHs. If differences between PCPCHs and non-PCPCHs caused the two groups of clinics to respond differently to changes in the health system or economy, then non-PCPCHs may represent an insufficient comparison group and the results may understate or overstate the effect of PCPCH recognition.

- The study included only patients with consistent health care coverage and at least one primary care visit who received care exclusively from a PCPCH or a clinic that was never recognized as a PCPCH. This means the effects of PCPCH recognition described in the study may not apply to patients with less consistent care or coverage.

Recent evaluations of medical home programs have found fewer positive effects than Gelmon et al found for the PCPCH Program:

- A meta-analysis of 17 patient-centered medical home evaluations selected for their methodological rigor found no significant association between medical home transformation and most measures of health care use, including primary care visits, ED visits, and inpatient visits. Medical home transformation was associated with a small decrease in specialty care visit rate among all patients and a moderate reduction in cost (excluding pharmacy) among patients with two or more major medical conditions.¹¹
- Evaluations of medical home programs in Pennsylvania and New Jersey found no significant changes in cost or services use associated with the programs.¹⁴

The difference between findings of the PCPCH Program evaluation and other evaluations may be related to differences between PCPCHs and non-PCPCHs, described above: PCPCHs include large clinics connected to large health care systems, which may enjoy the resources needed to make quality improvements that result in improved care and reduced spending. As a result, improvements at PCPCHs relative to non-PCPCHs may reflect the type clinics that become PCPCHs, rather than the effects of the PCPCH Program.

Factors that Helped and Hindered Adherence to the PCPCH Model

To identify factors that helped and hindered clinics with implementing the PCPCH model, Gelmon et al interviewed staff at 20 “exemplary” PCPCHs. They recruited these clinics based on the scores they received on their applications for PCPCH recognition, input from PCPCH Program staff, and other information. Based on the interviews, Gelmon et al identified a wide variety of factors at the level of the overall health system, the clinic, the teams and systems within a clinic, and the patient experience. This review focuses on challenges at the health system level that are most relevant to the waiver evaluation, and on care coordination practices that Oregon and other states may want to strengthen and replicate.

PCPCHs described the following challenges to meeting the PCPCH model at the health system level:

- Medicaid expansion, workforce shortages, and increased demands on staff occurred at the same time many clinics were attempting to implement the PCPCH model. Medicaid expansion members exhibited complex needs, and PCPCHs invested significant time and resources helping them understand and navigate the health care system. Workforce shortages and demands on staff were especially challenging for small clinics and rural clinics.
- FFS payment systems did not adequately reimburse PCPCHs for many non-medical services needed to provide coordinated care. Examples include increased communication with patients and coordination with specialists and social service providers.
- Challenges with billing prevented PCPCHs from funding on-site behavioral health providers over the long run.

PCPCHs described the following care coordination practices as especially important:

- PCPCHs valued dedicated care coordinator positions for the support they provided to patients and staff. Care coordinators played many roles across PCPCHs, including

communicating with patients who had complex needs, following up with patients discharged from the hospital, and helping patients access health-related services such as transportation or food assistance.

- PCPCHs noted the importance of providing care in teams, standardizing workflows, and cross-training staff. These activities enabled PCPCHs to provide care for larger numbers of patients due to Medicaid expansion and strengthen their relationships with patients.
- EHRs were important for many aspects of care coordination. For example, they helped team members communicate and helped PCPCHs improve access to care by generating appointment reminders. The ability to exchange information with other clinics and hospitals using an EHR greatly improved continuity of care. Having a customizable EHR and the expertise needed to modify it was especially important for care coordination. However, PCPCHs often lacked staff to manage or analyze data from EHRs. PCPCHs experienced challenges extracting information from EHRs and exchanging information with other clinics and hospitals.

STUDY 3: ALTERNATIVE PAYMENT METHODOLOGIES IN OREGON: THE STATE OF REFORM

Leoff et al assessed the development of APMs in Oregon for OHA.¹⁶ As part of the study, they interviewed individuals involved in implementing APMs at four CCOs. Three of the CCOs had implemented APMs as pilot projects or on a full scale as of mid-2014, when the interviews were conducted:

- AllCare Health Plan piloted a shared savings APM for primary care providers. The APM distributed savings to providers based on measures of health care service use, access, and quality. AllCare planned to expand the APM to all primary care providers in its service area, and to pilot APMs for specialty care, behavioral health, and dental providers.
- Pacific Source Central Oregon initiated a large-scale APM combining capitation payments and pay-for-performance in March 2014. The system paid primary care physicians and hospitals using capitation payments, with a portion of hospital payments withheld; physicians and hospitals could earn back a share of the withheld payments based on quality measures that required physicians and hospitals to work together, such as hospital readmissions and ED follow-up measures. In addition, all physicians could earn a share of any CCO budget surplus based on performance on a subset of CCO incentive measures.
- Eastern Oregon CCO initiated a shared savings and shared risk system in April 2014. The system withheld a portion of claims payments from providers. The CCO could retain withheld payments if spending exceeded the CCO's budget and pass on a share of withheld payments if spending was below the CCO's budget.

The CCOs had not yet distributed APM payments at the time Leoff et al conducted interviews. As a result, evidence about the effect of the APMs was unavailable.

STUDY 4: FUNDING ACCOUNTABLE CARE ORGANIZATIONS IN OREGON: FINANCIAL MODELS IN TWO COORDINATED CARE ORGANIZATIONS

Broffman et al assessed how two CCOs with different organizational structures and governance models used their global budgets: Health Share of Oregon, Oregon's largest CCO, comprised of multiple health plans, county mental health organizations, dental care organizations, and

provider organizations; and PacificSource Central Oregon, a smaller CCO comprised of a single health plan and a smaller number of partner organizations than Health Share.⁸ They used information from documents collected from OHA and the CCOs and interviews with State policymakers and regulators, CCO executives, partner organizations, and providers conducted from 2012 to 2015.

Broffman et al found that both CCOs continued some aspects of pre-CCO payment systems but also made progress toward implementing APMs. Relationships among organizations comprising Health Share and PacificSource Central Oregon affected the extent to which each CCO developed APMs with providers:

- Competition among the organizations comprising Health Share resulted in gradual movement toward APMs. Health Share passed most of its global budget through to health plans, county mental health organizations, and dental managed care organizations; these organizations, in turn, used the funds to pay providers. For the most part, the plans paid providers on a FFS basis. However, Health Share had also initiated APM planning and pilot projects by 2015.
- The relative lack of competition among organizations comprising PacificSource Central Oregon gave the CCO “room to experiment” with APMs and facilitated development of an extensive APM. The CCO set up an APM with the one hospital in its service area in which a substantial share of the hospital’s payments depended on quality measures.

STUDY 5: INTEGRATING BEHAVIORAL HEALTH UNDER AN ACO GLOBAL BUDGET: BARRIERS AND PROGRESS IN OREGON

Kroening-Roche et al described challenges experienced by five CCOs identified by OHA as working to integrate primary care and behavioral health care.¹⁹ They used information from interviews with the CCOs’ leaders, primary care clinicians, and behavioral health clinicians conducted from April to October 2014.

CCOs and primary care clinics used different approaches to integrate primary care and behavioral health care. Most often, primary care clinics brought behavioral health care providers on-site by hiring them directly or contracting with mental health organizations. In some cases, community mental health clinics (CMHCs) brought primary care providers on-site through hiring or contracting. CCOs also contracted with CMHCs to place mental health providers in schools.

While CCOs carried out a variety of activities to integrate primary care and behavioral health care, Kroening-Roche et al found that global budgets had not yet resulted in flexibility to allocate funding among different types of care as hoped for by CCOs. They identified three primary barriers that restricted the use of global budgets to support integration:

- Preexisting contracting and funding structures limited CCOs’ ability to promote integration at the clinic level. Before CCOs, different types of organizations managed funding for physical and behavioral health care: Medicaid managed care organizations received capitation payments from the State for physical health care and contracted with physical health care providers, while counties received block grant funding for behavioral health care and contracted with behavioral health care providers. Even after the integration of funding for physical and behavioral health care in global budgets, most CCOs continued to pass funding designated for CMHCs through counties. Preexisting contracting and funding structures were difficult to change because primary care and mental health organizations had not worked together previously, and because some stakeholders feared that funding needed to serve patients with severe mental illness would be redirected to primary care.

- Billing restrictions and federal regulations made funding integrated care challenging. Primary care clinics could use two approaches to provide services from a behavioral health clinician (BHC): hire a licensed BHC directly or contract with a CMHC. Hiring a licensed BHC allowed primary care clinics to bill for the BHC's services; however, clinics that used this approach reported that reimbursement rates they received for behavioral health services using traditional billing codes did not cover the costs of a licensed BHC. Contracting with a CMHC allowed an unlicensed BHC to bill, since the BHC operated under supervision of a licensed provider at the CMHC; however, federal regulations required such BHCs to complete lengthy intake assessments and meet documentation requirements as they would at a CMHC. These requirements prevented BHCs from billing for services like brief interventions and warm handoffs to physical health care providers, viewed as important for integrating physical and behavioral health care.
- CCOs were concerned about justifying spending on non-billable services to support integration. The federal government uses health care claims and encounter data to determine whether capitation rates received by CCOs are reasonable. CCO stakeholders were concerned about justifying spending on services that do not have traditional billing codes and do not generate claims or encounter data. They feared losing funding or incurring penalties if they were unable to justify such spending.

CCOs often used grant funding to support integration and avoid these barriers; however, they expressed concerns that grant funding would be unsustainable. Kroening-Roche et al recommended technical assistance to help CCOs use global budgets and state advocacy with federal leaders to refine requirements for spending on non-billable services in order to help CCOs fund integration.

STUDY 6: FORMERLY HOMELESS PEOPLE HAD LOWER OVERALL HEALTH CARE EXPENDITURES AFTER MOVING INTO SUPPORTIVE HOUSING

Wright et al assessed changes in spending, use of health care services, and self-reported health status among homeless people who moved into Bud Clark Commons, a supportive housing facility in Portland, Oregon, between 2011 and 2014.²¹ The facility provided permanent housing and on-site services—including case management, physical and mental health care, substance use treatment, and employment counseling—to people directly from the street. Wright et al used surveys to measure access to care and health status among 98 people in the year before and after moving in. In addition, they used health care claims from the 58 people with Medicaid coverage to measure spending and health care services use in the two years before and after move-in.

Wright et al found that moving into Bud Clark Commons was associated with reduced spending, reduced ED and hospital use, increased access to primary care, and increased subjective well-being:

- Among Medicaid members, per-member per-month (PMPM) spending decreased substantially, from \$1,626 in the year before move-in to \$899 in the first year after move-in and \$995 in the second year after move-in.
- Changes in services use suggest that reduced PMPM spending resulted from a shift toward primary care and away from ED and hospital care: Among Medicaid members, rates of ED visits and hospital stays decreased substantially (by 43 percent and 23 percent, respectively), while rates of primary care visits and outpatient behavioral visits increased slightly (by 7 percent and 6 percent, respectively). The percentage of all residents reporting

a hospitalization or ED visit decreased substantially, while the percentage who reported having a designated primary care provider increased.

- The percentage of all residents reporting unmet physical and mental health needs decreased substantially in the year after moving in, and reported physical and mental health improved.

The study lacked a comparison group, meaning the results cannot be interpreted as caused by moving into Bud Clark Commons. However, Wright et al note that results were broadly consistent with other studies of supportive housing, some of which used comparison groups.

Wright et al conclude that the homeless population may be relatively small, but that homeless Medicaid members have a disproportionate impact on Medicaid spending. As a result, supporting housing may be an important means to reduce overall costs.

STUDY 7: HEALTH IN HOUSING: EXPLORING THE INTERSECTION BETWEEN HOUSING & HEALTH CARE

Wright et al assessed changes in health care spending and use of health care services among 1,625 members of the Health Share CCO who moved into affordable housing properties from January 2011 through June 2015.²² In addition, they assessed changes in access to care, quality of care, and health status among 275 of the members as reported on a survey.

Properties in the study were operated by nine housing organizations. Each property provided one of three types of housing: housing for families; permanent supportive housing for people experiencing homelessness, behavioral issues, or substance use issues; or housing for older adults or those with physical or behavioral health disabilities. The overwhelming majority of properties offered at least one type of health care or health-related service on site. The type and intensity of services varied widely. For example, more than half of properties offered some type of medical resource, but only six percent offered doctors or nurses on-site.

Wright et al found that moving into affordable housing was associated with reduced PMPM spending for two types of housing, and with an increased rate of primary care visits and a reduced rate of ED visits for all three types of housing. Survey responses indicated that reduced spending was not achieved at the expense of access or quality.

- Total PMPM spending decreased substantially among members who moved into permanent supportive housing and housing for seniors and people with disabilities (by 14 percent and 16 percent, respectively). Change in PMPM spending for members who moved into housing for families was not statistically significant.
- The rate of primary care visits increased and the rate of ED visits decreased among members in all types of housing, with the largest changes among members who moved into permanent supportive housing (a 23 percent increase in primary care visits and a 37 percent decrease in ED visits).
- Among all members, 40 percent reported their ability of get all the care they needed improved after move-in, while only 4 percent reported it worsened. Similarly, 38 percent reported their overall quality of health care improved in the year following move-in, while only 7 percent reported it worsened.
- Reductions in total spending and ED visits per person were greater for members at properties with health care staff or services on site, suggesting such staff and services may improve outcomes.

As with Study 6, this study lacked a comparison group, meaning the results cannot be interpreted as caused by moving into affordable housing.

STUDY 8: OREGON CCO HOUSING SUPPORTS: SURVEY REPORT

OHA surveyed all CCOs about the types of housing-related services they fund or otherwise support.²³ They asked whether CCOs support or partner with other organizations to provide three types of services:

- Services to help members gain new housing, such as identifying members in need of housing-related services, accompanying members on housing searches, and helping members with move-in costs.
- Services to help members stay in housing, such as educating tenants about leases, coaching on handling landlord or neighbor disputes, and short-term rental assistance.
- Services to help members access health care or health-related services, either by coordinating among housing providers and medical providers or by providing health care and health-related services on-site. Examples include coordination between housing and health care providers, locating mental health or dental clinics in housing, and transportation to appointments.

In addition, OHA asked CCOs about the reasons they support housing-related services and their use of global budgets to pay for housing-related services. Fifteen CCOs responded to the survey. Results reflect use of housing-related services as of May 2015.

The majority of CCOs supported some type of housing-related service for their members:

- All CCOs supported some type of service to help members maintain housing, and all but one supported some type of service to help members gain new housing.
- All but one CCO supported coordination among housing and health care providers, and 12 of 15 supported some type of health or health-related service on-site.

Most CCOs reported high need for housing as the most important reason they supported housing-related services. Several CCOs described lack of housing and rising housing prices in their service areas (CHSE analysis of survey data).

Twelve of 15 CCOs used their global budgets to pay for housing-related services. Examples include criminal record expungement, short-term rental assistance, peer support to reduce ED visits, food assistance, and temporary housing for homeless patients after surgery. Several CCOs reported challenges using global budgets to pay for these services. These included categorization of health-related services as administrative expenses rather than medical expenses in rate setting and the adequacy of global budgets to pay for housing-related services. Some CCOs used funding sources outside global budgets, such as grants, to pay for housing-related services.

STUDY 9: OREGON'S MEDICAID REFORM AND TRANSITION TO GLOBAL BUDGETS WERE ASSOCIATED WITH REDUCTIONS IN EXPENDITURES

McConnell et al used Medicaid members in Washington State as a comparison groups to evaluate the early effects of the waiver.²⁴ Washington Medicaid members offered a useful comparison group for several reasons:

- Oregon and Washington are demographically similar and geographically contiguous. As a result, using Washington Medicaid members as a comparison group can help control for the effect of regional changes that affect health care use and spending by Medicaid members.
- Oregon's and Washington's Medicaid programs are historically similar. Both programs were based on managed care and expanded Medicaid eligibility in 2014.
- Washington Medicaid members were subject to a more limited set of health care reforms than members in Oregon. These included a program aimed at addressing emergency department overuse that was initiated in 2012 and a program to help high-risk Medicaid members access health and social services that was initiated in 2013. As a result, Washington Medicaid members provided an estimate of change that would have occurred in Oregon with more limited reforms than those in Oregon's Medicaid waiver.

McConnell et al compared change in measures of access to primary care, health care quality, and spending from 2011 to 2013 and 2014. As with Mathematica's midpoint evaluation, all measures were based on health care claims from OHA.

McConnell et al used propensity-score weighting and repricing of claims to make the outcome measures comparable between Oregon and Washington Medicaid members.

- Propensity scores were used to "weight" comparison group members based on their similarity to Oregon Medicaid members. First, a propensity score was calculated for each person representing the probability that he or she would enroll in Oregon's Medicaid program given his or her observable characteristics. Then, outcome measures for each person were weighted using his or her propensity score. Finally, change in outcomes for Oregon Medicaid members was compared with change in weighted outcomes for the comparison group. This technique helped control for differences between Oregon and Washington Medicaid members.
- Health care services were "repriced" using dollar amounts paid by Oregon's FFS program. Using the same price for each type of service received by Oregon Medicaid and comparison group members helped account for factors that may have affected spending, such as changes in amounts paid for services by other states' Medicaid programs. In addition, it provided spending amounts for services paid for under capitation systems, in which providers receive a fixed payment per person (rather than a payment for each service) to provide care. Repricing using Oregon's FFS fee schedule was only possible for services covered by both Oregon's and Washington's Medicaid programs; as a result, spending measures used in this study accounted for approximately 38 percent of total spending on medical services.

McConnell et al included only Medicaid members enrolled in both the pre and post-waiver periods. As a result, the study excluded Medicaid members who gained coverage under the ACA in 2014. McConnell et al excluded members not enrolled in CCOs due to special health needs, dual-eligibles, and members of one CCO that launched in 2013.

The study suggests that Oregon's 2012-2017 Medicaid waiver positively affected important measures of emergency department (ED) and hospital use and spending use within its first two years. Effects in other areas were mixed.

- Total spending per member, per month (PMPM) decreased moderately from 2011 to 2013 and 2014 relative to Washington (by \$7 PMPM, a decrease of seven percent from spending of \$95 PMPM in 2011). Inpatient spending PMPM decreased substantially relative to Washington from 2011 to 2013 and 2014, accounting for most of the decrease in total spending PMPM.
- Oregon's total ED visit rate and avoidable ED visit rate decreased relative to Washington from 2011 to 2014. Oregon's overall avoidable hospitalization rate also decreased substantially from 2011 to 2013 relative to Washington. McConnell et al suggested that CCOs' use of health-related support services—including flexible services, community health workers, and care coordinators—may have helped CCOs reduce ED and hospital use among members with multiple chronic conditions.
- Oregon's primary care visit rate decreased moderately relative to Washington from 2011 to 2013 and 2014, while other access measures changed relatively little. McConnell et al suggested that Oregon's large increase in Medicaid enrollment may account for lack of improvement in access relative to Washington: Like Oregon, Washington expanded Medicaid eligibility and experienced substantial increases in Medicaid enrollment in 2014; however, enrollment increased more in Oregon than in Washington. This may have limited the ability of previously enrolled Medicaid members to make appointments with primary care providers as new Medicaid members used their coverage to access primary care.
- Two of five measures for avoiding low-value care used in the study improved from 2011 to 2014 relative to Washington. Change in the other three measures was not statistically significant.

STUDY 10: EARLY PERFORMANCE IN MEDICAID ACCOUNTABLE CARE ORGANIZATIONS: A COMPARISON OF OREGON AND COLORADO

In a similar study, McConnell et al used Medicaid members in Colorado as a comparison group to evaluate early effects of Oregon's 2012-2017 Medicaid waiver.²⁵ Unlike Washington's Medicaid program, Colorado underwent a significant delivery system reform during the study period. In 2011, Colorado launched regional care collaborative organizations (RCCOs), which receive payments to improve connections among members, providers, and community services. Like Oregon's reforms, Colorado's reforms were widespread: Approximately 70 percent of Colorado Medicaid members were enrolled in an RCCO by 2014. Unlike Oregon's reform model, Colorado's Medicaid program continued to pay providers directly on a FFS basis. In addition, Colorado did not receive federal investment on the scale Oregon received to launch its reforms. Overall, Colorado's reforms were more limited than those in Oregon but more extensive than those in Washington. As with the Washington comparison study, McConnell et al used propensity-score weighting and repricing of claims to make outcome measures comparable between Oregon and Washington Medicaid members.

Similar to the Washington comparison study, comparison with Colorado suggested that the waiver positively affected important measures of ED and hospital use, but had more mixed effects in other areas.

- Change in total spending per member, per month relative to Colorado was not statistically significant.

- Oregon's ED visit rate and avoidable ED visit rate decreased from the pre-waiver period (defined as July 2010-December 2011) to 2013 and 2014 relative to Colorado, with a substantial decrease in avoidable ED visits from 2011 to 2014. Oregon's overall avoidable hospitalization rate also decreased substantially from 2011 to 2013 relative to Colorado.
- Oregon's primary care visit rate decreased moderately from the pre-waiver period to 2013 and 2014 relative to Colorado. Adults' access to preventive and outpatient care increased slightly from the pre-waiver period to 2013 relative to Colorado, while children's access to primary care providers did not change significantly.
- By contrast with overall access measures described above, rates of well-child visits for children age 3 to 6 and adolescent well-care visits increased from the pre-waiver period to 2013 and 2014. Performance on adolescent well-child visits, a CCO incentive measure, increased substantially. This suggests that the waiver maintained or improved access to specific services even if access to care overall declined.

STUDY 11: OREGON'S COORDINATED CARE ORGANIZATIONS INCREASED TIMELY PRENATAL CARE INITIATION AND REDUCED DISPARITIES

Muoto et al estimated the waiver's effect on two measures of prenatal care quality using Washington Medicaid members as a comparison group: early prenatal care initiation (a CCO incentive measure), defined as starting prenatal care in the first trimester of pregnancy; and prenatal care adequacy, defined as receiving nine or more prenatal care visits during pregnancy.²⁶ In addition, they estimated the waiver's effect on the disparity in prenatal care quality between Oregon Medicaid and commercial insurance members.

Muoto et al used a similar approach to McConnell et al, assessing the difference-in-differences between Oregon Medicaid members and the comparison group; however, they used a much longer pre-waiver period (January 2008 through June 2012), and used birth certificate data (rather than health care claims data) to calculate quality measures. In addition, Muoto et al used regression analysis to control for observable characteristics of mothers, but did not use propensity-score weighting to balance Oregon Medicaid members and the comparison group.

Muoto et al found that the rate of prenatal care initiation increased slightly compared to Washington Medicaid members in 2013. In addition, the disparity between prenatal care initiation and adequacy for Oregon Medicaid members and commercial members decreased. However, the percentage of mothers with adequate prenatal care among Oregon Medicaid members did not change compared to the rate among Washington Medicaid members.

APPENDIX C:

Activity Measures

OVERVIEW

This appendix describes activity measures we used to assess OHA's and CCOs' progress transforming health care delivery and payment. These measures were meant to help us assess the implementation of Oregon's 2012-2017 Medicaid waiver, and to help explain changes in outcome measures described in Chapter 4. We used regression analysis to evaluate the relationship between specific activity measures and outcome measures (see **Appendix F, Section 6** for details on this analysis).

Two activity measures, Patient-Centered Primary Care Home (PCPCH) Enrollment and Electronic Health Record (EHR) Adoption, were CCO Incentive Measures defined by OHA, meaning CCOs could earn incentive payments for improving their performance on these measures. The remaining activity measures were developed by CHSE for the evaluation using data provided by OHA.

LEVER 1: IMPROVE CARE COORDINATION

We used two CCO Incentive Measures to assess progress with Lever 1: PCPCH Enrollment and EHR Adoption.

- **PCPCH Enrollment:** Percentage of CCO members enrolled in a recognized patient-centered primary care home. The measure definition “weights” members enrolled in Tier 2 and 3 PCPCHs, which have achieved a higher level of PCPCH recognition, more heavily than members enrolled in Tier 1 PCPCHs:

$$(\text{Tier 1 enrollees} * 1) + (\text{Tier 2 enrollees} * 2) + (\text{Tier 3 enrollees} * 3) / (\text{total enrollees} * 3)$$

CCOs self-report PCPCH enrollment by tier to OHA. OHA provided clinic-level data, including enrollment by tier and total enrollment, which we used to calculate this measure.

- **EHR Adoption:** Percentage of providers in a CCO's network and service area that received and EHR incentive payment. The measure includes providers who received an incentive payment from the Medicaid EHR incentive program, tracked by OHA's Office of Health Information Technology, and providers who received a payment from the Medicare or Medicare Advantage Incentive Program, tracked by the federal Centers for Medicare & Medicaid Services. OHA used information on CCOs' provider networks that CCOs are contractually required to submit to calculate the measure's denominator. OHA provided summarized provider-level data for providers in the numerator and denominator that we used to calculate the measure.

Because the numerator reflected the number of providers that ever received an EHR incentive payment, CCOs could receive a score greater than 100 percent on the measure. For reporting and regression analysis, we “top coded” the measure so that a CCO with a greater score than 100 percent was reported as 100 percent.

LEVER 2: IMPLEMENT ALTERNATIVE PAYMENT METHODS (APMs)

APM Adoption: Percentage of dollars paid to providers in CCO's networks. We developed this measure to assess progress with Lever 2 based on data reported to OHA by CCOs in their quarterly financial reports (Exhibit L). CCOs reported payments for member service expenses—including health care services, health-related flexible services, and other member service expenses—on Report L10 of 2014 and 2015 Exhibit L. The report included payments by the following categories:

- Salary payments
- Capitation and alternative costs to providers
- Fee-for-service (FFS) payments
- Other payment arrangements

We calculated APM Adoption as:

$$\frac{(\text{salary payments}) + (\text{capitation and alternative costs to providers})}{(\text{salary payments}) + (\text{capitation and alternative costs to providers}) + (\text{FFS payments})}$$

We excluded other payment arrangements, as this category generally refers to providers outside CCOs' networks.

Due to changes in Exhibit L format and improvement in reporting over time, we excluded data prior to 2015 from analysis.

LEVER 3: INTEGRATE PHYSICAL, BEHAVIORAL, AND ORAL HEALTH CARE

CHSE and OHA explored potential measures of progress on Lever 3, but were unable to identify measures that directly reflect these activities using existing data sources. As described in Chapter 2, existing studies indicate that efforts to integrate care occurred at the clinic level, with CCOs and primary care clinics focused on co-locating physical and behavioral health care provides.

Future evaluations could assess progress integrating care and its relationship to outcomes using surveys of clinics to collect information about their specific activities to integrate care. CHSE and the Providence Center for Outcomes Research and Education (CORE) were collaborating on a small-scale study using survey and claims data at the time of this evaluation, but results were not available in time for this report.

LEVER 4: INCREASE EFFICIENCY

As with Lever 3, CHSE and OHA explored potential measures of progress on Lever 4, but were unable to identify measures that directly reflect progress on this lever using existing data sources. As described in Chapter 2, many features of CCOs may increase efficiency. Additional work is needed to identify specific activities CCOs are carrying out to increase efficiency and collect data on these activities.

LEVER 5: USE FLEXIBLE SERVICES

We developed two measures of progress on Lever 5 based on a survey about CCOs' use of housing-related services conducted by OHA in mid-2015.²³ The survey asked CCOs about 26 types of housing-related services they supported or partnered with other organizations to provide. We categorized these services into two overall groups and counted the number of services in each group provided by each CCO.

These measures provide an overall picture of the housing-related services CCOs support, although they do not indicate how many members received each type of service.

- **Tenancy-Supporting Services:** Number of services to help members gain or stay in housing that were supported by CCOs. The survey listed 10 services.
- **Integrated Housing and Health Services:** Number of services to help members access health care or health-related services that were supported by CCOs. The survey listed 16 services.

OHA provided survey results from CCOs. We counted responses to fill-in questions (not open-ended questions). We grouped two categories of services listed on the survey—pre-tenancy services and tenancy-sustaining services—together for the Tenancy-Supporting Services measure.

LEVER 6: SPREAD INNOVATIONS AND BEST PRACTICES

We developed two activity measures to assess progress with Lever 6.

- **Learning Collaborative Participation:** Percentage of Statewide Learning Collaborative meetings attended by CCOs. Participation in Learning Collaboratives was high across nearly all CCOs. As a result there was insufficient variation among the CCOs to analyze the effect of learning collaborative participation on outcomes.
- **Technical Assistance through the Transformation Center:** Hours of technical assistance received through OHA's Transformation Center. We excluded this measure from regression analysis because technical assistance generally occurred too late to plausibly affect outcomes for most of the years in the study period.

APPENDIX D:

Interviews with CCOs

OVERVIEW

This appendix describes our methods for conducting interviews about CCOs' use of flexible services.

INTERVIEW GUIDE

We developed an interview guide to collect information about key areas of interest to OHA and help improve flexible services policy. As background, OHA provided an interview guide and summarized findings from interviews about flexible services conducted by its Transformation Center in mid-2015. We structured our interview guide to cover topics from OHA's interviews, as well as additional areas of interest. These included:

- CCOs' overall approaches to providing flexible services and how they developed their approaches
- CCOs' processes for providers, members, and other stakeholders to request flexible services, and CCOs' processes for evaluating requests
- Funding sources used to provide flexible services
- Types of flexible services CCOs provided
- CCOs' systems for tracking and evaluating flexible services
- Challenges CCOs experienced with providing flexible services
- CCOs' processes for completing the flexible services section of their quarterly financial reports to OHA, and any flexible services they provided that were not reflected in the reports
- Any planned changes to CCOs' flexible services programs
- Interviewees' roles at their CCOs

The Institutional Review Board at Oregon Health & Science University approved our interview guide and protocol (described below). We made minor modifications to the interview guide as new information and themes emerged from the initial interviews.

PARTICIPANT RECRUITMENT, INTERVIEWS, AND FOLLOW-UP

CHSE obtained a list of names and contact information for chief executive officers and chief financial officers of all 16 CCOs from OHA. From these contacts, we requested via email the names and contact information for one or more CCO staff members who could best explain

the CCO's processes for flexible services provision and financial reporting. OHA also contacted the CEOs and CFOs by email to inform them that CHSE would be requesting names and contact information of flexible services experts. All interviews were conducted by phone and lasted between 45 minutes and one hour, with at least two members of the evaluation team participating. The interviews were audio recorded, professionally transcribed, and entered into Atlas.ti (Version 8.0, Atlas.ti Scientific Software Development GmbH) for analysis.

ANALYSIS

The evaluation team developed a preliminary code list based on the research questions and findings from OHA's 2015 interviews. The team met repeatedly to review transcripts as a group, modifying the code list until agreement on coding practices was achieved. We then extracted and summarized interview themes, meeting as needed to insure agreement on interpretation.

RESULTS

All CEOs and CFOs provided contact information for their CCOs' flexible services experts, and we were able to complete interviews with all CCOs. We conducted fourteen interviews in March and April 2017, with one to four CCO staff participating in each interview. Experts at two of the interviews provided information for two CCOs each.

Table D1 summarizes the roles of participating CCO staff as self-described during interviews.

D1. Roles of CCO staff participating in interviews

Description	Count
Medical officers and leaders (MD, RN)	5
Case management or utilization management staff and leadership	7
Financial and reporting staff	8
Community relations staff	1
Chief executive, operations, and financial officers	4
Directors of Medicaid or CCO programs	6
Contracting and network management	1
Flexible-services specific staff	3
Total CCO respondents	35

APPENDIX E:

Outcome Measures

1. OVERVIEW

This appendix describes outcome measures used to evaluate the waiver's effect on five areas: health care access, quality, experience of care, health status, and spending. It describes our process for selecting the measures, the measure stewards that developed the measures' definitions, and the types of data used to calculate the measures. In addition, it describes the steps we used to create health care spending measures for the evaluation. **Section 6** describes each measure.

2. MEASURE SELECTION

We selected measures for the evaluation from the following measure sets. These include three measure sets used by OHA and the federal Centers for Medicare & Medicaid Services (CMS) to monitor outcomes in Oregon:

- **Quality and Access Test Measures:** Measures used by CMS to monitor access and quality under the waiver. CMS could have imposed financial penalties on the State if Oregon failed to improve on these measures.
- **CCO Incentive Measures:** Measures selected by OHA's Metrics and Scoring Committee and used by OHA to award incentive payments to CCOs for performance improvements.
- **Core Performance Measures:** Additional measures used by OHA to monitor access and quality. These measures were not used to impose financial penalties or award incentive payments.
- **Other measures agreed upon by CHSE and OHA:** Additional measures selected to provide a complete picture of outcomes in the five areas.

From these measure sets, we omitted measures for which 2011 data were unavailable and measures that were challenging to calculate accurately using health care claims.

3. MEASURE STEWARDS AND DEFINITIONS

A measure steward is the expert organization that developed a measure's definition. We used nationally recognized measures whenever possible, opting to develop and use our own measures only when required by the evaluation terms or when nationally recognized measures were unavailable. We used measures developed by the following stewards:

- **National Council for Quality Assurance (NCQA):** A national not-for-profit organization that monitors health care quality and accredits health insurance plans
- **Agency for Healthcare Research and Quality (AHRQ):** A federal agency charged with improving the safety and quality of America's health care system

- **Choosing Wisely:** A national initiative aimed at avoiding wasteful or unnecessary health care services

In addition, we used a small number of measures developed by Medi-Cal (California's Medicaid program) and OHA, and we developed some access and spending measures in consultation with OHA. **Section 5** describes development of the spending measures and **Section 6** describes all measures in detail.

Stewards may update measure definitions over time to account for changes in health care billing codes or other factors. To provide a consistent picture of outcomes over time, we used the same measure definitions to calculate measures across the evaluation period.

The measure descriptions in Section 6 of this appendix include the year or version of the measure definition we used for the evaluation (if applicable) and a brief summary of the measure definition. An asterisk (*) after the steward name indicates that we modified the steward's definition, and the description notes any modifications we made to the measure. Detailed definitions for each measure are available from its steward.

4. MEASURE DATA

Measures selected were calculated from the following types of data:

- **Health insurance claims, encounters, and enrollment:** Records of health care services received by health plan members and used for billing or program administration purposes. They contain information about members' diagnoses, date and type of health care services members received, basic demographic information, and other information needed to calculate many quality measures.
- **Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys:** Standardized surveys developed by AHRQ and its contractors. The surveys ask patients to report on their experience with health plans, primary or specialty care, and other parts of the health care system. OHA administers CAHPS survey questions to a sample of members from each CCO and a sample of members with fee-for-service (FFS) coverage each year.
- **Other data:** Data from the Oregon Physician Workforce Survey, immunization records, and state administrative records.

Appendix F describes our sources for these data.

5. SPENDING MEASURES

CHSE developed all spending measures used for the evaluation. We used the following steps to create spending measures:

- **We “repriced” most medical claims using prices paid by Oregon’s Medicaid FFS program to stand in for spending on each service.** Repricing helped account for differences in prices paid for services by different CCOs, and for differences in prices paid by Oregon's and Washington's Medicaid programs. In addition, it provided spending amounts for services covered under capitation systems, in which providers receive a fixed payment per person (rather than a payment for each service) to provide care.
- **We used prescription drug spending amounts as they appeared on pharmacy claims.** For Washington, we used “paid amount” because this was the only cost field available in the Washington Medicaid data. For Oregon, we used “allowed amount” because an evaluation

of Oregon Medicaid pharmacy data suggested paid amounts for non-carveout drugs were vastly underreported.

- **We grouped claims into categories and used claims in these categories to create the eight spending measures shown in Chapter 4, Figure 4.12.** Of the measures, six are comparable between Oregon and Washington. Due to data limitations, we did not report the two remaining measures for Washington.
- **We calculated all measures as spending on services per member per month (PMPM).** For an individual member, spending PMPM was calculated as total spending on services in a year divided by number of months the member was enrolled in the year.

We used the following steps to calculate spending on specific measures:

- **Primary Care, Emergency Department, and Other Outpatient Spending PMPM:** We used repriced medical claims to determine PMPM spending. We included only services for evaluation and management, imaging, tests, and procedures, as defined by Berenson-Eggers Type of Service (BETOS) categories. We included observation visits, defined as same-day discharges from an inpatient facility, as Other Outpatient spending at a flat \$1,573 rate based on prior analyses of average inpatient daily spending among Oregon Medicaid members. We excluded behavioral health claims, which we reported separately.
- **Inpatient Facility Spending PMPM:** We calculated inpatient days as the number of nights spent in the hospital, using facility claims. We considered same-day discharges as “observation visits” and included them as Other Outpatient spending (not inpatient spending). We summed inpatient days and multiplied by a \$1,573 daily rate based on prior analyses of average inpatient daily spending among Oregon Medicaid members. We excluded behavioral health claims, which we reported separately.
- **Inpatient Professional Spending PMPM (Oregon only):** We used repriced medical claims to determine PMPM spending. We excluded behavioral health claims, which we reported separately. We did not calculate this measure for Washington because validation checks on data received from Washington’s Medicaid program suggested the data did not include a full set of inpatient professional claims for Washington Medicaid members.
- **Prescription Drug Spending PMPM:** We used pharmacy claims to determine PMPM spending. We excluded drugs on a list of mental health prescription drugs provided by OHA, as these drugs were carved out of CCOs’ global budgets and paid for on a fee-for-service basis.
- **Behavioral Health Spending PMPM (Oregon only):** We identified behavioral health claims using definitions of behavioral health services from two prior studies of behavioral health care coverage^{30,31} and used repriced behavioral health claims to determine PMPM spending. Inpatient facility behavioral health spending was calculated as the number of nights spent in the hospital multiplied by a \$1,573 daily rate based on prior analyses of average inpatient daily spending among Oregon Medicaid members. Because the data we received from Washington’s Medicaid program excluded behavioral health claims, we were unable to compare behavioral health spending for Oregon and Washington Medicaid members.
- **Total Spending PMPM:** We calculated two versions of this measure:
 - » **Total Spending PMPM for Pre-Post Analysis (Oregon only):** We summed all spending categories above. This measure provides a more complete picture of overall spending in Oregon but is not comparable between Oregon and Washington.
 - » **Total Spending PMPM for Comparison Group Analysis:** We summed all spending categories above except Inpatient Professional Spending and Behavioral Health

Spending. Because this measure excluded Inpatient Professional Spending and Behavioral Health Care Spending, it was comparable between Oregon and Washington.

The following information should be considered when interpreting spending measures in this report:

- **The spending measures reflect changes in spending that would have occurred if all services were priced at FFS prices (not actual prices paid).** As described above, we repriced medical claims using prices paid by Oregon's Medicaid FFS program. This step was needed to account for differences in prices paid by CCOs and Medicaid programs, and to provide spending amounts for services covered under capitation systems. It means that evaluation results for spending measures reflect changes in spending that would have occurred *if all services were priced the same way*, rather than changes in spending that *actually occurred*.
- **The spending measures exclude spending on health care services outside the categories described above.** Examples include durable medical equipment and medical transportation. Spending on such services was not comparable for Oregon and Washington Medicaid members, either because the services were not covered by Washington's Medicaid program, or because data on service use was not comparable between the two states. In addition, total spending excludes drugs carved out of CCOs' global budgets and paid for on a fee-for-service basis.
- **The spending measures exclude any spending by CCOs or the State through non-claims-based payment systems.** Examples include incentive payments from CCOs to health care providers for achieving quality goals, and spending on non-billable health-related services, such as individual or community-level flexible services.
- **Spending reported for the evaluation is defined differently than spending used for the waiver's Quality and Access Test.** Oregon's 2012-2017 Medicaid waiver stated that CCOs' global budget spending PMPM for all people required to enroll in CCOs and enrolled voluntarily would be used to determine whether the State had achieved the waiver's goal of limiting spending growth. This definition of spending is broader than spending reflected in our measures, which exclude some types of spending from CCOs' global budgets. As a result, spending measures used for the evaluation cannot be used to determine whether Oregon passed the Quality and Access Test.

6. MEASURE DESCRIPTIONS

This section describes the specific measures selected for the evaluation, grouped into 13 domains. It includes each measure's formal name (the name used by the measure steward, if different from the name used in this report); the measure's steward and year or version of the measure definition used in this report (if applicable); a brief description of the measure, including any modifications we made to the definition; the type of data used to calculate the measure; and measure sets to which the measure belongs.

1. ACCESS: Access to Care Overall

Name: **Members with Any Health Care**

Formal name: NA

Steward: CHSE

Description: Percentage of members age one and older who received at least one physical or behavioral health care service in the measurement year.

Data: Health care claims

Measure set: Other

Name: **Getting Care Quickly**

Formal name: NA

Steward: AHRQ, 2015

Description: Average of two percentages: Percentage of members who said they usually or always got care for illness or injury as soon as needed; and percentage of members who said they usually or always got non-urgent appointments as soon as needed within the last six months

Data: CAHPS Survey

Measure set: Quality and Access Test, CCO Incentive (2013-2017), Core Performance

Name: **Getting Needed Care**

Formal name: NA

Steward: AHRQ, 2015

Description: Average of two percentages: Percentage of members who said it was usually or always easy to get needed care, tests, or treatments; and percentage of members who said it was usually or always easy to get appointments with specialists as soon as needed within the last six months

Data: CAHPS Survey

Measure set: Other

Name: **Physicians Accepting New Medicaid Patients**

Formal name: Extent to which providers are accepting new Medicaid / Oregon Health Plan patients

Steward: OHA

Description: Percentage of Oregon physicians who said their practice was open to new Medicaid patients or accepting new Medicaid patients on a limited basis (excluding responses of “don’t know” and “does not apply”)

Data: Oregon Physician Workforce Survey

Measure set: Quality and Access Test

Name: **Physicians Caring for Medicaid Patients**

Formal name: Extent to which providers currently see Medicaid patients

Steward: OHA

Description: Percentage of Oregon physicians who reported they had Medicaid patients under their care (excluding responses of “don’t know”)

Data: Oregon Physician Workforce Survey

Measure set: Quality and Access Test

Name: **Patients with Medicaid Coverage**

Formal name: Current payer mix

Steward: OHA*

Description: Average percentage of patients in a provider's practice with Medicaid coverage, as reported by Oregon physicians. By contrast, OHA calculates this measure as percentage of providers who reported *any* Medicaid patients among their patients, rather than average percentage of patients with Medicaid coverage reported by physicians.

Data: Oregon Physician Workforce Survey

Measure set: Quality and Access Test

2. ACCESS: Access to Primary Care

Name: **Members with Any Primary Care**

Formal name: NA

Steward: CHSE

Description: Percentage of members age one and older who had at least one visit to a primary care provider in the measurement year

Data: Health care claims

Measure set: Other

Name: Children and Adolescents' Access to Primary Care

Formal name: Children and Adolescents' Access to Primary Care Practitioners

Steward: NCQA, 2014

Description: Percentage of children who had at least one visit to a primary care provider in the measurement year or prior year; reported separately for children and adolescents age 1 to 6 and 7 to 19.

Data: Health care claims

Measure set: Other

Name: Adults' Access to Primary Care

Formal name: Adults' Access to Preventive-Ambulatory Services

Steward: NCQA, 2014

Description: Percentage of adults who had an outpatient or preventive care visit in the measurement year; reported separately for adults age 20-44 and 45-64, and 65 and over

Data: Health care claims

Measure set: Other

3. ACCESS: Access to Behavioral Health Care

Name: Outpatient Visits for Behavioral Health Care per 1,000 MM

Formal name: NA

Steward: CHSE

Description: Number of outpatient visits for behavioral health care per 1,000 member months (total months of enrollment divided by 1,000)

Data: Health care claims

Measure set: Other

Name: Outpatient Visits for Non-Behavioral Health Care per 1,000 MM

Formal name: NA

Steward: CHSE

Description: Number of outpatient visits for non-behavioral health care per 1,000 member months (total months of enrollment divided by 1,000)

Data: Health care claims

Measure set: Other

4. QUALITY: Prevention and Wellness for Children and Adolescents

Name: Well-Child Visits in the First 15 Months

Formal name: Well-Child Visits for Children 0-15 Months of Age

Steward: NCQA, 2014

Description: Percentage of children who reached age 15 months in the measurement year who had six or more well-child visits during their first 15 months of life

Data: Health care claims

Measure set: Quality and Access Test

Name: Developmental Screening in the First Three Years

Formal name: Developmental Screening in the First Three Years of Life

Steward: NCQA, 2014

Description: Percentage of members who reached age one, two, or three in the measurement year, and who were screened for risk of developmental, behavioral, and social delays in the 12 months preceding their first, second or third birthday

Data: Health care claims

Measure set: Quality and Access Test, CCO Incentive (2013-2017), Core Performance

Name: Adolescent Well-Care Visits

Formal name: NA

Steward: NCQA, 2014

Description: Percentage of members age 12 to 21 who had at least one comprehensive well-care visit in the measurement year

Data: Health care claims

Measure set: Quality and Access Test, CCO Incentive (2013-2017), Core Performance

Name: Assessments for Children in DHS Custody

Formal name: Assessments within 60 Days for Children in DHS Custody

Steward: OHA

Description: Percentage of members age zero to 17 years in custody of the Oregon Department of Human Services who received required physical, mental, and dental assessments

Data: Health care claims and administrative records from Oregon's foster care system; CHSE used a summarized data extract from OHA to calculate the measure

Measure set: CCO Incentive (2013-2017)

Name: **Immunizations for Children**
Formal name: Childhood Immunization Status
Steward: NCQA, 2017
Description: Percentage of children age two who received recommended vaccinations
Data: Oregon ALERT Immunization Information System; CHSE received statewide rates calculated by OHA to report this measure
Measure set: Quality and Access Test, CCO Incentive (2016-2017)

Name: **Immunizations for Adolescents**
Formal name: Immunization for Adolescents
Steward: NCQA, 2016
Description: Percentage of members age 13 who received recommended vaccinations
Data: Oregon ALERT Immunization Information System; CHSE received statewide rates calculated by OHA to report this measure
Measure set: Quality and Access Test

5. QUALITY: Prevention and Wellness for Adults

Name: **Chlamydia Screening for Women Age 16 to 24**
Formal name: Chlamydia Screening in Women 16-24
Steward: NCQA, 2014
Description: Percentage of women identified as sexually active who received at least one chlamydia test during the measurement year; reported separately for women age 16-20 and 21-24
Data: Health care claims
Measure set: Quality and Access Test

Name: **Effective Contraceptive Use**
Formal name: NA
Steward: OHA, 2015
Description: Percentage of women age 15-44 who used contraception during the measurement year
Data: Health care claims
Measure set: CCO Incentive (2015-2017), Core Performance

Name: **Monitoring for Patients on Long-Term Medications**
Formal name: Annual Monitoring for Patients on Persistent Medications
Steward: NCQA, 2014
Description: Percentage of members age 18 and over who received at least 180 days of specific drug therapies in the measurement year, and who had at least one drug monitoring test in the measurement year
Data: Health care claims
Measure set: Other

Name: Tobacco Use

Formal name: Tobacco Use Prevalence

Steward: AHRQ, 2015

Description: Percentage of members age 18 and older who currently smoke cigarettes or use other tobacco products

Data: CAHPS Survey

Measure set: Core Performance

Name: Help Quitting Tobacco Use: Members Advised to Quit

Formal name: Medical Assistance with Smoking and Tobacco Use Cessation: Advised to Quit

Steward: AHRQ, 2015

Description: Percentage of members who currently smoke or use tobacco, and who were usually or always advised to quit by a doctor or other health care provider in the last six months

Data: CAHPS Survey

Measure set: Quality and Access Test

Name: Help Quitting Tobacco Use: Doctor Recommended Medication

Formal name: Medical Assistance with Smoking and Tobacco Use Cessation: Medications to Quit

Steward: AHRQ, 2015

Description: Percentage of members who currently smoke or use tobacco, and who were usually or always recommended medication to quit tobacco use by a doctor or other health care provider in the last six months

Data: CAHPS Survey

Measure set: Quality and Access Test

Name: Help Quitting Tobacco Use: Doctor Discussed Strategies

Formal name: Medical Assistance with Smoking and Tobacco Use Cessation: Strategies to Quit

Steward: AHRQ, 2015

Description: Percentage of members who currently smoke or use tobacco whose doctor or other health care provider usually or always discussed or recommended strategies to quit tobacco use in the last six months

Data: CAHPS Survey

Measure set: Quality and Access Test

6. QUALITY: Care Coordination

Name: 30-Day Follow-Up after Hospitalization for Heart Attack

Formal name: 30-Day Outpatient Follow-Up after Hospitalization for Acute Myocardial Infarction

Steward: CHSE

Description: Percentage of acute inpatient discharges after visits for acute myocardial infarction (heart attack) where the patient received a follow-up visit within 30 days

Data: Health care claims

Measure set: Other

Name: 30-Day Follow-Up after Hospitalization for Heart Failure

Formal name: 30-Day Outpatient Follow-Up after Hospitalization for Heart Failure

Steward: CHSE

Description: Percentage of acute inpatient discharges after visits for heart failure where the patient received a follow-up visit within 30 days

Data: Health care claims

Measure set: Other

Name: 30-Day Follow-Up after Hospitalization for Pneumonia

Formal name: 30-Day Outpatient Follow-Up after Hospitalization for Pneumonia

Steward: CHSE

Description: Percentage of acute inpatient discharges after visits for pneumonia where the patient received a follow-up visit within 30 days

Data: Health care claims

Measure set: Other

Name: Alcohol or Other Drug Treatment: Initiation

Formal name: Engagement of Alcohol or Other Drug Dependence Treatment, 13-64 years

Steward: NCQA, 2014

Description: Percentage of members age 13 and over diagnosed with alcohol or drug dependence who started treatment within 14 days of the diagnosis

Data: Health care claims

Measure set: Core Performance

Name: Alcohol or Other Drug Treatment: Engagement

Formal name: Engagement of Alcohol or Other Drug Dependence Treatment, 13-64 years

Steward: NCQA, 2014

Description: Percentage of members age 13 and over diagnosed with alcohol or drug dependence who started treatment, and who received at least two services for alcohol or other drug abuse within 30 days of starting treatment

Data: Health care claims

Measure set: Core Performance

7. QUALITY: Physical, Behavioral, and Oral Health Care Integration

Name: Follow-Up for Children with ADHD Medication: Initiation

Formal name: Follow-up care for Children Prescribed ADHD Medication - Initiation

Steward: NCQA, 2014

Description: Percentage of children age 6 to 12 prescribed ADHD medication who had a follow-up visit within 30 days.

Data: Health care claims

Measure set: Quality and Access Test, CCO Incentive (2013-2014)

Name: Follow-Up for Children with ADHD Medication: Engagement

Formal name: Follow-Up Care for Children Prescribed ADHD Medication - Engagement

Steward: NCQA, 2014

Description: Percentage of children prescribed ADHD medication who had at least two follow-up visits within 31 to 300 days, and who stayed on medication at least 210 days.

Data: Health care claims

Measure set: Quality and Access Test, CCO Incentive (2013-2014)

Name: 30-Day Follow-Up after Hospitalization for Mental Illness

Formal name: NA

Steward: NCQA, 2014

Description: Percentage of discharges from a hospital after a member was hospitalized for mental illness in which the member received follow-up from a health care provider within 30 days of discharge.

Data: Health care claims

Measure set: Quality and Access Test, CCO Incentive (2013-2017)

Name: **Glucose Testing for Members with Antipsychotic Medications**

Formal name: Glucose Testing for People Using Second Generation Antipsychotic Medications

Steward: CHSE (based on a measure developed by RAND Corporation for the Veterans Administration)

Description: Percentage of members age 18 to 64 with a filled prescription for second-generation antipsychotic medication in the prior year who had at least one HbA1c test performed within 180 days of last prescription fill

Data: Health care claims

Measure set: Other

Name: **Cholesterol Testing for Members with Antipsychotic Medications**

Formal name: Lipid Testing for People Using Second Generation Antipsychotic Medications

Steward: CHSE (based on a measure developed by RAND Corporation for the Veterans Administration)

Description: Percentage of members age 18 to 64 with a filled prescription for second-generation antipsychotic medication in the prior year who had at least one LDL-C screening performed within 180 days of last prescription fill

Data: Health care claims

Measure set: Other

Name: **Members with Any Dental Care**

Formal name: NA

Steward: CHSE

Description: Percentage of members who received at least one dental service in the measurement year

Data: Health care claims

Measure set: Other

Name: **Dental Sealants for Children**

Formal name: NA

Steward: OHA, 2016

Description: Percentage of children age 6-14 who received a sealant on a permanent molar in the measurement year

Data: Health care claims

Measure set: CCO Incentive (2015-2017)

8. QUALITY: Care for People with Chronic Conditions

Name: **Appropriate Medications for Children with Asthma**

Formal name: Use of Appropriate Medications for People with Asthma, Children

Steward: NCQA, 2014

Description: Percentage of members age 5 to 17 with persistent asthma who received appropriate medication in the measurement year

Data: Health care claims

Measure set: Other

Name: **Appropriate Medications for Adults with Asthma**

Formal name: Use of Appropriate Medications for People with Asthma, Adult

Steward: NCQA, 2014

Description: Percentage of members age 18 to 64 with persistent asthma who received appropriate medication in the measurement year

Data: Health care claims

Measure set: Other

Name: **Glucose Testing for People with Diabetes**

Formal name: Diabetes HbA1C Testing

Steward: NCQA, 2014

Description: Percentage of members age 18 to 75 with type 1 or 2 diabetes who had at least one HbA1c test in the measurement year

Data: Health care claims

Measure set: Quality and Access Test

Name: **Cholesterol Testing for People with Diabetes**

Formal name: Diabetes LDLC Screening

Steward: NCQA, 2014

Description: Percentage of members age 18 to 75 with type 1 or 2 diabetes who had at least one cholesterol test in the measurement year

Data: Health care claims

Measure set: Quality and Access Test

Name: **Cholesterol Testing for People with Cardiovascular Conditions**

Formal name: Cholesterol Management for Patients with Cardiovascular Conditions

Steward: NCQA, 2014

Description: Percentage of members age 18 to 75 with cardiovascular conditions who had at least one cholesterol test in the measurement year

Data: Health care claims

Measure set: Other

9. QUALITY: Hospital and Emergency Department Use

Name: **Emergency Department Visit Rate**

Formal name: Ambulatory Care: ED Utilization (per 1,000 MM)

Steward: NCQA, 2014

Description: ED visits per 1,000 member months (total months of enrollment divided by 1,000)

Data: Health care claims

Measure set: Quality and Access Test, CCO Incentive (2013-2017), Core Performance

Name: **Avoidable Emergency Department Visit Rate**

Formal name: Potentially Avoidable ED Visits

Steward: Medi-Cal

Description: Number of ED visits with a diagnosis indicating they are preventable or treatable with appropriate primary care per 1,000 member months (total months of enrollment divided by 1,000); reported separately for members age 1 to 17 and 18 and over

Data: Health care claims

Measure set: Core Performance

Name: **Avoidable Hospitalization Rate: Short-Term Complications from Diabetes**

Formal name: Prevention Quality Indicator 01: Adult Diabetes Short Term Complications Admission Rate

Steward: AHRQ, v4.5*

Description: Number of hospital admissions for short-term complications from diabetes per 100,000 member years (total member months of enrollment multiplied by 100,000 / 12) for members 18 and over; CHSE modified this measure by counting admissions that were transfers between hospitals as unique admissions

Data: Health care claims

Measure set: Quality and Access Test

Name: **Avoidable Hospitalization Rate: Asthma in Younger Adults**

Formal name: Prevention Quality Indicator 15: Asthma in Younger Adults Admission Rate

Steward: AHRQ, v4.5*

Description: Number of hospital admissions for asthma per 100,000 member years member years (total member months of enrollment multiplied by 100,000 / 12) for members age 18 to 39; CHSE modified this measure by counting admissions that were transfers between hospitals as unique admissions

Data: Health care claims

Measure set: Quality and Access Test

Name: **Avoidable Hospitalization Rate: COPD or Asthma in Older Adults**

Formal name: Prevention Quality Indicator 05: COPD or Asthma in Older Adults Admission Rate

Steward: AHRQ, v4.5*

Description: Number of hospital admissions for chronic obstructive pulmonary disease (COPD) or asthma per 100,000 member years (total member months of enrollment multiplied by 100,000 / 12) for members age 40 and over; CHSE modified this measure by counting admissions that were transfers between hospitals as unique admissions

Data: Health care claims

Measure set: Quality and Access Test

Name: **Avoidable Hospitalization Rate: Heart Failure**

Formal name: Prevention Quality Indicator 08: Congestive Heart Failure Admission Rate

Steward: AHRQ, v4.5*

Description: Number of hospital admissions for heart failure per 100,000 member years (total member months of enrollment multiplied by 100,000 / 12) for members 18 and over; CHSE modified this measure by counting admissions that were transfers between hospitals as unique admissions

Data: Health care claims

Measure set: Quality and Access Test

Name: **Readmissions to the Hospital within 30 Days**

Formal name: 30-day Plan All-Cause Readmissions

Steward: NCQA, 2014

Description: Percentage of hospital stays among members age 18 and over with unplanned readmissions to the hospital within 30 days

Data: Health care claims

Measure set: Other

10. QUALITY: Avoiding Low-Value Care

Name: **Appropriate Use of Imaging Tests for Low Back Pain**

Formal name: Appropriate Use of Imaging Studies for Low Back Pain

Steward: NCQA, 2014

Description: Percentage of members with a new diagnosis of low back pain who did not receive an imaging study within 28 days of diagnosis

Data: Health care claims

Measure set: Other

Name: **Avoidance of Imaging Tests for Headache**
Formal name: Avoidance of Head Imaging for Uncomplicated Headache
Steward: Choosing Wisely
Description: Percentage of members with a diagnosis of uncomplicated headache who did not receive a CT or MRI for an uncomplicated headache
Data: Health care claims
Measure set: Other

Name: **Avoidance of Antibiotics for Adults with Acute Bronchitis**
Formal name: Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis
Steward: NCQA, 2014
Description: Percentage of members diagnosed with acute bronchitis who were not dispensed an antibiotic within three days of the diagnosis
Data: Health care claims
Measure set: Other

Name: **Avoidance of CT Scan without Ultrasound for Appendicitis**
Formal name: Avoidance of CT without Ultrasound, for Evaluation of Suspected Appendicitis
Steward: Choosing Wisely
Description: Percentage of children age 1-18 with a diagnosis of appendicitis who had a CT scan, but not an ultrasound, within 30 days prior to the diagnosis
Data: Health care claims
Measure set: Other

Name: **Avoidance of Unnecessary Cervical Cancer Screening**
Formal name: Avoidance of Non-Recommended Cervical Cancer Screenings in Adolescent Females
Steward: NCQA, 2014
Description: Percentage of females age 16-20 who were not screened unnecessarily for cervical cancer
Data: Health care claims
Measure set: Other

Name: **Appropriate Testing for Children with Sore Throat**
Formal name: Appropriate Testing for Children with Pharyngitis
Steward: NCQA, 2014
Description: Children age 2-18 diagnosed with pharyngitis and dispensed an antibiotic who received a strep test for the episode
Data: Health care claims
Measure set: Quality and Access Test

11. EXPERIENCE OF CARE

Name: How Members Rated their Health Care

Formal name: Rating of All Health Care

Steward: AHRQ

Description: Percentage of members who rated all their health care in the last six months an 8, 9, or 10 on a scale of 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible

Data: CAHPS Survey

Measure set: Other

Name: How Members Rated their Doctor

Formal name: Rating of Personal Doctor

Steward: AHRQ

Description: Percentage of members who rated their personal doctor an 8, 9, or 10 on a scale of 0 to 10, where 0 is the worst personal doctor possible and 10 is the best personal doctor possible

Data: CAHPS Survey

Measure set: Other

Name: How Well Doctors Communicate

Formal name: NA

Steward: AHRQ

Description: Average of four percentages: 1) percentage of members who said their doctor usually or always explained things in a way that was easy to understand; 2) percentage of members who said their doctor usually or always listened to them carefully; 3) percentage of members who said their doctor usually or always showed respect for what they had to say; and 4) percentage of members who said their doctor usually or always spent enough time with them in the last six months

Data: CAHPS Survey

Measure set: Other

Name: How Members Rated their Specialist

Formal name: Rating of Specialist

Steward: AHRQ

Description: Percentage of members who rated the specialists they saw most often in the last six months an 8, 9, or 10 on a scale of 0 to 10, where 0 is the worst specialist possible and 10 is the best specialist possible

Data: CAHPS Survey

Measure set: Other

Name: How Members Rated their Health Plan

Formal name: Health Plan Customer Service

Steward: AHRQ

Description: Average of two percentages: 1) percentage of members who said health plan customer service usually or always gave them the information or help they needed; and 2) percentage of members who said health plan customer service usually or always treated them with courtesy and respect in the last six months

Data: CAHPS Survey

Measure set: Quality and Access Test, CCO Incentive (2013-2017), Core Performance

12. HEALTH STATUS

Name: Member Rating of Overall Health

Formal name: Member Rating of Health Status

Steward: AHRQ

Description: Percentage of members who rated their overall health as good, very good, or excellent

Data: CAHPS Survey

Measure set: Core Performance

13. SPENDING

Name: Primary Care Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total spending on primary care services common to Oregon and Washington Medicaid, excluding behavioral health services, divided by months of enrollment. To account for differences in provider payment rates among CCOs and states, we used prices paid by Oregon's Medicaid FFS program to stand in for spending on each service. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Emergency Department Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total spending on emergency department services common to Oregon and Washington Medicaid, excluding behavioral health services, divided by months of enrollment. To account for differences in provider payment rates among CCOs and states, we used prices paid by Oregon's Medicaid FFS program to stand in for spending on each service. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Other Outpatient Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total spending on outpatient services common to Oregon and Washington Medicaid, excluding primary care, emergency department, and behavioral health services, divided by months of enrollment. To account for differences in provider payment rates among CCOs and states, we used prices paid by Oregon's Medicaid FFS program to stand in for spending on each service. We included observation visits as Other Outpatient spending at a flat \$1,573 rate. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Inpatient Facility Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total inpatient facility spending, excluding behavioral health services, divided by months of enrollment. We calculated total inpatient spending as the sum of inpatient days multiplied by a \$1,573 daily rate. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Inpatient Professional Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total inpatient professional spending, excluding behavioral health services, divided by months of enrollment. To account for differences in provider payment rates among CCOs and states, we used prices paid by Oregon's Medicaid FFS program to stand in for spending on each service. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Prescription Drug Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total spending on prescription drugs, excluding mental health drugs "carved out" of CCO coverage and paid for by Oregon's Medicaid FFS program, divided by months of enrollment. We used "paid amount" from Washington claims and "allowed amount" from Oregon claims due to limitations of data received from both states' Medicaid programs. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Behavioral Health Care Spending Per Member, Per Month (PMPM)

Formal name: NA

Steward: CHSE

Description: Total spending on behavioral health care services divided by months of enrollment. We used definitions of behavioral health services from two prior studies of behavioral health care coverage.^{27,28} To account for differences in provider payment rates across CCOs, we used prices paid by Oregon's Medicaid FFS program to stand in for spending on each service. We calculated inpatient facility behavioral health spending as the number of nights spent in the hospital multiplied by a \$1,573 daily rate. We were unable to calculate this measure for Washington Medicaid members because data we received from Washington's Medicaid program exclude behavioral health claims. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

Name: Total Spending Per Member, Per Month (PMPM) for Comparison Group Analysis

Formal name: NA

Steward: CHSE

Description: Sum of Primary Care Spending, Other Outpatient Spending, Emergency Department Spending, Inpatient Facility Spending, and Prescription Drug Spending. This measure is comparable for Oregon and Washington Medicaid members. See **Section 5** above for details about spending measures.

Data: Health care claims

Measure set: Other

Name: Total Spending Per Member, Per Month (PMPM) for Pre-Post Analysis

Formal name: NA

Steward: CHSE

Description: Sum of Total Spending for Comparison Group Analysis, Inpatient Professional Spending, and Behavioral Health Care Spending. This measure is reported for Oregon Medicaid members only. See **Section 5** above for details.

Data: Health care claims

Measure set: Other

APPENDIX F:

Regression Models

OVERVIEW

This appendix describes our methodology for estimating the waiver's effects on outcome measures (see **Appendix E** for details on measures). It includes the following sections:

- **Sections 1-3:** These sections describe our processes for calculating outcome measures using three data sources: health care claims and enrollment data, CAHPS survey data, and other data. They describe the data sources, how we specified measure outcomes for use in regression models, data timeframes we used, and how we reported results for different Medicaid populations and subgroups. Section 1 also describes how we selected outcome measures for dual-eligible members and why rates for claims-based measures reported by OHA may differ from rates calculated for the evaluation.
- **Section 4:** This section describes regression models we used for pre-post analysis, subgroup analysis, calculating predicted outcomes of CCO members in the highest and lowest CCOs, and comparison group analysis.
- **Section 5:** This section describes our methods for propensity-score weighting, which was used for comparison group analysis.
- **Section 6:** This section describes our methods for estimating the relationship between specific activities to transform health care delivery and payment, as represented by activity measures, and change in specific outcomes among CCOs.

1. CLAIMS-BASED MEASURES

We selected 54 measures based on health care claims and enrollment data. These include most access and quality measures and all of the spending measures in this evaluation.

Data Sources

We obtained health care claims and enrollment data from the following sources:

- **Oregon's Medicaid program:** We obtained health care claims and encounters data for Oregon Medicaid members from OHA's Health Systems Division. These include claims and encounters reported to OHA by CCOs and claims paid by Oregon's Medicaid fee-for-service (FFS) program.
- **Washington's Medicaid program:** We obtained health care claims and encounters data for Washington Medicaid members from the Washington State Health Care Authority, Washington's Medicaid agency. We used these data to create a comparison group comprised of Washington Medicaid members.
- **OHA's All-Payer All-Claims Reporting Program (APAC):** APAC collects data on claims paid for Oregonians by commercial health insurance plans, Medicare Advantage plans, the federal Medicare FFS program, and Oregon's Medicaid program. We used data from APAC

to create a dataset of complete claims data for dual-eligibles, Oregonians with Medicare and Medicaid coverage. We describe the process for creating the dataset below.

Data from these sources included enrollment files with information on the months members were enrolled in coverage and basic demographic information, and claims files with members' diagnoses, health care services received, and other information from health care claims.

Table F1 shows the type of claims available from each data source.

- Because the type of claims available varied among data sources, we were unable to calculate all claims-based measures for Washington Medicaid members and dual-eligible members. Specifically, we were unable to calculate measures requiring behavioral health care and dental care claims for Washington Medicaid members.
- Due to differences between Oregon Medicaid data and APAC data, measures calculated for dual-eligible members and other Oregon Medicaid members were not directly comparable.

Table F1. Claims data sources

Data source	Physical health care claims	Behavioral health care claims	Substance use claims	Dental health care claims
Oregon's Medicaid program	Yes	Yes	Yes	Yes
Washington's Medicaid program	Yes	No	No	No
Oregon APAC	Yes	Yes	No	No

Measure Outcomes

For regression models, we calculated measures for each member on an annual basis:

- **Measures with binary outcomes:** We calculated measures with binary outcomes—for example, whether or not the member received a specific service—by determining who was eligible for the measure (the denominator) and then calculated whether eligible members met the criteria for the measure within a given timeframe (the numerator). Eligible members received a 1 for the year if they met the criteria and a 0 if they did not meet criteria.
- **Measures with non-binary outcomes:** We calculated measures with non-binary outcomes—for example, number of visits or spending—by determining who was eligible for the measure (the denominator) and calculating a total for each eligible member (the numerator). Denominators of these measures are expressed in different units for different measures (e.g., months of enrollment). The outcomes are also expressed in different units for different measures (e.g., the number of visits per 1,000 months of enrollment or dollars spent for healthcare services per member, per month).

Data Timeframe

To ensure claims data used in each year of the study were complete, we selected 2015 as the latest year to include in the analysis. Claims often take 3 to 6 months or longer to finalize and pay after health care services are delivered. As a result, claims data from 2016 were not considered sufficiently complete as of early 2017, when the analyses were carried out.

We defined 2015 as Q4 2014 through Q3 2015. Starting in October 2015, the federal government required health care organizations to transition from ICD-9 to ICD-10 diagnostic and procedure codes. Due to this change, we defined our 2015 measurement year as October 1, 2014 through September 30, 2015. Redefining 2015 allowed us to calculate claims-based measures over a 12-month period comparable to other years in the evaluation timeframe using ICD-9 codes. This means members' outcomes in Quarter 4, 2014 were used twice in regression models: once to analyze effects for 2014 and again to analyze effects for 2015.

Identifying Medicaid Populations

We analyzed claims-based measures separately for four non-overlapping populations that may have been affected differently by Oregon's 2012-2017 waiver. We used the following criteria to include a member's measure outcome in a given year in the analysis for a specific population.

- **Medicaid member:** Enrolled in a CCO at least three months in the year and not a post-expansion or dual-eligible member (see below).
- **Fee-for-service (FFS) member:** Enrolled in Medicaid FFS coverage at least three months in the year and not a post-expansion or dual-eligible member (see below).
- **Post-expansion member:** Not enrolled in Medicaid before 2014, eligible for Medicaid under ACA expansion eligibility criteria (identified by OHA Program Eligibility Reporting Codes M1 and M3), enrolled in Medicaid at least three months in the year prior to the measurement year, and not a dual-eligible member (see below); may be enrolled in CCO or Medicaid FFS coverage. We used a modified version of this definition for comparison group analysis (see below).
- **Dual-eligible member:** Enrolled in Medicare and Medicaid, enrolled in all three months of each quarter in the year prior to the measurement year, not a partial dual-eligible (one for whom Medicaid covers only Medicare expenses, such as premiums, deductibles and copays), and not enrolled in Program of All-Inclusive Care for the Elderly (PACE); may be enrolled in CCO or Medicaid FFS coverage.

We used a modified version of the post-expansion member definition for comparison group analysis. For comparison group analysis, we compared changes among CCO members and Washington Medicaid members, excluding other Oregon Medicaid populations from the analysis. To exclude post-expansion members, we used the definition above, but did not restrict post-expansion members to those eligible under ACA expansion criteria. This means CCO members used in comparison group analysis excluded everyone who was new to Medicaid in 2014 and 2015, including some people who were eligible for Medicaid under preexisting eligibility criteria. As described in **Section 5** below, the propensity-score weighting method used for comparison group analysis was designed to make the CCO and Washington Medicaid populations in 2013-2015 "look like" the CCO population in Q4 2011. Excluding everyone new to Medicaid in 2014 and 2015 helped achieve this goal.

Identifying Subgroups

We used the following information to categorize Medicaid members into subgroups for claims-based measures (see **Chapter 4, Table 4.3** for the list of subgroups):

- **Medicaid enrollment files:** We used information from Medicaid enrollment files to identify members by race/ethnicity group (with the exception of Indian tribe members), age group, sex, geography of residence (identified using the University of Washington's Rural-Urban Commuting Area designations, a crosswalk applied at the zip code level), disability status

(identified by OHA Program Eligibility Reporting Codes 3, 4, 3B, and D4), and household language.

- **Tribal member file:** We used a supplemental file provided by OHA to identify Indian tribe members. Tribal identity superseded race/ethnicity in the Medicaid enrollment file; that is, a member identified as tribal in the supplemental file was categorized as tribal regardless of his or her race/ethnicity in the enrollment file. Tribal identify may differ from American Indian/Alaska Native identify in Medicaid enrollment files.
- **Medicaid claims files:** We used data on diagnoses and services from Medicaid claims files to identify high utilizers, members with severe and persistent mental illness (SPMI), and children and youth with special health needs (CYSHN). OHA provided a list of diagnosis and procedure codes that we used to identify members with SPMI (Table F2). At OHA's request, we used diagnosis codes published by CMS to identify children with chronic conditions.³²

Table F2. Diagnosis codes used to identify people with SPMI*

Diagnosis	ICD-9 code
Schizophrenia and other psychotic disorders	295.XX, 297.3, 298.8, 298.9
Major depression and bipolar disorders	296.XX
Cyclothymic disorder	301.13
Schizotypal, chronic hypomanic, and borderline personality disorders	301.11, 301.22, 301.83
Post-traumatic stress disorder	309.81
Obsessive compulsive disorder	300.3

* A member must have had at least two claims (on different dates of service) within 24 months to be defined as having SPMI.

Data and Outcome Measures for Dual-Eligible Members

Dual-eligible members receive coverage through both federal Medicare and state Medicaid programs. As described above, we obtained data from APAC on claims paid by both programs for Oregon dual-eligible members. We used these data and supplemental data from the Oregon Medicaid enrollment file to create a specialized database for dual-eligible members. We excluded claims paid by Medicare Advantage plans offered by one commercial payer due to quality issues with the payer's data in APAC during the study period.

We selected a subset of outcome measures to evaluate the 2012-2017 waiver's effect on dual-eligible members by excluding the following measures from full set of waiver evaluation measures:

- **Measures not applicable to most dual-eligible members:** The overwhelming majority of dual-eligibles are age 65 and older. We excluded measures defined for people under age 65, such as measures of quality for children and adolescents.
- **Measures affected by APAC data limitations:** APAC excludes data related to substance use and Medicare FFS data prior to 2011. We excluded measures that require substance use claims data and measures with a look-back period greater than one year, as we would be unable to calculate these measures for 2011.
- **Measures applicable to a small number of members:** Some measures apply to a relatively small share of the Medicaid population because they reflect infrequent events, such as hospitalization for mental illness or certain avoidable conditions. Dual-eligible members

make up a relatively small share of all Medicaid members. As a result, the number of dual-eligibles would be too small to calculate these measures reliably.

- **Spending measures:** To evaluate change in spending measures for CCO, FFS, and post-expansion members, we “repriced” medical claims using prices paid by Oregon’s Medicaid FFS program (see **Appendix E, Section 5** for details). Medicare managed care plans and the Medicare FFS program pay different rates for services than Oregon’s Medicaid FFS program. As a result, our repricing method would have been inaccurate for Medicare claims.

Differences with Measure Results Reported by OHA

Measure rates reported by OHA may differ from rates used for the evaluation. OHA reports claims-based measures for CCO members in its semiannual *Health System Transformation Report*. These rates may differ from rates we calculated for the evaluation for the following reasons:

- **Different populations:** OHA includes post-expansion members and dual-eligible members when calculating measure results. As described above, we provide separate results for CCO members, FFS members, post-expansion members, and dual-eligible members.
- **Different enrollment criteria:** OHA requires Medicaid members to be continuously enrolled in a single CCO in order to include their outcomes in measure results. We determined continuous enrollment across CCOs; for example, a member enrolled six months in one CCO followed by six months in a different CCO would be considered continuously enrolled during the 12-month period.
- **Different measure definitions over time:** OHA updates definitions used to calculate measures based on updated definitions from measure stewards. As described above, we use the same definitions across all years to provide a consistent picture of outcomes across all years.
- **Different definition of 2015:** OHA reported 2015 results for most measures using full-year data for calendar year 2015. As described above, we defined 2015 as Quarter 4, 2014 through Quarter 3, 2015 due to the transition to ICD-10 codes that occurred in October 2015.

2. CAHPS-BASED MEASURES

We selected 12 measures based on CAHPS survey data. These include all member experience measures, some access and quality measures, and the single health status measure used in this report. See **Appendix E** for information about the CAHPS survey and details on CAHPS-based measures used in the evaluation.

Data Source

We obtained responses to Oregon Medicaid CAHPS survey from 2011 through 2015 from OHA. These data included sample members’ self-reported demographic information, consisting of age, sex, and race or ethnicity; whether members were enrolled in CCO or FFS coverage; and the name of the CCO members were enrolled in at the time of the survey. In addition, the data included survey weights needed to aggregate responses from sample members into overall rates for the Medicaid population.

Measure Outcomes

Because OHA administers the CAHPS survey each year, we calculated measures on an annual basis. For regression models, members received a 1 if they met the criteria for a measure in a given year—for example, if they reported a given level of satisfaction with care they received—and 0 if they did not meet the criteria for the measure in the year. To present measures for Medicaid members as a whole, we aggregated the results using survey weights.

Some CAHPS-based measures are composite measures, meaning they include results from two or more survey questions. These measures include Getting Needed Care, Getting Care Quickly, How Well Doctors Communicate, and How Members Rated their Health Plan (see **Appendix E** for descriptions of these measures). As specified by AHRQ, we calculated composite measures by taking the simple average of the results from each constituent question, regardless of the number of respondents who answered each question.³³

Medicaid Populations

Information in the survey responses allowed us to calculate CAHPS-based measures separately for CCO members and FFS members. However, the responses did not contain information needed to identify and report results separately for post-expansion members and dual-eligible members. To match reporting of claims-based measures as closely as possible, we removed likely dual-eligible members by excluding responses from members age 65 and over. However, measure results for CCO and FFS members may include responses from post-expansion members and dual-eligible members under age 65.

Subgroups

We used self-reported race/ethnicity, sex, and age in the survey data to report results by subgroup. Membership in an Indian tribe was not available in the survey data. As a result, we reported results for American Indian/Alaska Native members, one of the race/ethnicity groups in the survey data. Data needed to identify members belonging to other subgroups were not available in CAHPS responses.

3. OTHER MEASURES

We selected six measures based on other data sources. We report statewide results for these measures, as well as results for the highest and lowest CCO and race/ethnicity where available. However, we were unable to use results in statistical models due to data limitations.

- **Oregon Physician Workforce Survey measures:** The Oregon Physician Workforce Survey asks physicians about their characteristics, practice activities, and barriers to participation in Oregon's Medicaid program. OHA administered the survey to licensed Oregon physicians in certain years from 2004 to 2015. We obtained responses from the 2009, 2012, 2014, and 2015 surveys from OHA and used these data to calculate three measures access of access for Medicaid patients (OHA did not administer the survey in 2011, or 2013). Because responses were at the physician level, we were unable to control for the effect of member characteristics on outcomes using regression models.
- **Immunization measures:** OHA uses data from the state immunization registry to calculate immunization measures for children and adolescents. For this evaluation, OHA calculated these measures for all years from 2011 through 2015 using the same definition and provided us with rates for all Medicaid members, rates by race or ethnicity, and rates by CCO. Because the data were at the state or CCO level, we were unable to control for the effect of member characteristics on outcomes using regression models.

- **Health Assessments for Children in DHS Custody:** OHA uses a combination of claims data and administrative data from Oregon’s foster care system to calculate this measure. For the waiver evaluation, OHA provided a summarized version of these data showing the number of members in the numerator and denominator of the measure in each year from 2011 through 2015. Because the summarized data did not include demographic information and other member-level information, we were unable to control for the effect of member characteristics on outcomes using regression models.

4. REGRESSION MODELS

This section describes regression models we used for pre-post analysis, subgroup analysis, predicting rates for the highest and lowest-performing CCOs, and comparison group analysis.

Pre-Post and Subgroup Analysis

We calculated change in members’ outcomes using a simple pre-post model. This model represents the relationship between a member’s outcome in a given year and other observable factors, including whether or not the outcome occurred in the first three years of the 2012-2017 waiver:

$$Y_{it} = f(b_0 + \sum_{t=2013}^{2015} b_{1t} * Year_{it} + a * X_{it} + e_{it})$$

- Y_{it} is the measure outcome for member i in year t .
- f is a function representing the relationship between the outcome Y and the independent variables.
- $Year_t$ represents a set of dummy variables indicating whether the member’s outcome occurred in 2011, 2013, 2014, or 2015 for CCO members and FFS members, and 2014 or 2015 for post-expansion members.
- X_{it} represents a vector of member characteristics, including:
 - » Subgroup (see **Chapter 4, Table 4.3** for the list of subgroups)
 - » CCO in which the member was enrolled in that last month of the year
 - » Health status, as represented by Chronic Illness and Disability Payment System (CDPS) risk indicators
- The coefficient b_{1t} is the estimated effect of the waiver in each year. It represents the change in members’ outcomes associated with each year in the waiver period, controlling for member characteristics.

We used the model above to calculate pre-post and subgroup results:

- To calculate pre-post results, we estimated the model separately for CCO, FFS, and post-expansion members (for claims-based measures), and separately for CCO and FFS members (for CAHPS-based measures).
- To calculate subgroup results, we replaced year dummy variables with a single dummy variable, $Post_t$, indicating whether the member’s outcome occurred in the period 2013-2015. We then divided the CCO population into subgroups and estimated the model for each subgroup, omitting the dummy variable in the vector X_{it} that identified the subgroup being analyzed.

Predicted Rates for Highest and Lowest-Performing CCOs

We used the following steps to calculate predicted rates for the highest and lowest-performing CCOs on each measure:

- We estimated the pre-post model above, replacing year dummy variables with $Post_t$.
- For each outcome, we created predicted values from the regression for each individual using that individual's characteristics and setting $Post = 1$.
- We then replaced the coefficient for CCO with the largest coefficient from the model instead of the coefficient from the individual's actual CCO. This was used to calculate the "High CCO" results.
- We then replaced the coefficient for CCO with the smallest coefficient from the model instead of the coefficient from the individual's actual CCO. This was used to calculate the "Low CCO" results.

Comparison Group Analysis

We used the following model to estimate results for comparison group analysis:

$$Y_{it} = f(b_0 + \sum_{t=2013}^{2015} b_{1t} * Year_t + b_2 * CCO_{it} + \sum_{t=2013}^{2015} b_{3t} * Year_t * CCO_{it} + a * X_{it} + e_{it})$$

- $CCO_{it} = 1$ if an individual is a CCO member and 0 if an individual is a Washington Medicaid member.
- The coefficient b_3 is the estimated effect of the waiver in each year. It represents the change in members' outcomes from 2011 to each year from 2013 to 2015 for CCO members *minus* the change in outcomes for Washington Medicaid members (the difference-in-differences), controlling for member characteristics.

Outcomes used in the model were weighted using propensity scores, described below.

5. PROPENSITY-SCORE WEIGHTING

Propensity-score weighting is a statistical technique used to make two populations as similar as possible so they can be compared on an outcome of interest.³⁴ It is intended to reduce or remove extraneous sources of variability between groups—such as differences in age or race distribution—to ensure that any difference between treatment and comparison groups on an outcome of interest is not due to extraneous factors.

For this evaluation, we used propensity-score weighting to make Washington Medicaid members as similar as possible to Oregon Medicaid members in Q4 2011, since the CCO intervention began in 2012. Consistent with this approach, we also used propensity-score weighting to make Oregon Medicaid members in years following Q4 2011 as similar as possible to Oregon Medicaid members in that quarter. In other words, we weighted Oregon and Washington Medicaid members to make them "look like" Oregon Medicaid members in Q4 2011.

We used a series of logistic regression models to create the propensity weights. The outcome variable was membership in the Q4 2011 Oregon Medicaid population (as opposed to the Washington Medicaid population or the Oregon Medicaid population in another time period). The predictor variables in each model included age, age squared, gender, interaction of age and

gender, geography (rural or urban), months enrolled in the prior quarter, months enrolled in the prior year, and CDPS risk indicators. We estimated separate models for Oregon and Washington Medicaid members; within these groups, we estimated separate models for each quarter from Q1 2011 through Q3 2015.

Each model produced a score for each individual, such that those most like the Oregon Medicaid population in Q4 2011 were weighted more heavily than those not as similar to this population. Occasionally, some individuals were assigned very high weights, and these weights were trimmed to the ninety-ninth percentile so as not to give them undue influence in the model.

A requirement of propensity-score weighting is that the two groups have parallel trends in the outcomes of interest prior to the intervention after weighting is applied. Because of the large sample size in this analysis, very small differences in trends would have been statistically significant. We used visual inspection of plots to ensure trends of weighted Oregon and Washington Medicaid members were roughly parallel prior to calculating the difference-in-differences models.

6. ACTIVITY MEASURES ANALYSIS

In addition to evaluating the 2012-2017 waiver's effect on outcome measures, we evaluated the relationship between *specific activity measures* described in Chapter 2 and *specific outcome measures* from our complete set of outcome measures. Our goal was to move beyond evaluating whether the waiver overall improved outcomes and identify specific activities that contributed most to improvements.

We found no consistent relationship between transformation activities and improvements in outcomes. The absence of consistent relationships does not indicate that CCOs' activities failed to improve outcomes; rather, it indicates the need for additional data at a more granular level to evaluate the effectiveness of CCOs' activities.

Activity Measures and Outcome Measures

We compared CCOs' progress on specific transformation activities—as represented by activity measures—to improvements on specific outcome measures among the CCOs' members (see **Appendix C** for detailed descriptions of activity measures). To simplify the analysis, we selected a limited number of outcome measures to represent access, quality, experience of care, and spending. We selected outcome measures that would be likely to improve as a result of CCOs' progress on transformation activities. Table F3, page 175 shows activity and outcome measures we selected and our reason for selecting the measures.

Activity measures data were subject to the following limitations, which affected our ability to evaluate the relationship between activities and outcomes with certainty:

- All activity measures were at the CCO level, rather than the person level. For example, while data available for the evaluation allowed us to calculate activity measures for each CCO, they did not indicate whether individual CCO members were enrolled in clinics that were patient-centered primary care homes (PCPCHs), used electronic health records (EHRs), or received payment through alternative payment methods (APMs); or whether the members received housing-related services. As a result, only 16 “data points” were available for the analysis for each year. Person-level data would have enabled us to identify relationships between activities and outcomes with greater certainty.
- Data needed to create some activity measures were unavailable for 2013 and 2014. For consistency, we used only 2015 activity measures for all analyses. Availability of activity

Table F3. Activity measures and outcome measures for analysis

Activity measure	Outcome measure											Possible relationship		
	Getting Care Quickly	Getting Needed Care	Access to Any Primary Care	Follow-Up After Heart Attack	Avoidable Hosp. Rate, Diabetes, Short-Term	Avoidable Hosp. Rate, Asthma, Young Adults	Avoidable Hosp. Rate, COPD or Asthma	Avoidable Hosp. Rate, Heart Failure	Appropriate Testing for Low Back Pain	Avoidance of Imaging Tests for Headache	How Well Doctors Communicate	Satisfaction with Care Overall	Primary Care Spending PMPM	
LEVER 1: Improve Care Coordination <ul style="list-style-type: none"> • PCPCH Enrollment • EHR Adoption 	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	Oregon’s PCPCH model includes standards for access, care coordination, and patient experience. EHRs may improve access, care coordination, and patient experience by helping providers manage patient data and schedule appointments and follow-up care. As a result, PCPCH enrollment and EHR adoption may increase primary care spending PMPM and reduce avoidable hospitalizations.	
LEVER 2: Implement APMs <ul style="list-style-type: none"> • APM Adoption 			✓		✓	✓	✓	✓	✓				✓	APMs may encourage providers to deliver care efficiently and control costs. Providers may achieve these goals by improving access to primary and preventive care and increasing primary care spending PMPM; managing care to reduce avoidable hospitalizations; and reducing use of unnecessary services.
LEVER 5: Use Flexible Services <ul style="list-style-type: none"> • Tenancy-Supporting Services • Integrated Housing and Health Services 	✓	✓	✓		✓	✓	✓						✓	Stable housing and availability of health services through housing may help members access care. This may result in increased primary care spending PMPM and reduce avoidable hospitalizations.

measures data for all years would have enabled us to identify relationships between activities and outcomes with greater certainty.

- We were unable to identify measures that directly reflect activities under Levers 3 and 4 using existing data sources.
- We omitted activity measures under Lever 6: Spread Innovations and Best Practices from analysis.
- As with the analysis presented in Chapter 3, 2015 is defined as Q4 2014 through Q3 2015 for all claims-based outcome measures.

Regression Analysis

$$Y_{i2015} - Y_{i2011} = f(b_0 + b_1 * Y_{i2011} + b_2 * activity + e_i)$$

We used the following model to estimate the relationship between CCOs' activity measures in 2015 and improvement in outcome measures among their members from 2011 to 2015:

- $Y_{i2015} - Y_{i2011}$ is the difference in the outcome of interest between 2011 and 2015 for the *i*th CCO.
- *f* is the function representing the relationship between the independent variables and the outcome.
- b_1 is the effect of the baseline value of the outcome. We controlled for CCOs' outcomes in the baseline year, as CCOs with relatively high outcomes may have had less "room for improvement" from 2011 to 2015.
- b_2 is the effect of the activity.
- e_i is the error term for the *i*th CCO.

Because the analysis was at the CCO level, we weighted each CCO's outcomes by its share of total CCO members in 2015. This means larger CCOs counted more than smaller CCOs in the analysis. For example, a CCO with 25 percent of all members influenced the analysis more than a CCO with only one percent of all CCO members.

Results and Implications

For the overwhelming majority of measures, we were unable to identify relationships between activity measures and changes in outcome with a conventional level of statistical certainty. **Data Appendix Table 12** presents all regression results.

The absence of consistent relationships in our analysis does not indicate that CCOs' activities failed to improve outcomes. As shown in Chapter 4, the waiver was associated with improvements in a variety of measures used in this analysis, including Getting Needed Care, avoidable hospitalizations (compared to Washington Medicaid members), Appropriate Use of Imaging Tests for Back Pain and Avoidance of Imaging Tests for Headache (compared to Washington Medicaid members), and all experience of care measures. Rather, the absence of consistent relationships between activity measures and these outcomes suggests that person-level data covering additional years and transformation activities are needed to evaluate CCOs' activities and identify activities that contributed most to improvements. See **Chapter 5** for our recommendations on improving data collection.

References

- 1 Physical Health Service Delivery by Eligibility Group (July 2010-2012). Oregon Health Authority. <http://www.oregon.gov/oha/HSD/OHP/Pages/Reports.aspx>.
- 2 Special Terms and Conditions for Oregon Section 1115 Medicaid Demonstration amended July 5, 2012: 172-173.
- 3 Kliff S. Can Oregon save American health care? *Washington Post*. Published January 18, 2013.
- 4 John McConnell K, Marie Chang A, Cohen DJ, et al. Oregon's Medicaid Transformation: An Innovative Approach to Holding a Health System Accountable for Spending Growth. *Healthcare*. 2014;2(3):163-167. doi:10.1016/j.hjdsi.2013.11.002.
- 5 Kliff S. White House makes \$1.9 billion bet: Oregon can fix health care. *Washington Post*. Published May 4, 2012.
- 6 Howard SW, Bernell SL, Yoon J, Luck J, Ranit CM. Oregon's Experiment in Health Care Delivery and Payment Reform: Coordinated Care Organizations Replacing Managed Care. *J Health Polit Policy Law*. 2015;40(1):245-255. doi:10.1215/03616878-2854919.
- 7 Physical Health Service Delivery by Eligibility Group (December 2012-2016). Oregon Health Authority. <http://www.oregon.gov/oha/HSD/OHP/Pages/Reports.aspx>.
- 8 Broffman L, Brown K, Bayley KB, Savitz L, Rissi J. Funding Accountable Care in Oregon: Financial Models in Two Coordinated Care Organizations. *J Healthc Manag*. 2016;61(4):291-302.
- 9 Irvin C, Bigby J, Byrd V, Barna M, Witmer S, Higgins M. *Midpoint Evaluation of Oregon's Medicaid Section 1115 Demonstration: Mid-2012 through Mid-2014*. Mathematica Policy Research; 2015.
- 10 McDonald KM, Sundaram V, Bravata DM, et al. *Definitions of Care Coordination and Related Terms*. Agency for Healthcare Research and Quality (US); 2007.
- 11 Sinaiko AD, Landrum MB, Meyers DJ, et al. Synthesis of Research on Patient-Centered Medical Homes Brings Systematic Differences Into Relief. *Health Aff (Millwood)*. 2017;36(3):500-508. doi:10.1377/hlthaff.2016.1235.
- 12 *The Oregon Health Authority Patient-Centered Primary Care Home Program 2014-2015 Annual Report*. Oregon Health Authority; 2015.
- 13 Gelmon S, Wallace N, Sandberg B, Petchel S, Bouranis N. *Implementation of Oregon's PCPCH Program: Exemplary Practice and Program Findings*. OHSU & PSU School of Public Health and Mark O. Hatfield School of Government; 2016.
- 14 Friedberg MW, Schneider EC, Rosenthal MB, Volpp KG, Werner RM. Association Between Participation in a Multipayer Medical Home Intervention and Changes in Quality, Utilization, and Costs of Care. *JAMA*. 2014;311(8):815. doi:10.1001/jama.2014.353.

- 15 Zuvekas SH, Cohen JW. Fee-For-Service, While Much Maligned, Remains the Dominant Payment Method for Physician Visits. *Health Aff (Millwood)*. 2016;35(3):411-414. doi:10.1377/hlthaff.2015.1291.
- 16 Leof A, Curtis P, Gordon C, Thielke A, Evans R, Pinson N. *Alternative Payment Methodologies in Oregon: The State of Reform*. Center for Evidence-based Policy, Oregon Health & Science University; 2014.
- 17 Chang AM, Cohen DJ, McCarty D, Rieckmann T, McConnell KJ. Oregon's Medicaid Transformation—Observations on Organizational Structure and Strategy. *J Health Polit Policy Law*. 2015;40(1):257-264. doi:10.1215/03616878-2854959.
- 18 Gerrity M. *Evolving Models of Behavioral Health Integration: Evidence Update 2010-2015*. Milbank Memorial Fund; 2016.
- 19 Kroening-Roche J, Hall J, Cameron D, Rowland R, Cohen D. The Path to Integrating Medical, Behavioral and Oral Health Care: Oregon's Experience with Change. *Am J Manag Care* [in press].
- 20 Special Terms and Conditions for Oregon Section 1115 Medicaid Demonstration amended July 5, 2012: 56, 189.
- 21 Wright BJ, Vartanian KB, Li H-F, Royal N, Matson JK. Formerly Homeless People had Lower Overall Health Care Expenditures After Moving Into Supportive Housing. *Health Aff (Millwood)*. 2016;35(1):20-27. doi:10.1377/hlthaff.2015.0393.
- 22 Wright B, Li G, Vartanian K, Weller M. *Health in Housing: Exploring the Intersection Between Housing & Health Care*. Center for Outcomes Research & Education; 2016.
- 23 *Oregon CCO Housing Supports: Survey Report 2016*. Oregon Health Authority; 2016.
- 24 McConnell KJ, Renfro S, Lindrooth RC, Cohen DJ, Wallace NT, Chernew ME. Oregon's Medicaid Reform and Transition to Global Budgets Were Associated with Reductions In Expenditures. *Health Aff (Millwood)*. 2017;36(3):451-459. doi:10.1377/hlthaff.2016.1298.
- 25 McConnell KJ, Renfro S, Chan BKS, et al. Early Performance in Medicaid Accountable Care Organizations: A Comparison of Oregon and Colorado. *JAMA Intern Med*. February 2017. doi:10.1001/jamainternmed.2016.9098.
- 26 Muoto I, Luck J, Yoon J, Bernell S, Snowden JM. Oregon's Coordinated Care Organizations Increased Timely Prenatal Care Initiation and Decreased Disparities. *Health Aff (Millwood)*. 2016;35(9):1625-1632. doi:10.1377/hlthaff.2016.0396.
- 27 Kim H, Charlesworth C. *Assessing the Effects of Coordinated Care Organizations on Dual-Eligibles in Oregon*. Oregon Health Authority; 2016.
- 28 Stecker EC. The Oregon ACO Experiment—Bold Design, Challenging Execution. *N Engl J Med*. 2013;368(11):982-985. doi:10.1056/NEJMp1214141.
- 29 *Oregon Health System Transformation: CCO Metrics 2016 Final Report*. Oregon Health Authority; 2017.
- 30 Goldman HH, Frank RG, Burnam MA, et al. Behavioral Health Insurance Parity for Federal Employees. *N Engl J Med*. 2006;354(13):1378-1386. doi:10.1056/NEJMs053737.
- 31 McConnell KJ, Gast SHN, Ridgely MS, et al. Behavioral Health Insurance Parity: Does Oregon's Experience Presage the National Experience With the Mental Health Parity and Addiction Equity Act? *Am J Psychiatry*. 2012;169(1):31-38. doi:10.1176/appi.ajp.2011.11020320.

- 32 *Guidance for Conducting the Consumer Assessment of Healthcare Providers and Systems (CAHPS) 5.0H Child Survey*. Children's Health Care Quality Measures Core Set Technical Assistance and Analytic Support Program; 2012.
- 33 *Patient Experience Measures from the CAHPS Health Plan Survey*. Agency for Healthcare Research and Quality; 2015: 30
- 34 Stuart EA, Huskamp HA, Duckworth K, et al. Using Propensity Scores in Difference-in-Differences Models to Estimate the Effects of a Policy Change. *Health Serv Outcomes Res Methodol*. 2014;14(4):166-182. doi:10.1007/s10742-014-0123-z.