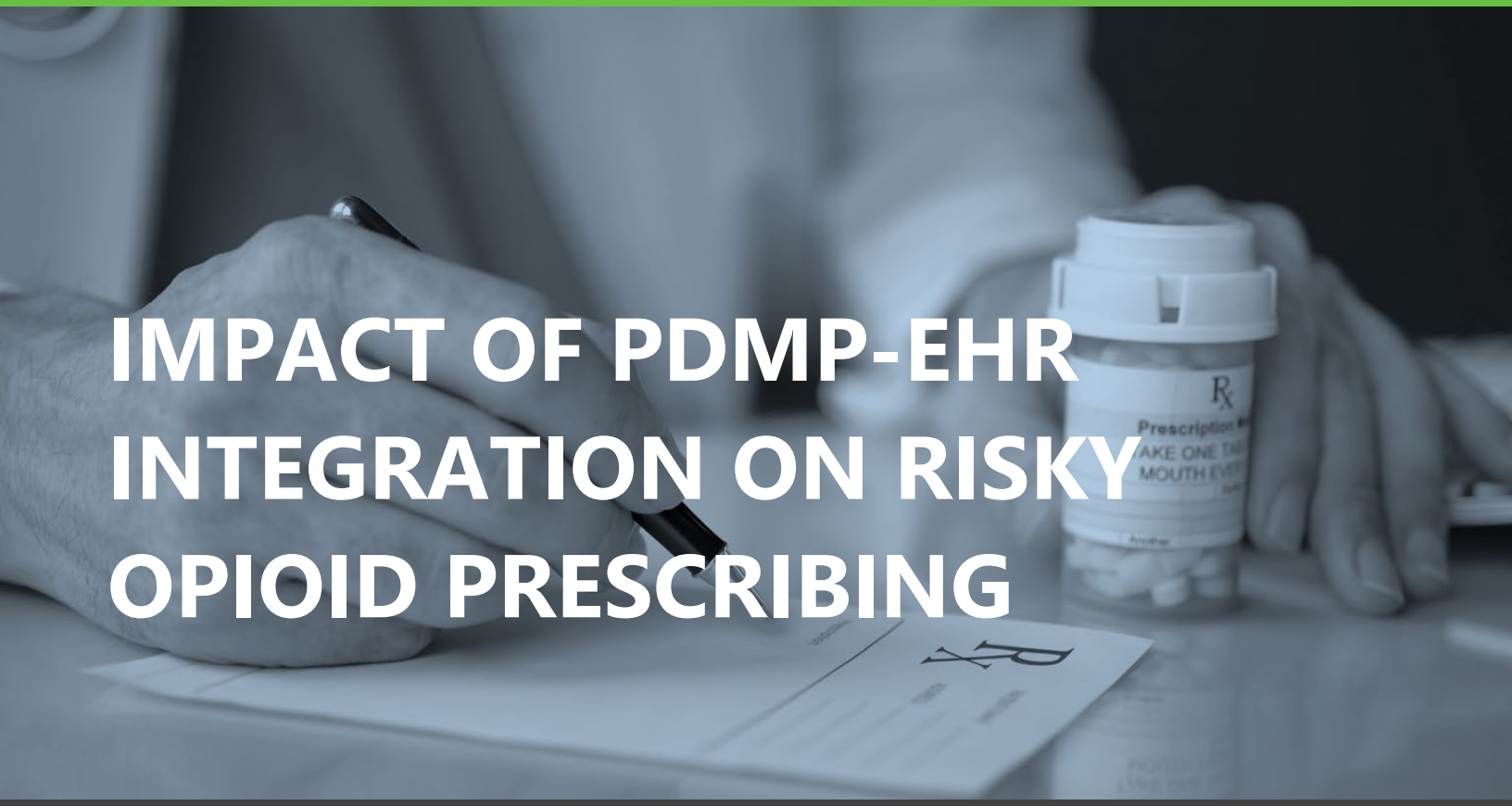

IMPACT OF PDMP-EHR INTEGRATION ON RISKY OPIOID PRESCRIBING

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Prepared for

Oregon Health Authority
Prescription Drug Monitoring Program
800 NE Oregon Street | Suite 705
Portland, OR 97232

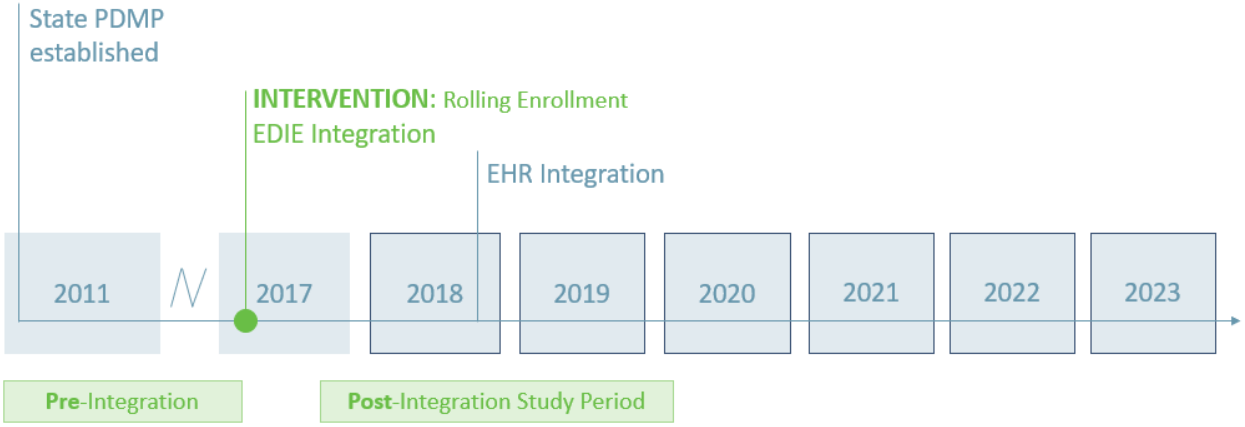
Prepared by

Comagine Health
Research & Evaluation Team
650 NE Holladay Street | Suite 1700
Portland, OR 97232

CONTENTS

BACKGROUND

Prescription drug monitoring programs (PDMPs) are a useful tool in addressing prescription opioid misuse, but their effectiveness in preventing opioid overdose has provided mixed results[1]. One explanation for these mixed results is that provider use of PDMPs historically has been low[2]. In Oregon, providers are mandated to register for the PDMP however, use remains voluntary. Oregon began the process of integrating the PDMP into Electronic Health Records (EHR) in July 2018 to streamline the workflow for prescribers. The priority of implementation was the Emergency Department Information Exchange (EDIE), followed by hospitals and affiliated clinics and retail pharmacies, and finally independent clinics with special attention to primary care, behavioral health, dental, and tribal clinics. By the end of 2019, all multi-hospital systems in Oregon had implemented EHR integration, with an average of 13 clinics per month starting the online application process to initiate integration[3].



Comagine Health, in partnership with the Oregon Health Authority, is evaluating the utility and impact of PDMP-EHR Integration by comparing risky opioid prescribing patterns in the two-years prior to an entity's integration (pre-integration study period) to patterns in the two-years after (post-integration study period). **The purpose of this issue brief is to describe the impact of EHR Integration on risky opioid prescribing over time.**

PDMP-EHR INTEGRATION

Before integration, Oregon prescribers accessed the PDMP via a web portal after inputting login credentials. In addition to the extra burden of accessing the PDMP via a separate portal, these

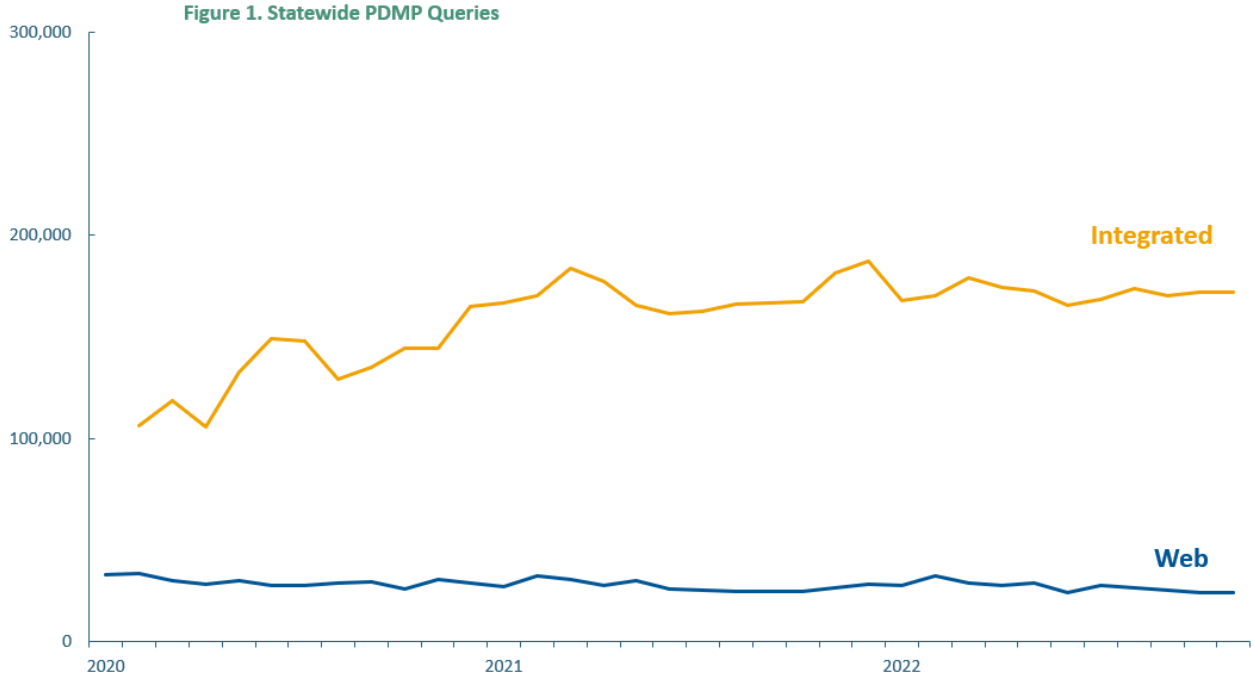
[1] Wilson MN, Hayden JA, Rhodes E, Robinson A, Asbridge M. (2019). Effectiveness of prescription monitoring programs in reducing opioid prescribing, dispensing, and use outcomes: A systematic review. J Pain 2019;20(12):1383–93.
[2] Deyo RA, Irvine J M, Hallvik SE, et al. Leading a horse to water: Facilitating registration and use of a prescription drug monitoring program. Clin J Pain 2015;31(9):1–787.
[3] HIT Commons (2020). PDMP Integration Post-Implementation Evaluation Report.

login credentials often differed from their EHR login credentials. What resulted was a tedious and time-consuming process that may have contributed to low utilization of the PDMP.

Upon integration, provider workflow was streamlined such that they could access the PDMP via the patient's EHR within a matter of seconds. The single sign-on one-click integration intended to make it faster and easier to access the PDMP with the goal of reducing risky opioid prescribing.

Across integrated entities in the state, the number of PDMP viewed queries from EHR integrated portals has increased since 2020, while web queries remained low and slightly declined over time (see Figure 1). These statewide trends suggest that EHR integration has resulted in greater utilization of the PDMP by providers, as intended.

Figure 1. Statewide PDMP Queries



METHODS

In this section we first define the five risky opioid prescribing metrics used as outcomes and describe the analytic approach.

RISKY OPIOID PRESCRIBING METRICS

From the PDMP prescribing data, we calculated the following five risky opioid prescribing measures. Data were calculated at the level of the entity, monthly for 48 months (24 pre-report and 24 post-report), except for measures 2 and 3 which have 36 months (12 pre-report and 24 post-report to allow for adequate lookback periods).

MEASURE 1.

High dose opioids

We calculated the percentage of a healthcare entity's opioid prescription fills that were for a high dose opioid, defined as a dosage greater than 90 morphine milligram equivalents (MME). Total MME for each opioid fill was calculated by multiplying the drug strength by the quantity and the MME conversion factor. The MME conversion factor was obtained using the Centers for Disease Control (CDC) Conversion Reference Table[4]. This metric excludes buprenorphine-containing drugs and Tramadol.

MEASURE 2.

Patients with Multiple (4+) Prescribers

Of a healthcare entity's patients filling any opioid prescription in a given month, we calculated the percentage of patients who received an opioid fill from four or more prescribers in the previous 6 months. Note that one patient may be in multiple healthcare entity's numerator. This metric excludes buprenorphine-containing drugs and Tramadol.

MEASURE 3.

Acute Opioid Fills

Of a healthcare entity's patients filling any opioid prescription in a given month, we calculated the percentage of patients who were prescribed a quantity of more than 42 pills (greater than roughly 7-day prescription) in the last calendar quarter and did not have an opioid fill in the previous 4 calendar quarters. This metric excludes all "non-pill" opioid fills (liquids, syrups, solutions, lollipops, etc.), all buprenorphine-containing drugs, all anti-tussive agents (codeine-containing drugs, hydrocodone-homatropine, etc.) and Tramadol.

[4] Dowell, D., Ragan, K. R., Jones, C. M., Baldwin, G. T. & Chou, R. CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022. *MMWR Recomm. Rep*. 71, 1–95 (2022)

MEASURE 4.

Opioid/benzodiazepine co-prescribing.

Of a healthcare entity's patients filling any opioid or benzodiazepine prescription in a given month, we calculated the percentage of patients that had a co-prescribed benzodiazepine/opioid. For this metric, the days' supply of each prescription was used to identify prescribing overlap. A patient with at least one day of opioid/benzodiazepine overlap in the month was counted in the entity's numerator. All the entity's patients filling a controlled substance prescription in the month were counted in the denominator.

MEASURE 5.

Opioid/opioid co-prescribing

Of a healthcare entity's patients filling any opioid prescription in a given month, we calculated the percentage of patients that had another opioid co-prescribed. The Drug field in the CDC Conversion Reference Tables was used to distinguish different opioid drugs. Co-prescribing was identified in the same manner as the opioid/benzodiazepine co-prescriptions.

DATA SET PREPARATION

To identify the date of PDMP-EHR integration and its associated impact on prescribing behavior, we matched providers to healthcare entities. Our partners at the Oregon Health Authority provided the entity names and go-live integration dates. We manually matched these names to the organizational billing entity names found in the Oregon All Payer Claims Database. Once billing entities were identified, we pulled the list of providers who rendered medical services under each billing organization between 2015 and 2021. For each calendar quarter, we matched providers with their 'primary' organization by selecting providers who had more than 50% of claims associated with a single organization during that quarter. PDMP prescription data and PDMP search data were obtained for the list of providers. Although primary provider/organization associations were identified by selecting providers billing at least 50% of their claims to an organization, it is possible some providers completed prescriptions and PDMP searches at other organizations during the quarter. While we are unable to identify all possible instances of this, we did remove any provider who completed an integrated PDMP search while associated with an organization that was not yet integrated. Finally, the PDMP prescription data was rolled up to the organization level.

ANALYSIS

We implemented an interrupted time series (ITS) analysis to evaluate the impact of EHR Integration on the five risky prescribing metrics described above. The five-outcome measures were evaluated monthly in a time-series and were 'interrupted' by the integration of PDMP-EHR. Integration was staggered and occurred during different months for each healthcare entity. Thus, the data were aligned such that the month of integration was the mid-point (Month = 0)

and separated data from months pre- and post-integration. The major finding that we will present in this report is the difference between the trends in risky prescribing during the months prior to EHR Integration (referred to as the pre-integration slope) compared to trends in risky prescribing during the 24 months after integration (referred to as the post-integration slope).

For each of the five outcomes, we conducted three models to answer the following questions:

ITS Model	Question Answered
Basic model	Did risky prescribing trends improve after EHR Integration, relative to pre-integration trends?
Adjusted model	Did risky prescribing trends improve after EHR Integration, relative to pre-integration trends controlling for entity characteristics? Control variables used for adjustment included organization type (emergency department, group practice, hospital, independent practice, and health system as reference), organization volume (large: over 100 controlled substance prescriptions per month on average prior to integration vs. small: up to and including 100 controlled substance prescriptions per month on average prior to integration), and rurality (urban is reference).
Investigatory model	Did risky prescribing trends improve after EHR Integration at different rates for different healthcare entities based on organization characteristics? Organizations were separated by emergency department, group practice, hospital, independent practice, and health systems, organization volume, and rurality.

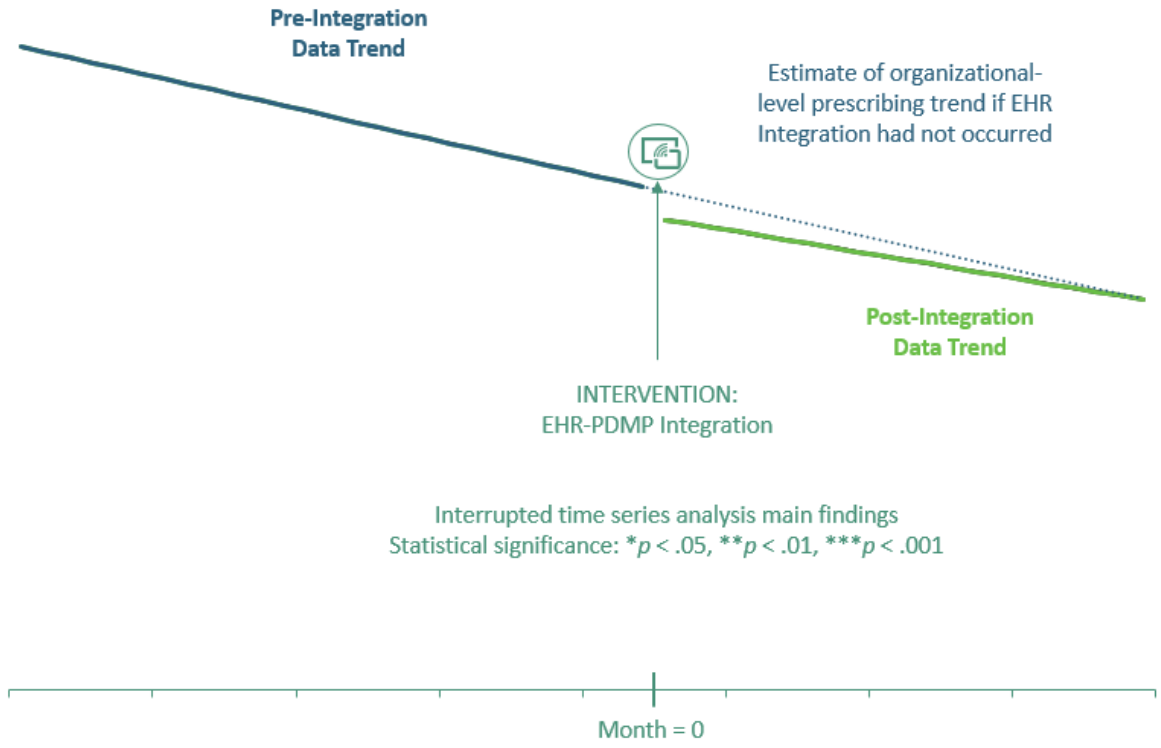
In the body of the report, we present the main findings from the adjusted model and group differences illuminated in the investigatory models. A full presentation of the results from all models are included in Appendix A.

FINDINGS

In the following section we describe the main findings for each of the five metrics. First, we describe how the results are presented and a key to interpreting the main findings.

The adjusted model findings are illustrated in a time-series graph (see Figure 2) that presents the **pre-integration data trends** and estimated trends had the report not been introduced. The graph also highlights the main finding, the **post-integration data trend**. The "interruption" is illustrated with the **integration icon** to separate the trends into pre- and post-integration time segments. The main finding, the extent to which the post-integration trend is different from what would be expected given pre-integration data trends, is written in the bottom center of the graphic and will include an illustration of the level of statistical significance.

Figure 2. ITS Example Graph

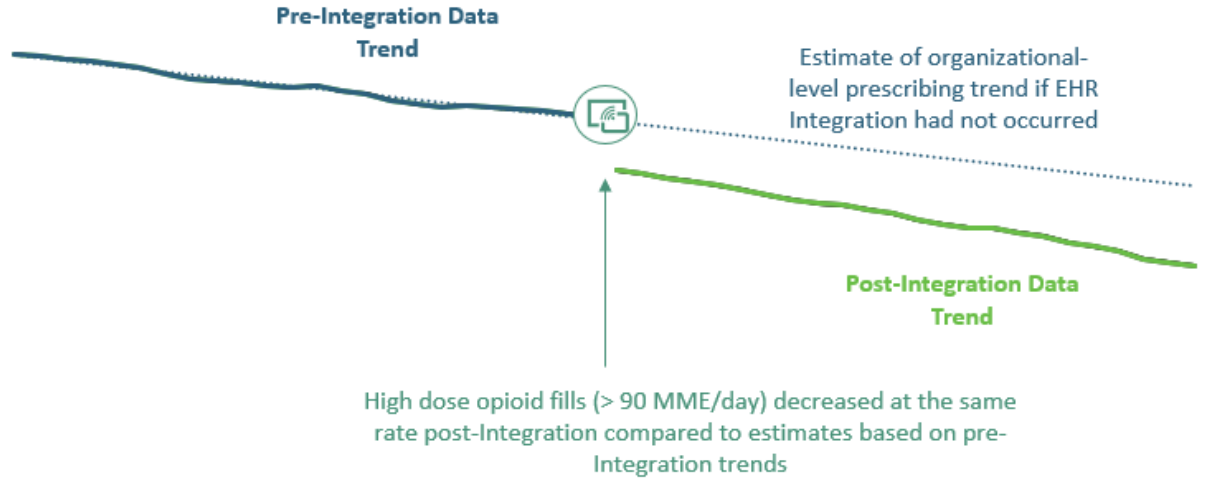


Group Differences for each outcome in the investigatory model are presented following the figure illustrating the main integration finding. We describe investigatory model results for healthcare entity groups that had statistically significant ($p < .05$) differences in improvement relative to other entity groups. Complete results for all investigatory models are presented in Appendix Tables 4a-e.

FINDINGS: M1 - HIGH DOSE OPIOIDS

Measure 1. High dose opioids defined as dispensations with dosage greater than 90 morphine milligram equivalents (MME), decreased at a non-significantly greater rate post-integration compared to estimates based on pre-integration trends (see Figure 3).

Figure 3. High Dose Opioids (M1) Findings



Group Differences. Improvements (declines in high dose opioid prescribing) differed significantly among two types of healthcare entities (see Appendix Table 4a):

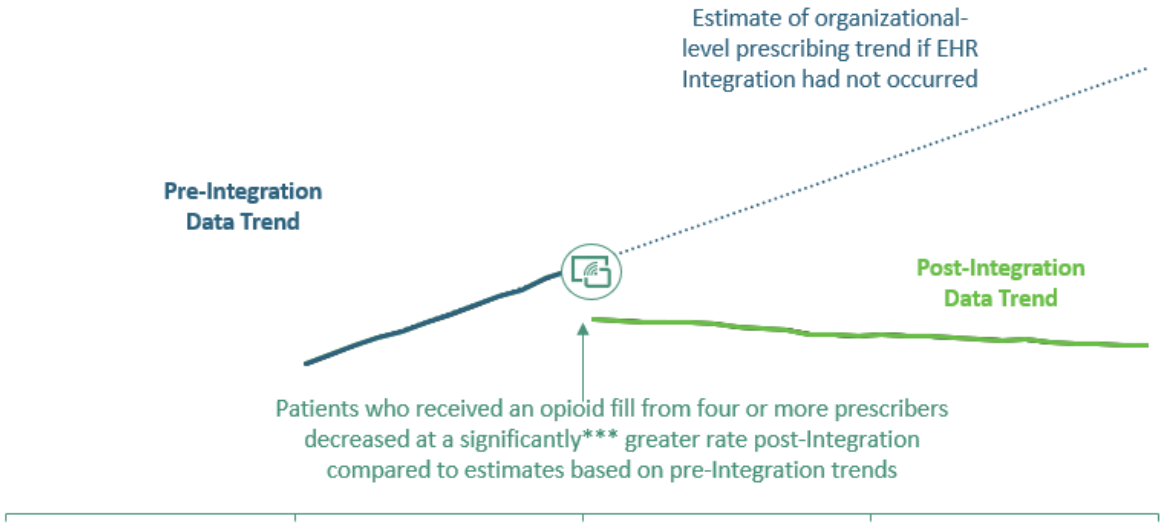
- Improvements were **greater** (declines sharper) for **hospitals** compared to other healthcare entities; and
- Improvements were **reversed** (increasing post-integration) for **independent practice organizations** compared to other healthcare entities.

Interpretation. While the PDMP-EHR integration did not have a significant impact on the already improving rates of high dose opioid prescriptions across all healthcare entities in Oregon, differences were detected between healthcare entity type. Specifically, hospitals improved at a great rate post-integration whereas independent practice organizations experienced an increase in high dose opioid prescribing post-integration relative to other entities.

FINDINGS: M2 – MULTIPLE PRESCRIBERS

Measure 2. Patients with Multiple (4+) Prescribers defined as percentage of patients who received an opioid fill from four or more prescribers, significantly **decreased post-Integration** compared to estimates based on pre-Integration trends (see Figure 4).

Figure 4. Patients with Multiple (4+) Prescribers (M2) Findings



Group Differences. Improvements (declines in patients with multiple prescribers) differed significantly among three types of healthcare entities (see Appendix Table 4b):

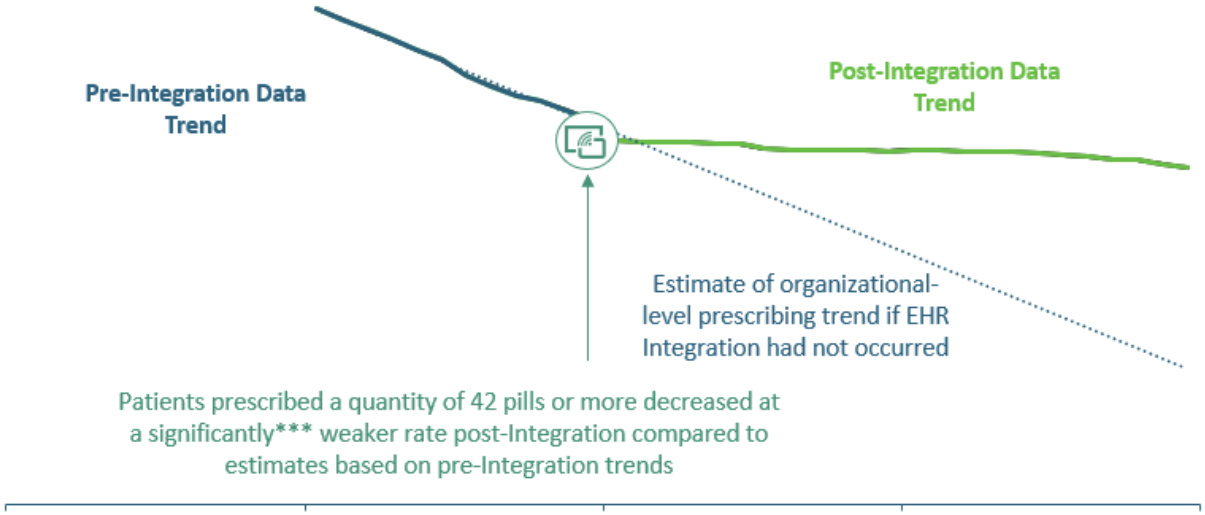
- Improvements were **greater** (declines sharper) for **group practices** compared to other healthcare entities; and
- Improvements over time were **weaker** among **emergency departments** and **large volume entities** relative to other healthcare entities and small volume entities due to decreasing trends pre-integration.

Interpretation. The integration of PDMP-EHR had a significant impact on the rate of opioid patients with multiple (4+) prescribers in Oregon. While the rate of opioid patients with multiple prescribers was increasing pre-integration, trends were reversed, and rates decreased post-integration. The extent to which integration impacted this outcome differed across healthcare entities. Specifically, group practices improved at a greater rate post-integration compared to other entities. However, emergency departments and large volume entities experienced a different pattern altogether. These entity groups experienced a decreasing trend pre-integration that was stronger than their decline post-integration.

FINDINGS: M3 – ACUTE OPIOID FILLS

Measure 3. Acute opioid fills defined as percentage of patients prescribed a quantity of more than 42 pills without an opioid fill in the previous 4 calendar quarters, decreased at a significantly weaker rate post-integration compared to estimates based on pre-integration trends (see Figure 5).

Figure 5. Acute Opioid Fills (M3) Findings



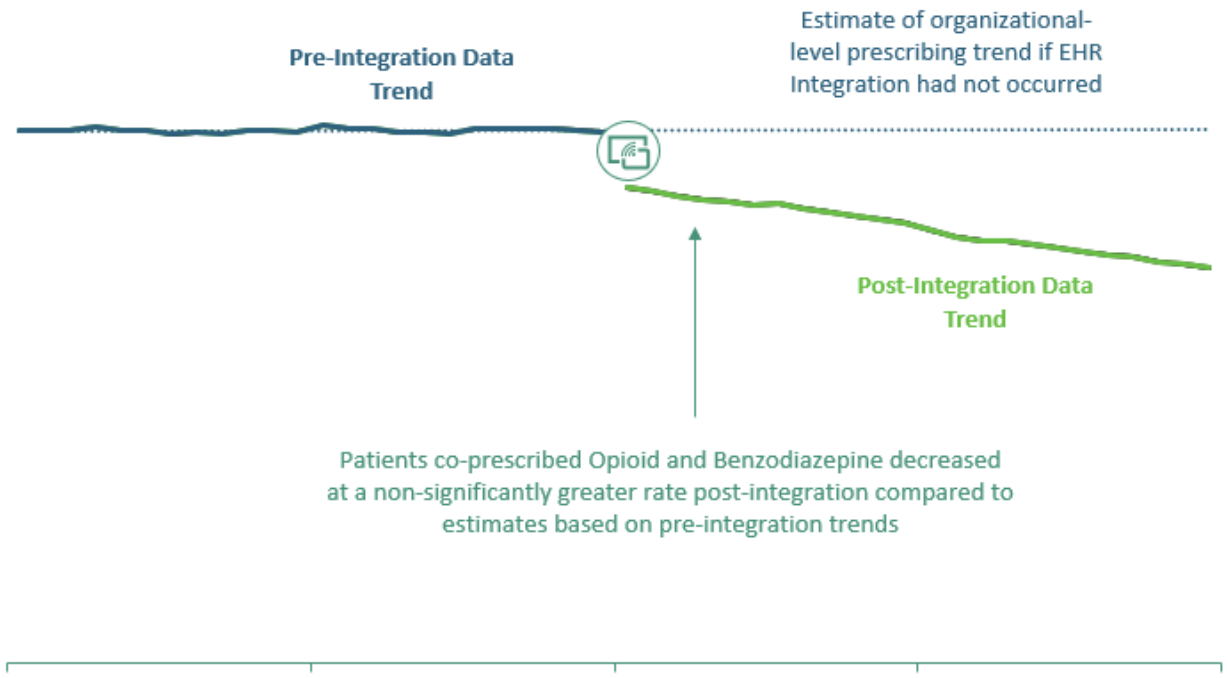
Group Differences. Entities did not differ significantly in the change in acute opioid fills post-integration relative to pre-integration (see Appendix Table 4c).

Interpretation. The integration of PDMP-EHR had a significant impact on the rate of patients with acute opioid fills in Oregon. While the rate of patients with acute opioid fills was sharply decreasing pre-integration, trends leveled out, decreasing at a weaker rate post-integration. There were no differences detected across healthcare entities.

FINDINGS: M4 – OPIOID/BENZODIAZEPINE

Measure 4. Opioid/Benzodiazepine Co-Prescribing defined as percentage of patients filling any benzodiazepine co-prescribed with an opioid, decreased at a non-significantly greater rate post-integration compared to estimates based on pre-integration trends (see Figure 6).

Figure 6. Opioid/Benzodiazepine Co-Prescribing (M4) Findings



Group Differences. Improvements (declines in co-prescribed opioid and benzodiazepine fills) differed significantly among three types of healthcare entities (see Appendix Table 4d):

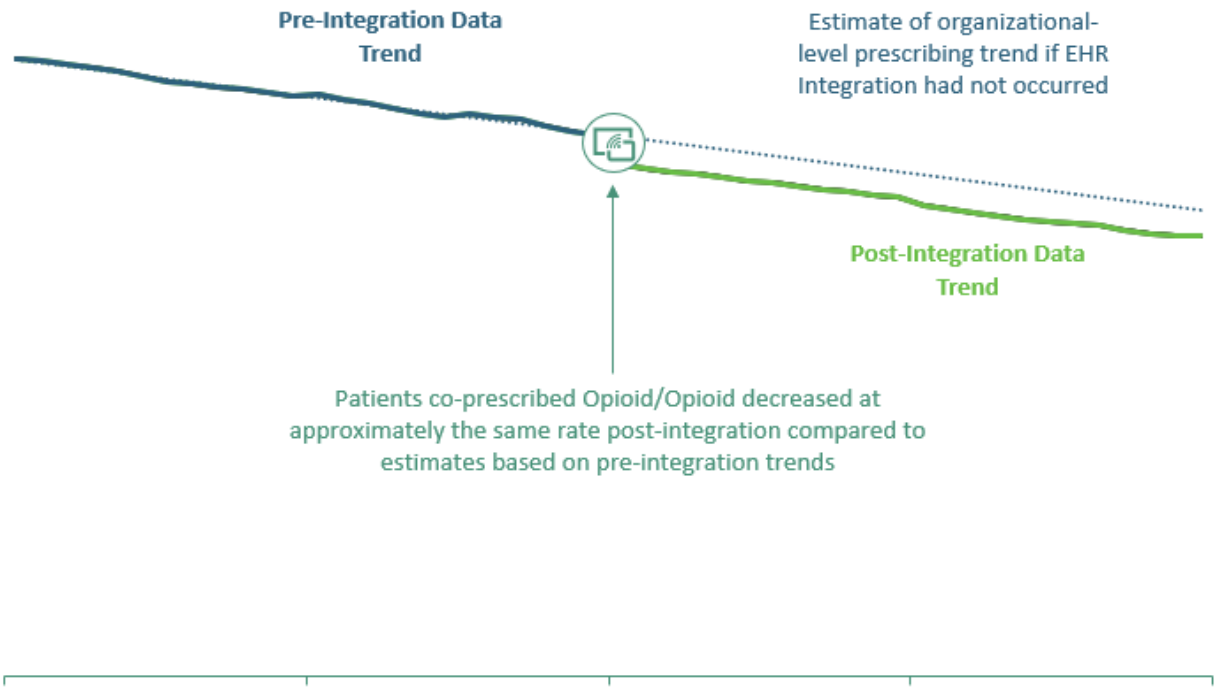
- Improvements were **greater** (declines sharper) for **hospitals** and **rural healthcare entities** compared to other healthcare entities and urban entities; and
- Improvements were **reversed** (increasing post-integration) for **group practice organizations** relative to other healthcare entities.

Interpretation. While the PDMP-EHR integration did not have an impact on the rates of opioid/benzodiazepine co-prescriptions across all healthcare entities in Oregon, differences were detected between healthcare entity types. Specifically, hospitals and healthcare entities in rural areas improved at a great rate post-integration whereas group practice organizations experienced an increase in their opioid/benzodiazepine co-prescribing post-integration compared to other entities.

FINDINGS: M5 – OPIOID/OPIOID

Measure 5. Opioid/Opioid Co-Prescribing defined as patients who filled any opioid prescription that had another opioid co-prescribed, decreased at a non-significantly greater rate post-integration compared to estimates based on pre-integration trends (see Figure 7).

Figure 7. Opioid/Opioid Co-Prescribing (M5) Findings



Group Differences. Improvement did not differ significantly between groups (see Appendix Table 4d).

Interpretation. PDMP-EHR integration did not have an impact on the already improving rates of opioid/opioid co-prescriptions across all healthcare entities in Oregon and there were no differences detected across healthcare entities.

DISCUSSION

Integration of the PDMP in EHRs had a **positive impact on reducing the number of patients who received an opioid fill from four or more prescribers in the previous 6 months** (M2). In addition, trends post-integration improved for reducing high dose opioids (M1), opioid/benzodiazepine co-prescribing (M4), and opioid/opioid prescribing (M5), though these rates of improvement was not significantly different from what was expected based on pre-integration trends. However, acute, high quantity (> 42 pills) opioid fills decreased at a weaker rate post-integration relative to pre-integration trends. This and other differences may have occurred because some prescribing practices had already decreased before integration, and it may have been unlikely to continue to see decreases at the same rate (i.e., a floor effect).

Level of improvement varied by healthcare entities for some outcomes.

- **Greater improvement**:
  - Hospitals experienced greater improvement on two outcome measures—reduced high dose opioid prescribing (M1) and Opioid/Benzodiazepine co-prescriptions (M4)—compared to other healthcare entities;
  - Rural entities experienced greater improvement on reduction of Opioid/Benzodiazepine co-prescriptions (M4)—compared to other healthcare entities;
- **Mixed findings:**
  - Group practice entities experienced **greater improvement** in reducing their prescriptions to patients with multiple prescribers (M2), but **less improvement** in reducing their opioid/benzodiazepine co-prescribing (M4) compared to other healthcare entities;
- **Less improvement**:
  - Emergency departments experienced less improvement on one outcome measure—patients with multiple prescribers (M2), compared to other healthcare entities;
  - Independent practice entities experienced less improvement on one measure—high dose opioids (M1), compared to other healthcare entities; and
  - Large Volume Organization entities experienced less improvement on one measure—patients with multiple prescribers (M2), compared to other healthcare entities.

APPENDIX

Table 1. Descriptive statistics by Measure (Metrics defined as percentages)

	Mean	Standard Deviation	Median	Min	Max	Quartile1	Quartile 3
M1. High Dose Opioids	7.15	11.56	4.00	0	100	0	8.72
M2. Patients with Multiple (4+) Prescribers	2.44	5.72	0.91	0	100	0	2.89
M3. Acute Opioid Fills	14.51	16.10	11.38	0	100	4.92	18.18
M4. Opioid/Benzodiazepine	8.32	9.85	6.98	0	100	2.06	11.33
M5. Opioid/Opioid Co-Prescribing	9.12	9.63	7.68	0	100	2.90	11.76

Table 2. Number of Organizations by Measure

	All Orgs	Emergency Dept	Group Practice	Hospital	Independent Practice	Health System (ref)
M1. High Dose Opioids	90	21	15	9	15	30
M2. Pts w/ Multiple (4+) Prescribers	78	21	11	7	13	26
M3. Acute Opioid Fills	71	21	8	7	12	23
M4. Opioid/ Benzodiazepine	104	22	22	9	17	34
M5. Opioid/Opioid Co-Prescribing	91	21	16	9	15	30

Note. Ref = reference group in interrupted time-series models

	Small volume (ref)	Large Volume	Rural	Urban (ref)
M1. High Dose Opioids	51	39	37	53
M2. Pts w/ Multiple (4+) Prescribers	39	39	34	44
M3. Acute Opioid Fills	34	37	32	39
M4. Opioid/ Benzodiazepine	64	40	42	62
M5. Opioid/Opioid Co-Prescribing	52	39	38	53

Note. Ref = reference group in interrupted time-series models

Table 3. Basic Model Results by Measure

Summary of the estimate of Impact: Post-slope relative to pre-slope.

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	-0.02	0.06	.670	-0.14	0.09
M2. Pts w/ Multiple (4+) Prescribers	**-0.12**	**0.06**	**.049**	**-0.25**	**-0.0003**
M3. Acute Opioid Fills	**0.42**	**0.19**	**.025**	**0.05**	**0.78**
M4. Opioid/Benzodiazepine	-0.08	0.05	.088	-0.17	0.01
M5. Opioid/Opioid Co-Prescribing	-0.02	0.05	.719	-0.11	0.08

Table 4. Adjusted Model Results by Measure

Summary of the estimate of Impact: Post-slope relative to pre-slope, controlling for organization characteristics (e.g., type, prescription volume, rurality).

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	-0.02	0.06	.723	-0.13	0.09
M2. Pts w/ Multiple (4+) Prescribers	**-0.13**	**0.06**	**.030**	**-0.26**	**-0.01**
M3. Acute Opioid Fills	**0.36**	**0.18**	**.046**	**0.01**	**0.71**
M4. Opioid/ Benzodiazepine	-0.06	0.05	.166	-0.15	0.03
M5. Opioid/Opioid Co-Prescribing	-0.01	0.05	.900	-0.10	0.09

Table 4. Investigatory Model Results by Measure

Summary of the estimate of Impact: Post-slope relative to pre-slope, exploring for differences by organization type (e.g., emergency department, group practice, hospital, and independent practice), by volume (large organization vs. small) and by location (rural vs. urban). Estimates (p values) presented for each three-way interaction.

Table 4a. M1. High Dose Opioids

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
Emergency Department (org type)	-0.07	0.13	.606	-0.32	0.19
Group Practice (org type)	-0.10	0.17	.561	-0.44	0.24
Hospital (org type)	**-0.76**	**0.19**	**< .001**	**-1.13**	**-0.39**
Independent Practice (org type)	**0.55**	**0.16**	**< .001**	**0.24**	**0.86**
Large Volume Orgs (vs. small)	0.02	0.11	.834	-0.20	0.25
Rural (vs. Urban) Orgs	-0.06	0.11	.593	-0.29	0.16

Table 4b. M2. Pts w/ Multiple (4+) Prescribers

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
Emergency Department (org type)	**0.31**	**0.14**	**.023**	**0.04**	**0.57**
Group Practice (org type)	**-1.07**	**0.19**	**< .001**	**-1.45**	**-0.69**
Hospital (org type)	0.23	0.20	.268	-0.17	0.63
Independent Practice (org type)	0.22	0.17	.193	-0.11	0.55
Large Volume Orgs (vs. small)	**0.29**	**0.12**	**.019**	**0.05**	**0.53**
Rural (vs. Urban) Orgs	0.13	0.12	.282	-0.11	0.38

Table 4c. M3. Acute Opioid Fills

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
Emergency Department (org type)	-0.17	0.39	.658	-0.93	0.59
Group Practice (org type)	-0.17	0.59	.772	-1.33	0.99
Hospital (org type)	0.99	0.58	.091	-0.16	2.13
Independent Practice (org type)	0.18	0.48	.707	-0.77	1.13
Large Volume Orgs (vs. small)	0.12	0.37	.736	-0.59	0.84
Rural (vs. Urban) Orgs	0.34	0.36	.352	-0.37	1.05

Table 4d. M4. Opioid/ Benzodiazepine

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
Emergency Department (org type)	0.17	0.11	.119	-0.04	0.38
Group Practice (org type)	**0.47**	**0.12**	**< .001**	**0.23**	**0.72**
Hospital (org type)	**-0.82**	**0.16**	**< .001**	**-1.13**	**-0.51**
Independent Practice (org type)	-0.21	0.13	.092	-0.46	0.04
Large Volume Orgs (vs. small)	0.15	0.09	.093	-0.03	0.34
Rural (vs. Urban) Orgs	**-0.22**	**0.09**	**.020**	**-0.40**	**-0.04**

Table 4e. M5. Opioid/ Opioid

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
Emergency Department (org type)	0.05	0.11	.656	-0.16	0.26
Group Practice (org type)	-0.03	0.14	.820	-0.30	0.24
Hospital (org type)	-0.06	0.15	.697	-0.36	0.24
Independent Practice (org type)	0.06	0.13	.659	-0.20	0.31
Large Volume Orgs (vs. small)	-0.08	0.09	.368	-0.27	0.10
Rural (vs. Urban) Orgs	0.10	0.09	.277	-0.08	0.29

Table 5. Investigatory Model Results by Healthcare Entity Group

Summary of the estimate of Impact: Post-slope relative to pre-slope, exploring for differences by organization type (e.g., emergency department, group practice, hospital, and independent practice), by volume (large organization vs. small) and by location (rural vs. urban). Estimates (p values) presented for each three-way interaction.

Table 5a. Emergency Department (org type)

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	-0.07	0.13	.606	-0.32	0.19
M2. Pts w/ Multiple (4+) Prescribers	**0.31**	**0.14**	**.023**	**0.04**	**0.57**
M3. Acute Opioid Fills	-0.17	0.39	.658	-0.93	0.59
M4. Opioid/ Benzodiazepine	0.17	0.11	.119	-0.04	0.38
M5. Opioid/Opioid Co-Prescribing	0.05	0.11	.656	-0.16	0.26

Table 5b. Group Practice (org type)

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	-0.10	0.17	.561	-0.44	0.24
M2. Pts w/ Multiple (4+) Prescribers	**-1.07**	**0.19**	**< .001**	**-1.45**	**-0.69**
M3. Acute Opioid Fills	-0.17	0.59	.772	-1.33	0.99
M4. Opioid/ Benzodiazepine	**0.47**	**0.12**	**< .001**	**0.23**	**0.72**
M5. Opioid/Opioid Co-Prescribing	-0.03	0.14	.820	-0.30	0.24

Table 5c. Hospital (org type)

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	**-0.76**	**0.19**	**< .001**	**-1.13**	**-0.39**
M2. Pts w/ Multiple (4+) Prescribers	0.23	0.20	.268	-0.17	0.63
M3. Acute Opioid Fills	0.99	0.58	.091	-0.16	2.13
M4. Opioid/ Benzodiazepine	**-0.82**	**0.16**	**< .001**	**-1.13**	**-0.51**
M5. Opioid/Opioid Co-Prescribing	-0.06	0.15	.697	-0.36	0.24

Table 5d. Independent Practice (org type)

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	**0.55**	**0.16**	**< .001**	**0.24**	**0.86**
M2. Pts w/ Multiple (4+) Prescribers	0.22	0.17	.193	-0.11	0.55
M3. Acute Opioid Fills	0.18	0.48	.707	-0.77	1.13

M4. Opioid/ Benzodiazepine	-0.21	0.13	.092	-0.46	0.04
M5. Opioid/Opioid Co-Prescribing	0.06	0.13	.659	-0.20	0.31

Table 5e. Large Volume Organization (vs. small volume at baseline)

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	0.02	0.11	.834	-0.20	0.25
M2. Pts w/ Multiple (4+) Prescribers	**0.29**	**0.12**	**.019**	**0.05**	**0.53**
M3. Acute Opioid Fills	0.12	0.37	.736	-0.59	0.84
M4. Opioid/ Benzodiazepine	0.15	0.09	.093	-0.03	0.34
M5. Opioid/Opioid Co-Prescribing	-0.08	0.09	.368	-0.27	0.10

Table 5f. Rural (vs. Urban) Organizations

	Estimate	Standard Error	P value	95% CI (L)	95% CI (U)
M1. High Dose Opioids	-0.06	0.11	.593	-0.27	0.16
M2. Pts w/ Multiple (4+) Prescribers	0.13	0.12	.282	-0.11	0.38
M3. Acute Opioid Fills	0.34	0.36	.352	-0.37	1.05
M4. Opioid/ Benzodiazepine	**-0.22**	**0.09**	**.020**	**-0.40**	**-0.04**
M5. Opioid/Opioid Co-Prescribing	0.10	0.09	.277	-0.08	0.29

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