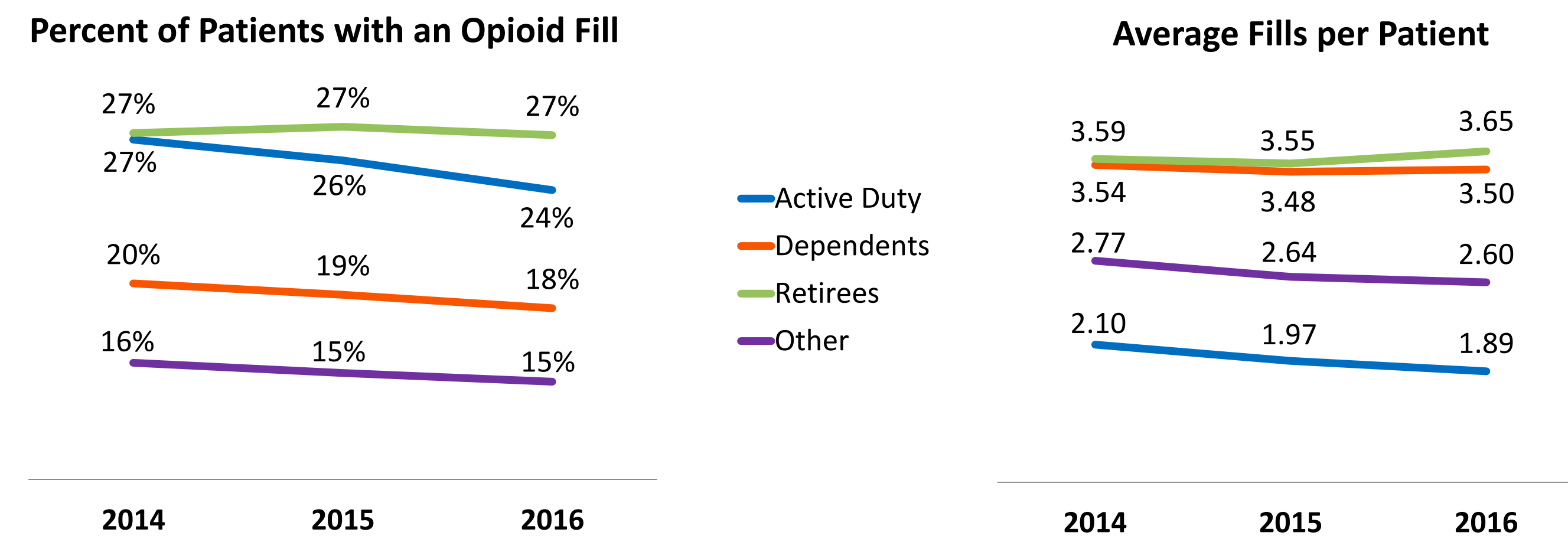


BACKGROUND

OPIOIDS IN THE MHS

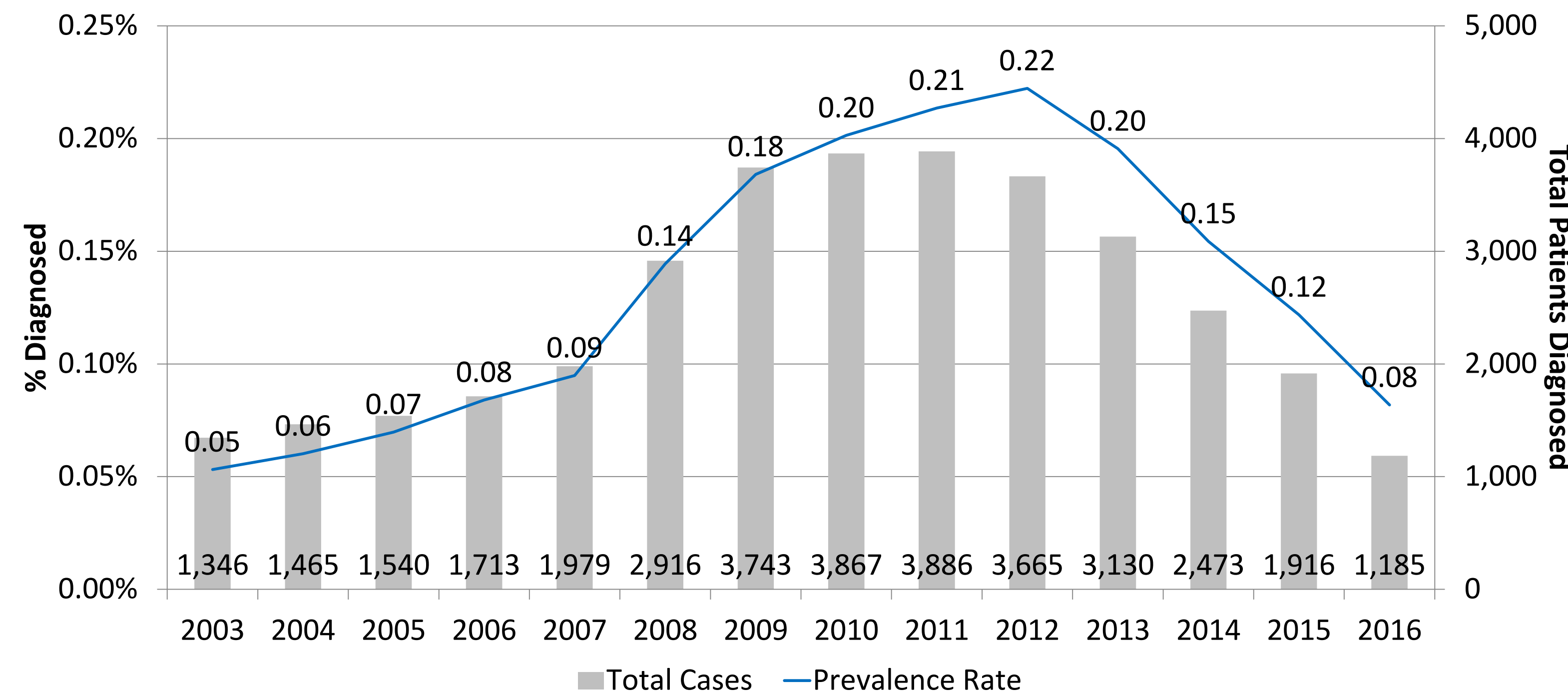
While opioid use in the civilian sector is considered an epidemic, the extent to which they are used in the Defense Department (DoD) has not been widely publicized. The graphs below illustrate trends in opioid use within the Military Health System (MHS) from FY14 through FY16. There has been a slight downward trend in opioid use among all beneficiary categories except Retirees for whom the rate has remained steadily highest at 27%. Overall, approximately 22% of the MHS population received an opioid prescription in the years examined.

Figure 1. Opioid Prescription Fills among MHS Beneficiaries, by Beneficiary Category



Despite nearly one quarter of active-duty service members (ADSMs) filling an opioid prescription in recent years, a very small percentage of ADSMs are diagnosed with an opioid use disorder (Figure 2).

Figure 2. ADSM Patients with Opioid Use Disorders, 2003-2016



OPIOID PRESCRIBER TRAINING

The recent crisis of opioid abuse and dependence has garnered significant attention from policy makers in all sectors of government. The Presidential Memorandum - Addressing Prescription Drug Abuse and Heroin Use, dated October 21, 2015, directed all executive departments and agencies to:

1. Provide training to all health care providers who prescribe controlled substances.
2. Create training to include best practices on the appropriate and effective prescribing of pain medications, principles of pain management, the misuse potential of controlled substances, identification of potential substance use disorders and referral to further evaluation and treatment (including medication-assisted therapy (MAT)), and proper methods for disposing of controlled substances.

In response to this directive, the Defense Health Agency created an online training program consisting of two modules for providers who prescribe opioids within the MHS. Module 1 is Pain Management and Opioid Prescribing Safety; Module 2 is Opioid Prescribing Safety – Do No Harm. The program was launched in November 2016, and completed on September 30, 2017. More than 22,000 providers have completed the training. The graph in Figure 3 shows the distribution of provider training counts from November 2016 through April 2017, the timeframe for this analysis.

METHODS

OBJECTIVES

1. Compare provider opioid prescribing patterns for four months before completion of training to their patterns for four months after completion of training. Are providers prescribing opioids more safely since receiving training?
2. Compare prescribing patterns for providers who received training with providers who did not receive training. Do changes in provider prescribing behaviors differ substantially between “trained” and “untrained” providers?

COHORTS

The “trained” cohort included providers who completed training by April 30, 2017, allowing for four months pre-training date and four months post-training date for comparison. Only providers with prescriptions in both pre- and post- time periods were included.

The “untrained” cohort included providers who did not complete training, and who prescribed opioids between December 1, 2016, through July 31, 2017. For this group the pre- period was the four months prior to May 1, 2017, and the post- period was the four months after May 1, 2017. Similarly, untrained providers were included if they had prescriptions in both pre- and post-time periods.

Figure 3. Providers Completing Opioid Prescriber Training by Month (2016-2017)

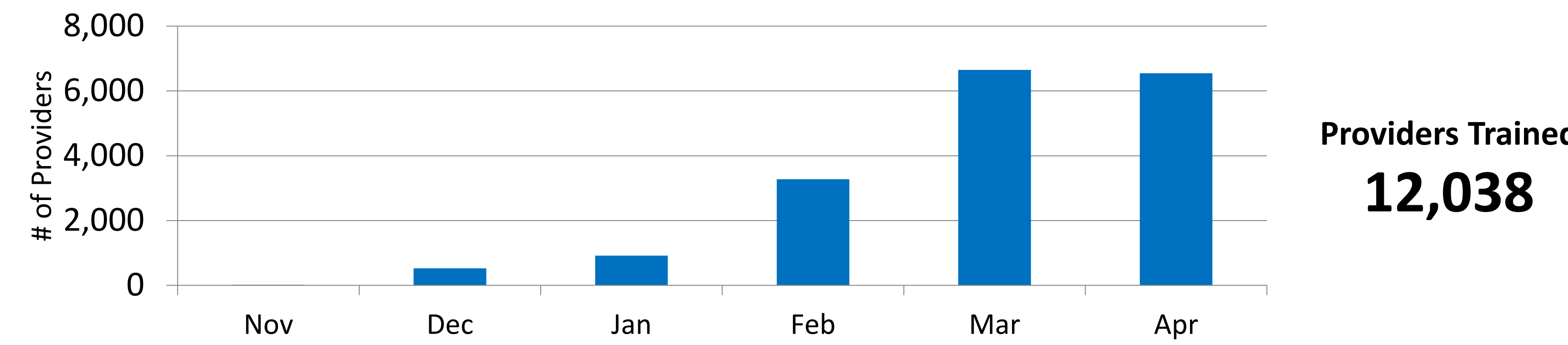
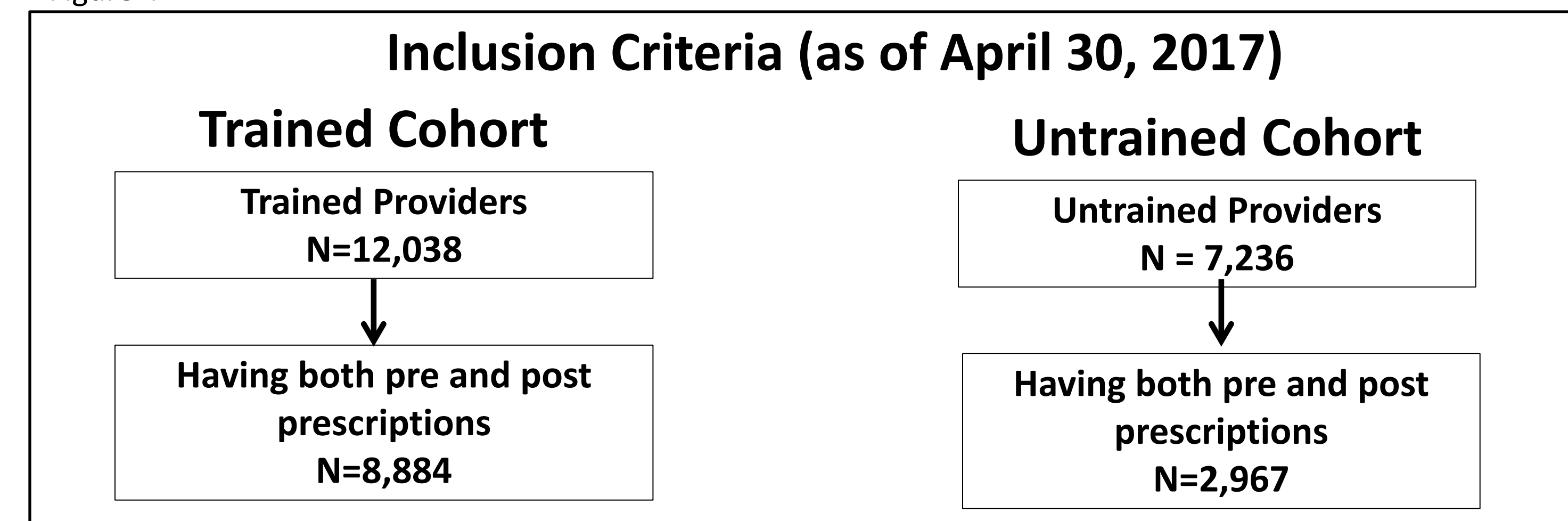


Figure 4



ANALYSIS

We pulled data on all opioid and benzodiazepine prescriptions for providers in the trained and untrained cohorts using provider National Provider Identifiers (NPIs) from the MHS Data Repository (MDR) Pharmacy Detail Transaction Service (PDTs) table. This table includes information on filled prescriptions, including drug name, National Drug Code (NDC), days supply, and refills. For each opioid we calculated the morphine mg equivalent daily dose (MME/day) based on the mg opioid amount per unit, the morphine mg equivalent conversion factor, and the daily quantity prescribed. 218 records where the calculation of MME/day was greater than 500 were eliminated due to the inability to confirm such a dose. Maximum MME/day among all remaining prescriptions was 300.

The emphasis of the training program was on safe prescribing of opioids; i.e., lower dose, fewer days supply, and no concurrent benzodiazepine. Therefore, we assessed change in the following metrics for both cohorts, using paired t-tests:

- 1) Mean morphine equivalent daily dose (MME/day);
- 2) Mean percent of prescriptions with MME/day > 90;
- 3) Mean percent of prescriptions having day count > 90;
- 4) Mean percent of prescriptions having overlap with a benzodiazepine prescription

RESULTS

Figure 5

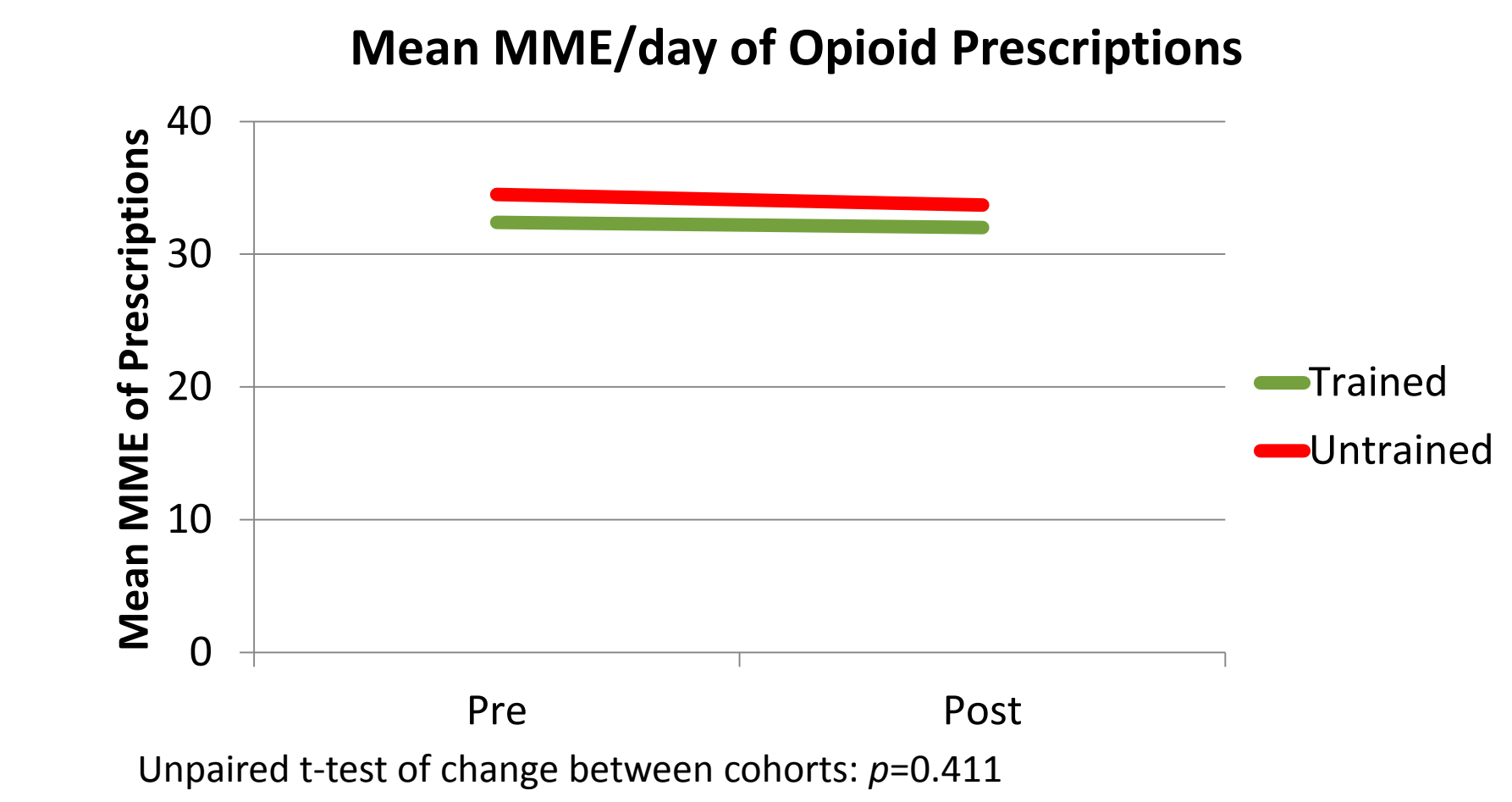


Figure 6

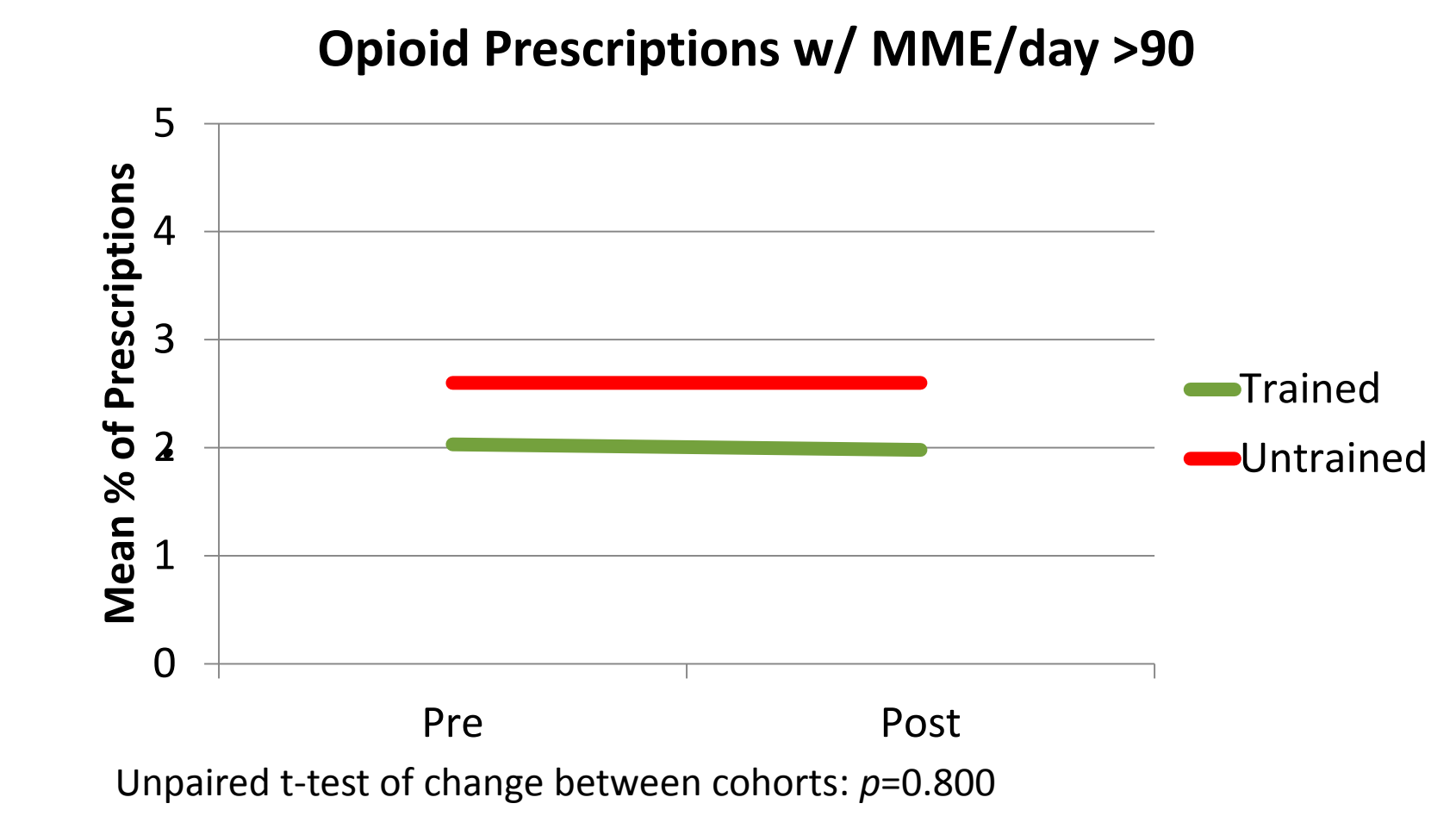


Figure 7

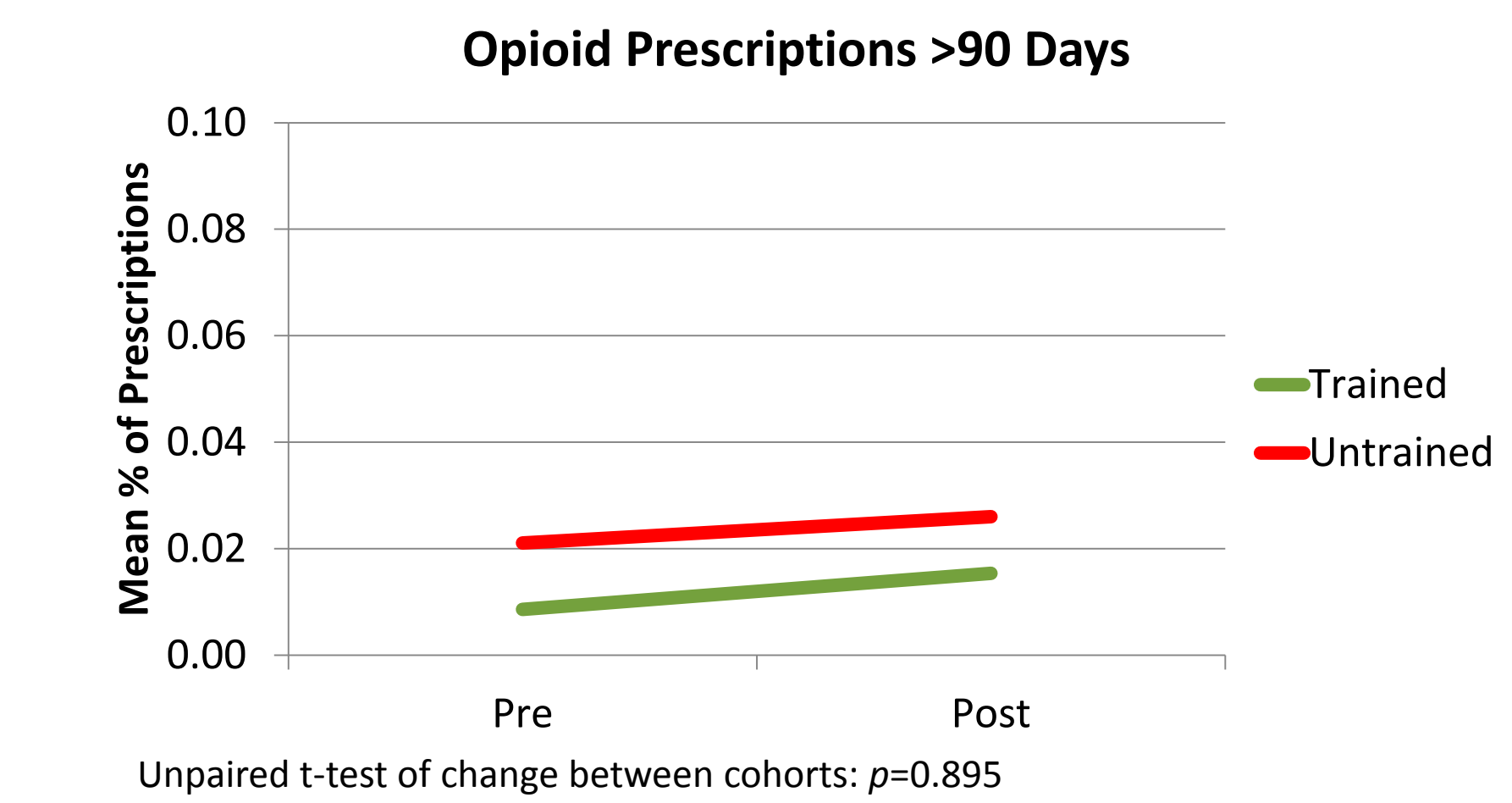


Figure 8

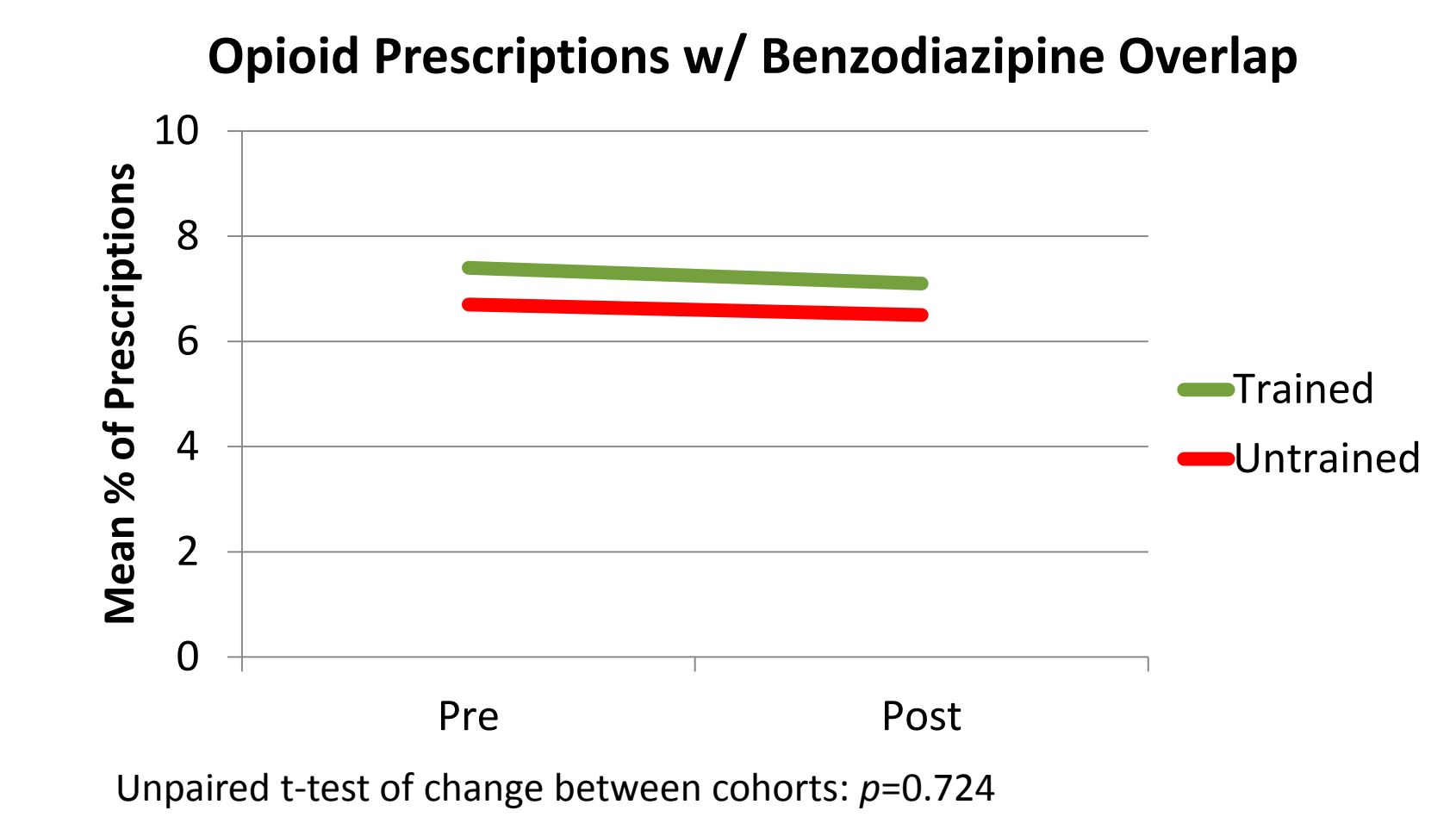


Table 1. Summary statistics of paired t-tests on change from pre- to post- within cohorts

MEASURE	Trained Cohort			Untrained Cohort		
	Pre-Post Δ	t-statistic	p-value	Pre-Post Δ	t-statistic	p-value
Mean MME/day per Prescription (Figure 5)	0.484	3.28	0.001	0.761	2.51	0.012
Mean % of Prescriptions w/ MME/day > 90 (Figure 6)	0.054	0.66	0.511	-0.001	-0.01	0.996
Mean % of Prescriptions w/ Days > 90 (Figure 7)	-0.005	-0.5	0.614	-0.007	-0.62	0.533
Mean % of Prescriptions w/ Benzodiazepine Overlap (Figure 8)	0.102	2.55	0.011	0.050	0.99	0.320

DISCUSSION

This preliminary analysis of the impact of safety training on provider prescribing patterns within the MHS was conducted by comparing prescribing patterns for four months each before and after completion of training. The results do not show that the opioid training meaningfully impacted prescriber behavior as evidenced by figures 5-8. In addition, prescribers who were trained did not have different outcomes post-training than their peers who were not trained. Specifically:

- Mean MME/day of opioid prescriptions slightly decreased in both trained and untrained providers, though not substantially; however, the unpaired t-test of change between cohorts was not statistically significant ($p=0.411$) (Figure 5)
- Percent of prescriptions with a MME/day greater than 90 was small (<3% in both cohorts) and remained stable in both (Figure 6)
- Overall, providers in the MHS rarely prescribe opioids for more than 90 days (<0.3% in both cohorts) and did not change after training (Figure 7)
- Approximately 7% of patients who filled an opioid prescription also had a concurrent prescription fill for a benzodiazepine. This did not change with training and was not different between cohorts (Figure 8). This is a safety issue that was highlighted by CDC Guideline for Prescribing Opioids for Chronic Pain (March 2016).

Of note here is that both prescriber cohorts worked for the MHS and were exposed to similar warnings within their professional and practice settings and in the public media about the seriousness of the current opioid epidemic. This in and of itself might explain the small (but not significant) change in both cohorts.

The goal is to analyze data for both groups of prescribers as of the end of the training period (September 30, 2017) and compare prescribing patterns over one year pre- and post. We would like to explore possible variations in patterns, within prescribers, over time.