

Medical Marijuana Legalization and Opioid- and Pain- Related Outcomes among Patients Newly Diagnosed with Cancer and Receiving Anti-cancer Treatment

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MAIN FINDINGS

Medical Marijuana Legalization implemented during 2012-2017 was associated with a lower rate of opioid dispensing and pain-related hospital events among some adults receiving treatment for newly diagnosed cancer.

Background

- Opioid prescriptions for cancer-related pain have declined rapidly in the U.S.
- Marijuana use among cancer survivors is increasing despite limited evidence on efficacy and safety.
- State marijuana legalization may be associated with such increases.
- We assessed the associations between state medical marijuana legalization (MML) during 2012-7 and opioid- and pain- related outcomes among non-elderly adults newly diagnosed with cancer and receiving anti-cancer treatment.

Data and Population

- 2011-17 Health Care Cost Institute (HCCI) commercial insurance claims data
- Individuals aged 18-64 with a new diagnosis of (female) breast, colorectal, or lung cancer and receiving anti-cancer treatment (cancer resection surgery, radiation, chemotherapy) in the 6 months following cancer diagnosis

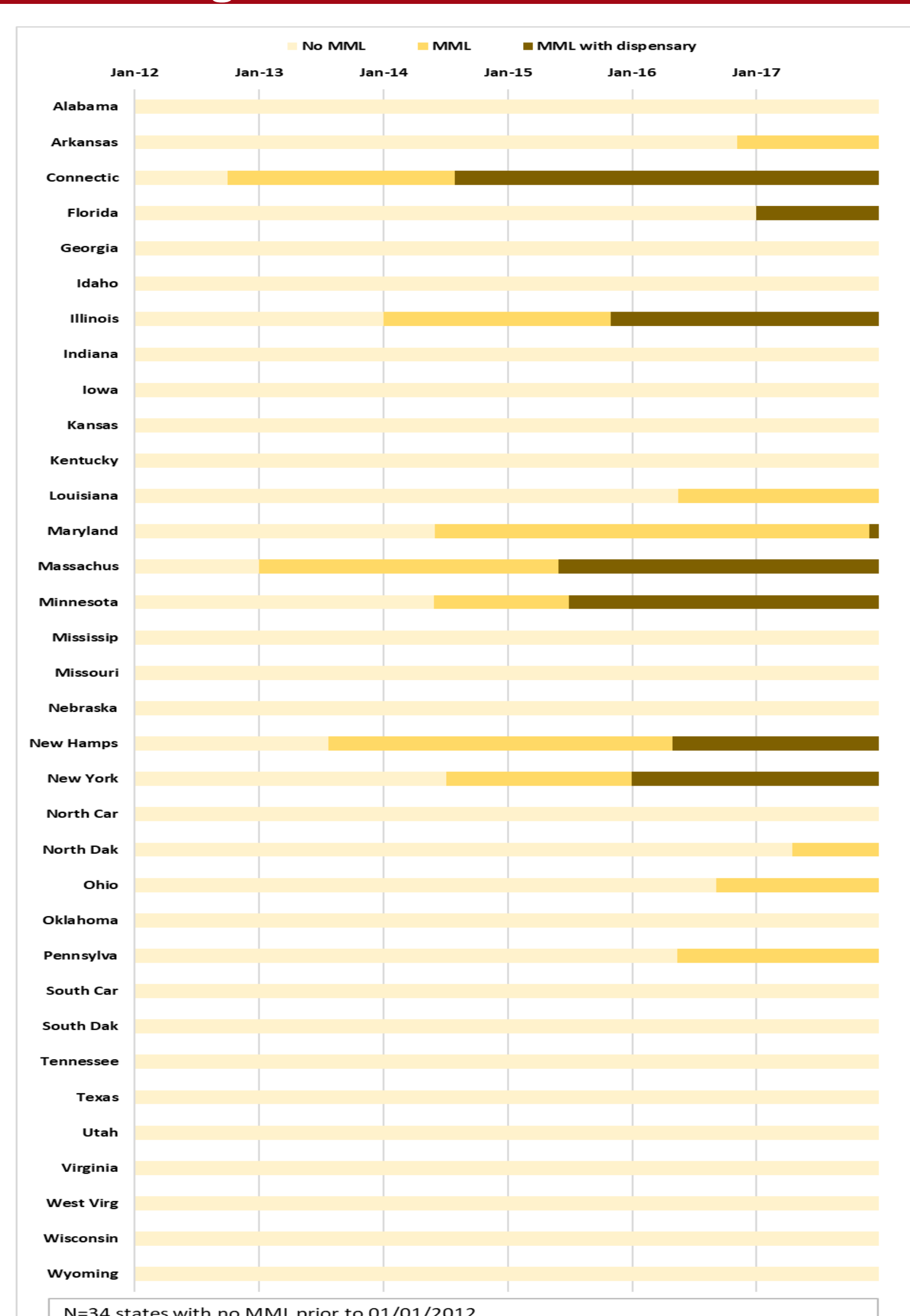
Outcome Measures

	Breast Cancer		Colorectal Cancer		Lung Cancer	
	No recent opioids N=33,472	Recent opioids N=4,717	No recent opioids N=11,059	Recent opioids N=1,757	No recent opioids N=5,793	Recent opioids N=1,397
≥1 day of opioid prescriptions	37.7%	89.1%	37.9%	88.3%	32.9%	89.6%
≥1 day of long-acting opioid prescriptions	0.5%	5.6%	2.7%	12.9%	7.0%	30.2%
MMEs if any opioid day, Mean (SD)	558.9 (1622.8)	2211.3 (6809.3)	1414.1 (4255.8)	3611.8 (10195.7)	3475.8 (8422.8)	7870.9 (15415.4)
≥1 pain-related hospital event	5.0%	8.0%	10.8%	12.5%	13.5%	19.4%

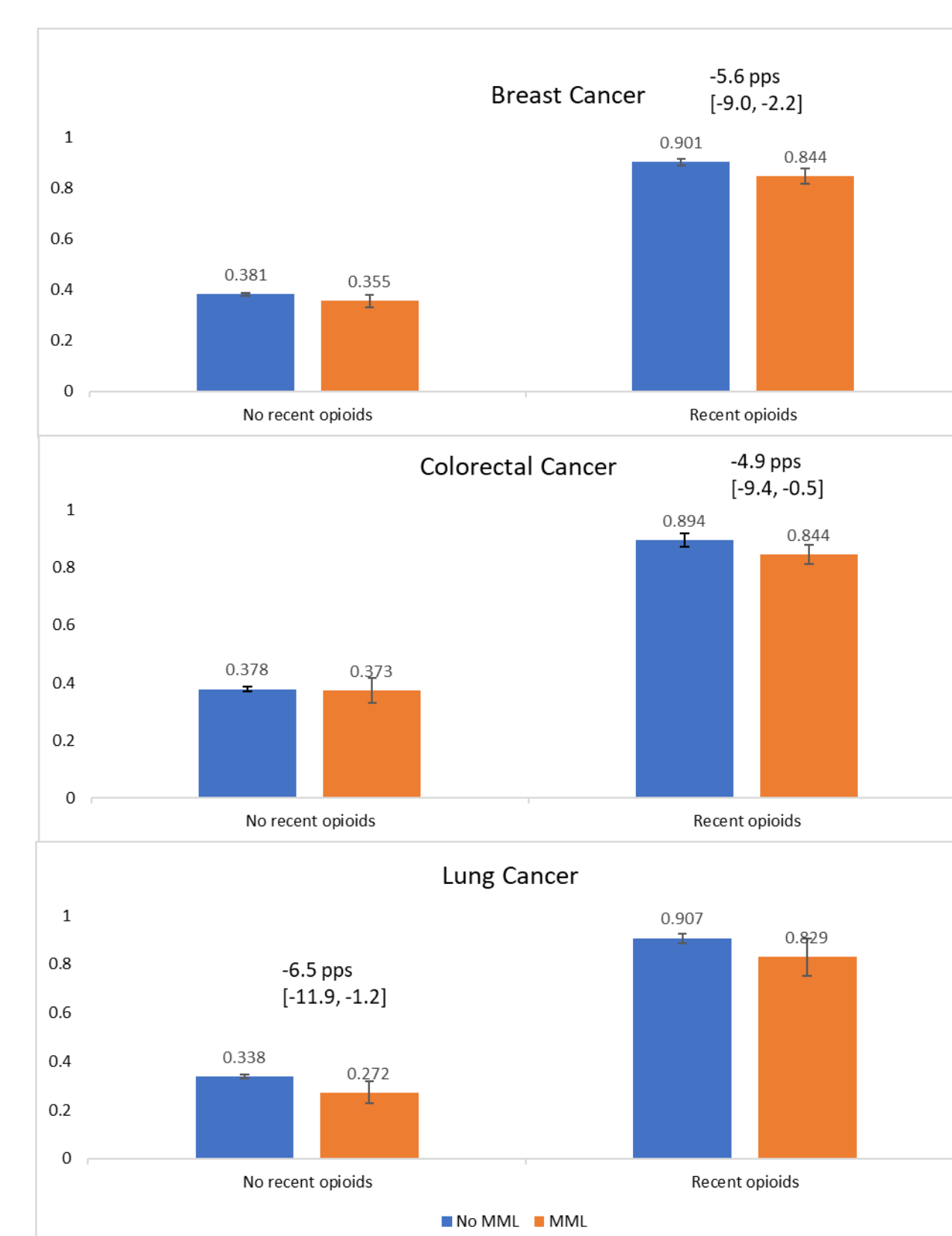
MME – Morphine Milligram Equivalents

Analytical Strategies

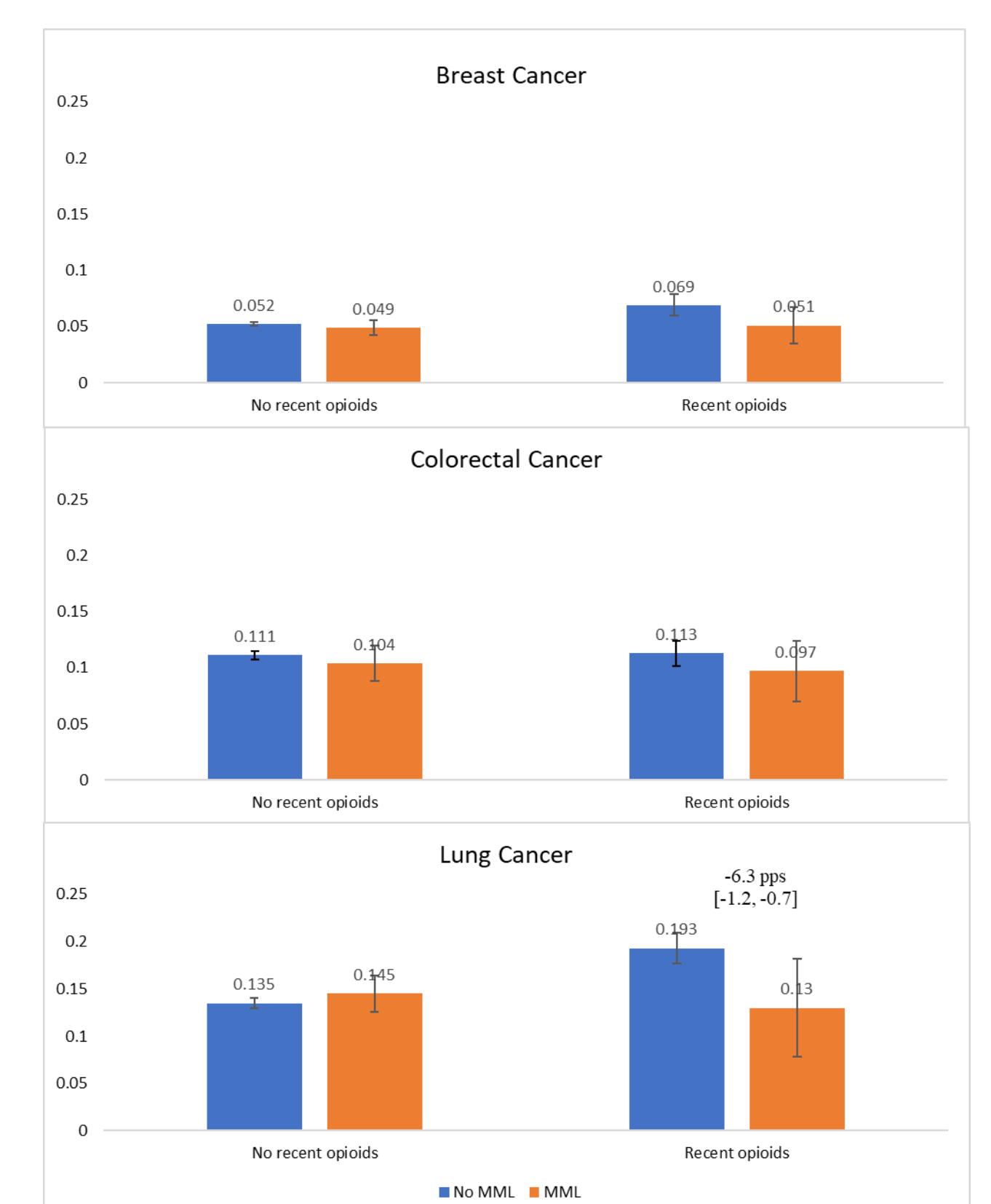
- Natural experiment design exploiting staggered implementation of MML across states
- Difference-in-Differences
 - Main analysis includes 34 states w/o MML prior to 1/1/2012
 - Secondary analysis differentiates between MML with and without dispensary allowances
 - Sensitivity analysis further restricts to 23 states with an operating Prescription Drug Monitoring Program prior to 1/1/2012
- Logistic (for 0/1 outcomes) and Generalized Linear (for MMEs) models control for patient age, sex, non-cancer chronic pain conditions, mental health and substance use disorders in the 12 months prior to new cancer diagnosis



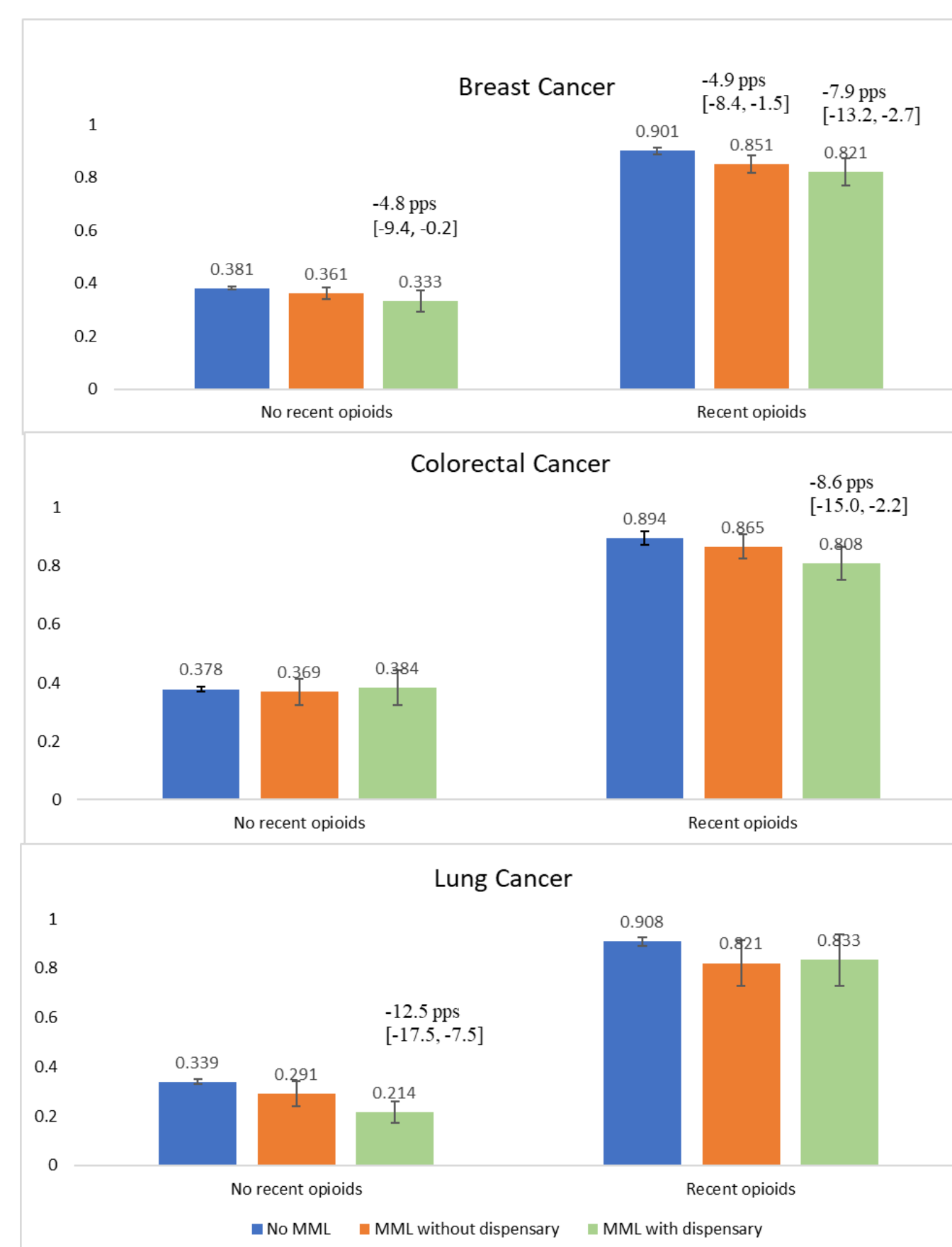
Rate of opioid dispensing associated with MML



Rate of pain-related hospital events associated with MML



MML with dispensary allowances was associated with greater reductions in opioid dispensing



Discussion

- MML may have led to lower use of opioids by some patients receiving active cancer patients
- Specific mechanisms are unknown and can include both less prescribing and lower demand by patients
- Pain-related hospital events reflect extreme outcomes
- Future studies need to investigate
 - quality of life, functioning, uncontrolled pain, and marijuana-related harm
 - Features of MML (in addition to dispensary allowances) to inform policy

Conclusions

- Newly implemented MML between 2012 and 2017 was associated with reductions in the rate of opioid dispensing and pain-related hospital events in some adult patients 18-64 receiving anti-cancer treatment
- MML with dispensary allowances was associated with greater reductions in opioid dispensing
- Future studies should elucidate the nature of the associations and their impact on patient outcomes

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