

Antibiotic and Opioid Prescribing by Dentists: Variation According to County, Region, and Patient Population Characteristics, 2012 to 2017

HUBBARD C,¹ EVANS C,^{2,3} CALIP G,¹ ROWAN S,⁴ GELLAD W,^{5,6} CAMPBELL A,⁷ GROSS A,¹ HERSHOW R,⁸ MCGREGOR J,⁹ SHARP L,¹ SUDA K^{5,6}

¹UIC College of Pharmacy • ²Northwestern University Feinberg School of Medicine, • ³Center of Innovation for Complex Chronic Healthcare, Edward Hines, Jr VA Hospital, ⁴UIC College of Dentistry • ⁵University of Pittsburgh School of Medicine, ⁶Center for Health Equity Research and Promotion, VA Pittsburgh Health Care System, ⁷IQVIA • ⁸UIC School of Public Health • ⁹Oregon State University College of Pharmacy

INTRODUCTION

- Dentists prescribe 1 out of every 10 prescriptions (Rx) for antibiotics and opioids.
- These Rx are associated with serious adverse events, including death, and have large public health impacts.

OBJECTIVE

- Examine county-level characteristics associated with prescribing patterns and to determine if there is an association of prescribing of antibiotics and opioids at the county-level.

DATA SOURCES AND METHODS

- IQVIA® Longitudinal Prescription (LRx) database, 2012-2017
- American Community Survey (US Census Bureau), 2011-2017
- Rural-Urban Commuting Area Codes (USDA)
- Outcome:** County-level Rx rate (per 100 persons)
- Predictors:** County-level socioeconomic characteristics
- Statistical Model:** GEE regression with negative binomial distribution
- Models were also used to evaluate the association between the prescribing rates of antibiotics and opioids.

RESULTS

In 2017:

- 2,850 counties included for analysis
- Opioids:** 3.22 Rx/100 persons; 10.4M Rx total
- Antibiotics:** 7.19 Rx/100 persons; 23.3M Rx total
- 2012-2017:**
- 20 % ↓ Opioid Rx
- 5 % ↑ Antibiotic Rx

RESULTS

FIGURE I:
National Opioid & Antibiotic Prescribing Rates, 2012-2017

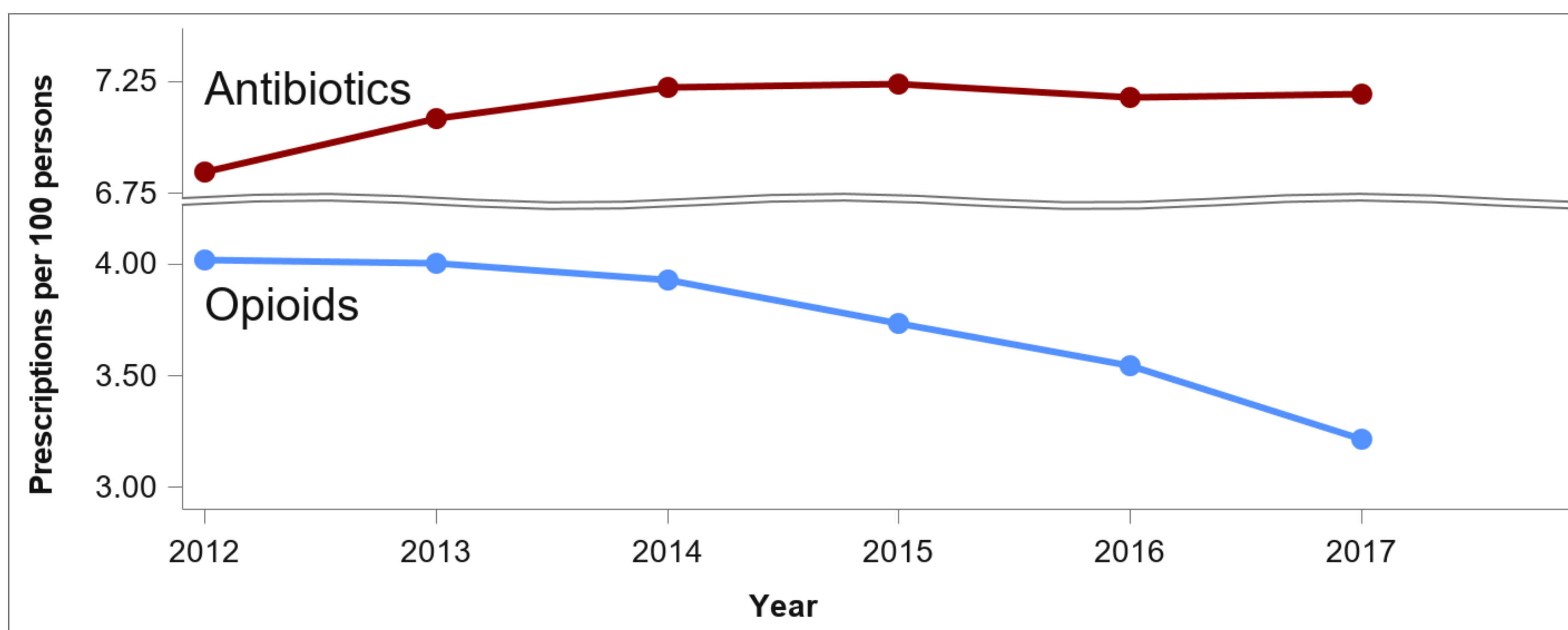


FIGURE II:
Regional Opioid Prescribing Rates, 2012-2017

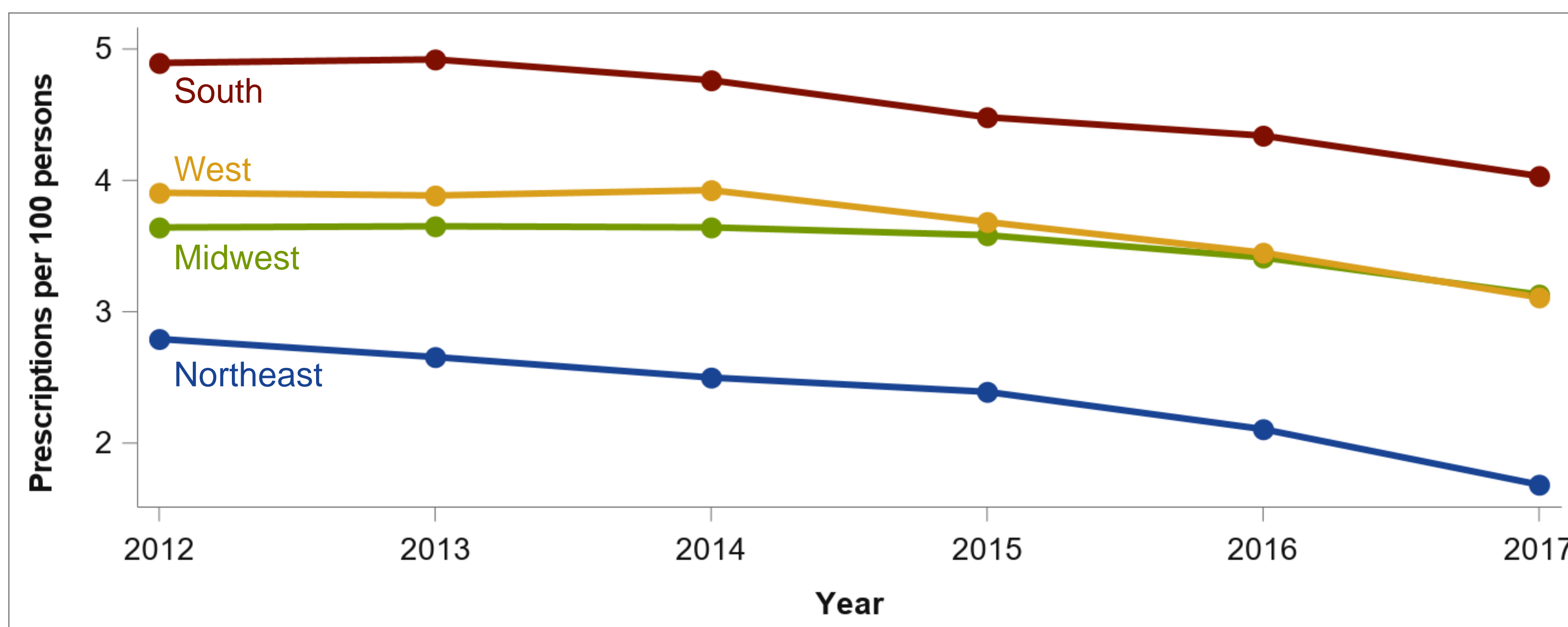


FIGURE III:
% Change in Opioid Prescribing by County, 2012-2017

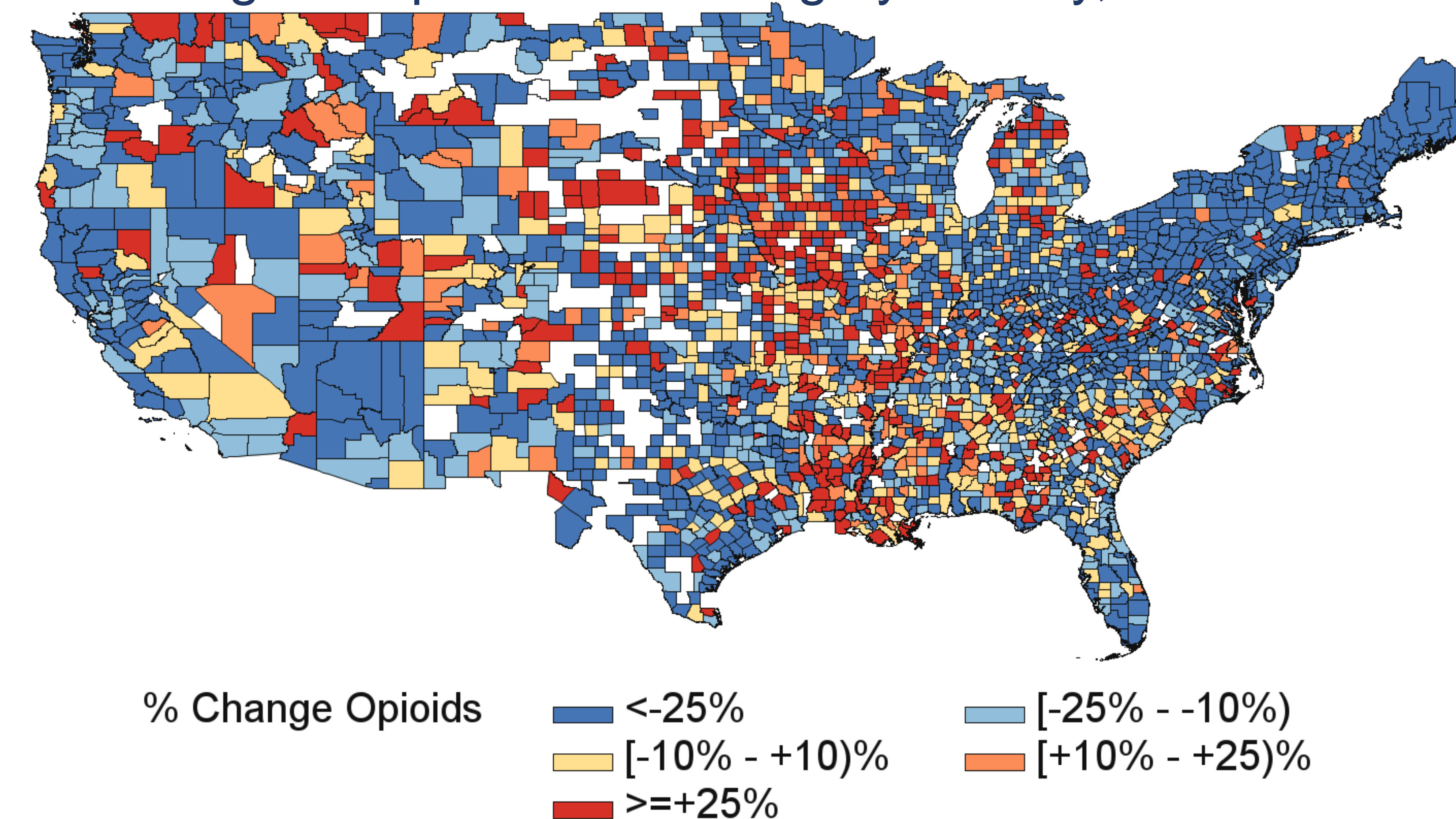


TABLE I: Multivariable Analysis (Selected Findings)

County-Level Characteristics	Adj. RR (95% CI)
Antibiotic Rx as Outcome:*	
Clinicians / 100K persons (high tertile v. low tertile)	1.22 (1.19-1.25)
Region (Northeast v. West)	1.36 (1.29-1.44)
Metro v. Rural	1.22 (1.14-1.30)
1 point ↑ Opioid Rx Rate	1.14 (1.13-1.15)
Opioid Rx as Outcome:**	
Clinician Density (low v. high)	1.06 (1.03-1.10)
Region (South v. Northeast)	2.15 (2.02-2.29)
Metro v. Rural	1.27 (1.16-1.37)
1 point ↑ Antibiotic Rx Rate	1.20 (1.19-1.22)

*Model also includes income tertile, proportion female, and proportion white.

** Model also includes proportion white and proportion in poverty.

Adj. RR= adjusted risk ratio; 95% CI = 95% confidence interval

FIGURE IV:
Regional Antibiotic Prescribing Rates, 2012-2017

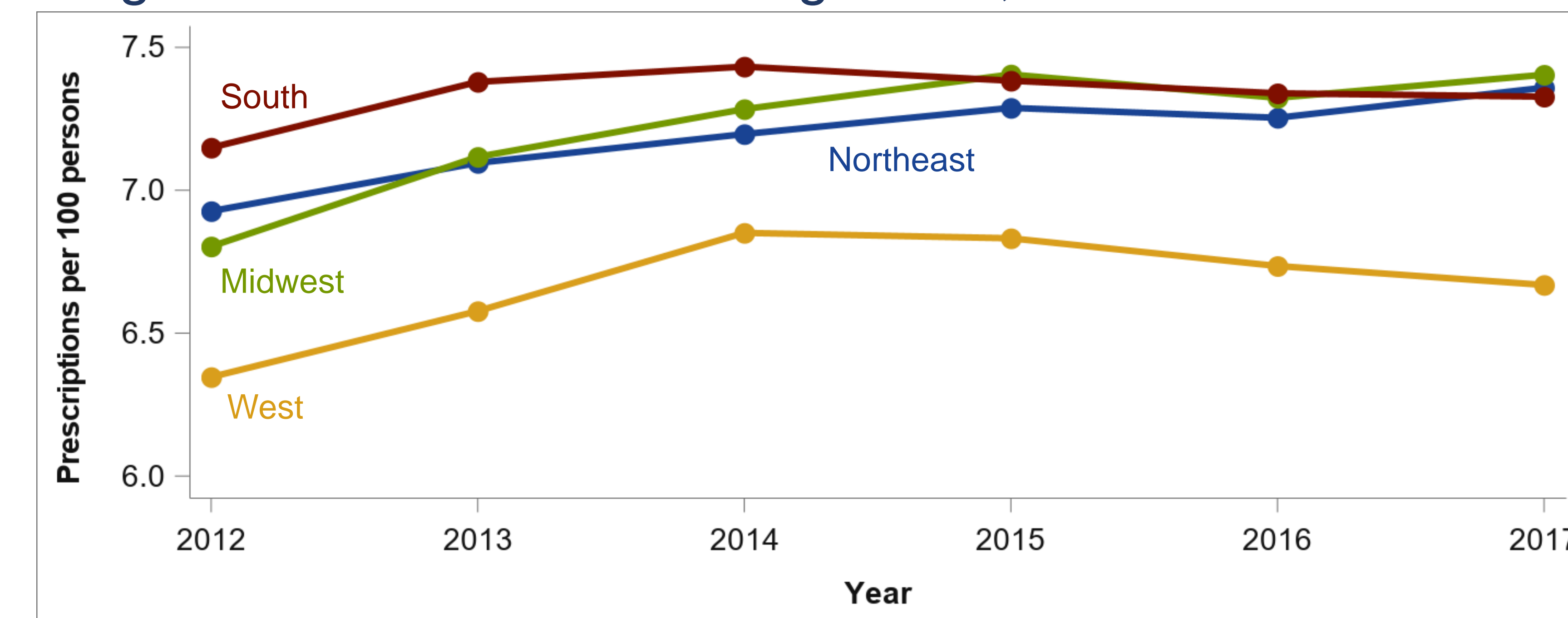


FIGURE V:
% Change in Antibiotic Prescribing by County, 2012-2017

