# Rural Variation of Medicaid Expansion on Access to Naloxone

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## INTRODUCTION

- In 2018, the U.S. Centers for Disease Control and Prevention reported that >67,000 people died from a drug overdose and 70% were related to opioid use.

- Retail pharmacy-based dispensing of naloxone, a non-addictive drug which can reverse an opioid overdose if administered in time, has significantly increased since 2012 and as a result of Medicaid expansion[1].

- Medicaid covered nearly 54% of nonelderly adults being treated for opioid use disorder (OUD) and these patients had increased risk of repeated opioid overdose.

- Drug overdose death rates and OUD prevalence are somewhat higher in rural areas compared to urban areas; most rural counties have lower naloxone dispensing rates.

- The Affordable Care Act required states to expand Medicaid eligible coverage for nonelderly adults with incomes up to 138% of the federal poverty level which could increase OUD treatment access and decrease opioid overdose through naloxone distribution especially for rural populations.

## OBJECTIVES

- To describe the trend in the naloxone dispensing rate per 100,000 population pre- and post-Medicaid expansion in rural vs non-rural areas as well as finer resolutions using rural population quartille at the 3-digit ZIP code level

- To describe the trend in the Medicaid paid percentage of naloxone in rural vs non-rural areas as well as finer resolutions using rural population quartille at the 3-digit ZIP code level

## METHODS

- This study was a cross-sectional descriptive study using available data from 2011 to 2017 (quarter 1 to 28).

- The number of naloxone prescriptions dispensed and the Medicaid paid percentage of naloxone prescriptions dispensed were obtained by the IQVIA National Prescription Audit (NPA) which provided nationally projected naloxone dispensed prescriptions from retail pharmacies.

- 3-digit ZIP codes of pharmacies were dichotomously classified into rural vs non-rural based on the percentage of rural population (>0% vs 0%) according to 2010 U.S Census. For areas with >0% rural population, the percentage of the rural population was quartiled (Q1,less rural; Q4,more rural). Each 3-digit ZIP code could be assigned to a corresponding state and assigned a state-level Medicaid expansion status. State Medicaid expansion status and implementation time were provided by the Henry J. Kaiser Family Foundation.

Naloxone dispensed from all-payer types has increased notably in rural and non-rural areas since 2011.

As rurality increased, the naloxone dispensing rate increased. Rates of naloxone dispensing increased over the study period with higher rates of naloxone dispensing in rural areas. Medicaid expansion may have increased naloxone access, especially in rural areas.

- Statistical Analyses
- Cross-sectional descriptive analyses and data visualization was conducted to describe trends.
- Means and standard errors were calculated for each quarter.
- All statistical analysis was conducted using SAS version 9.4

## RESULTS

**Table 1.** The mean number of naloxone prescriptions dispensed per 100,000 population by retail pharmacies at 3-digit ZIP code level from 2011 to 2017

| 3-digit ZIP code rurality | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Rural (>0% rural population) | 0.93 | 0.88 | 0.87 | 0.75 | 0.72 | 0.81 | 1.33 |
| Non-rural (0% rural population) | 0.40 | 0.39 | 0.30 | 0.55 | 0.58 | 0.63 | 0.83 |
| Overall | 0.57 | 0.56 | 0.45 | 0.58 | 0.60 | 0.67 | 0.96 |

## Results

**Table 2.** The mean number of naloxone prescriptions dispensed per 100,000 by retail pharmacies at 3-digit ZIP code quartiled by rural population percentage.

| Quantile groups in 3-digit ZIP code rural areas (rural population >0%) | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Q1 (less rural) | 0.58 | 0.58 | 0.74 | 0.48 | 0.47 | 0.60 | 0.83 |
| Q2 | 0.70 | 0.74 | 0.63 | 0.66 | 0.75 | 0.70 | 1.24 |
| Q3 | 1.41 | 0.93 | 0.89 | 0.77 | 1.00 | 1.02 | 1.70 |
| Q4 (more rural) | 1.88 | 1.57 | 1.43 | 1.61 | 1.26 | 1.76 | 2.62 |

*Note:* 3-digit zip code in rural areas are included four quantile groups based on the percentage of the rural population Q1: 0.0094% - 3.12%; Q2: 3.12% - 8.23%; Q3: 8.23% - 17.76%; Q4: 17.76% - 100%

**Figure 1.** Rate of naloxone prescriptions dispensed per 100,000 by retail pharmacies pre- and post-Medicaid expansion in rural (left) and non-rural (right) areas at 3-digit zip code level
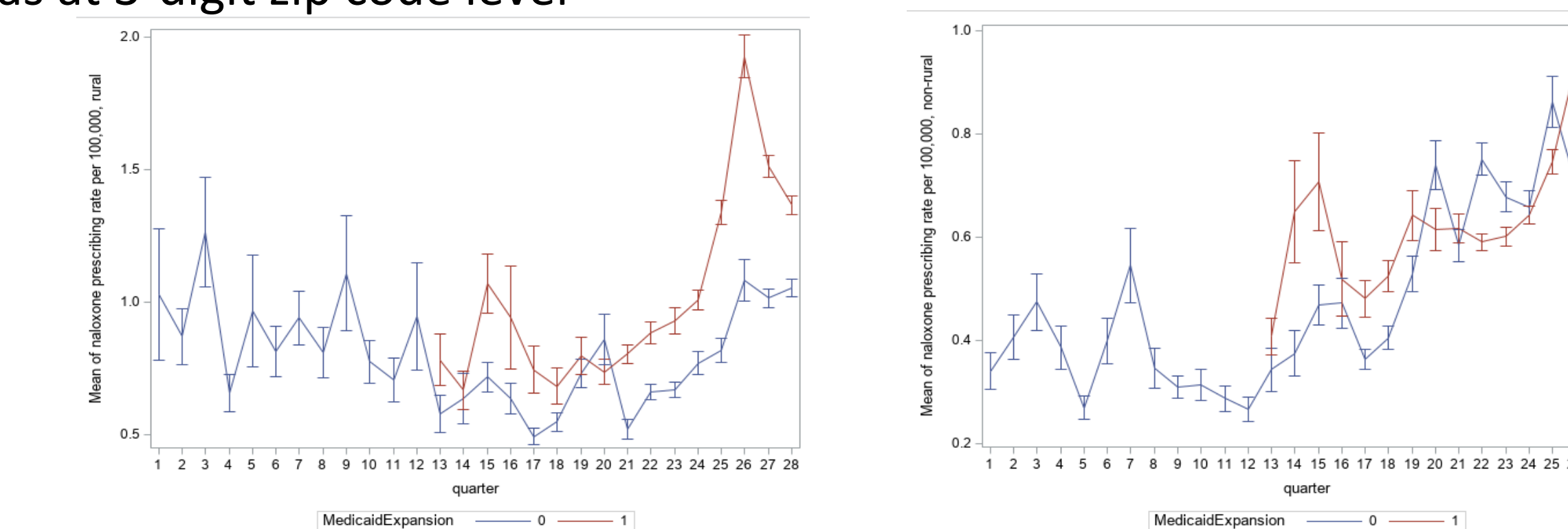


**Figure 2.** Rate of naloxone dispensed prescriptions per 100,000 by retail pharmacies pre- and post-Medicaid expansion in quantile groups of rural areas at 3-digit ZIP code level.
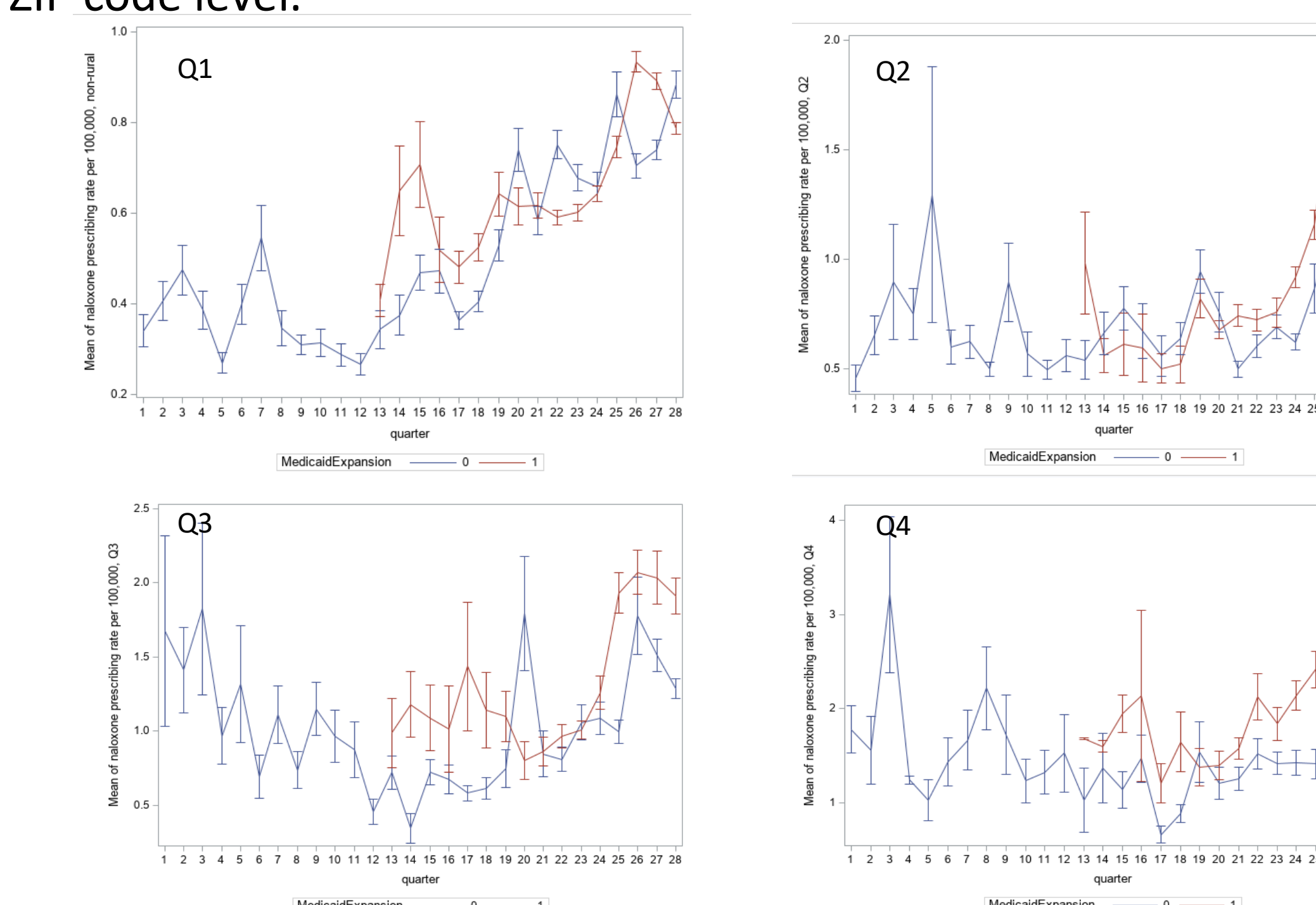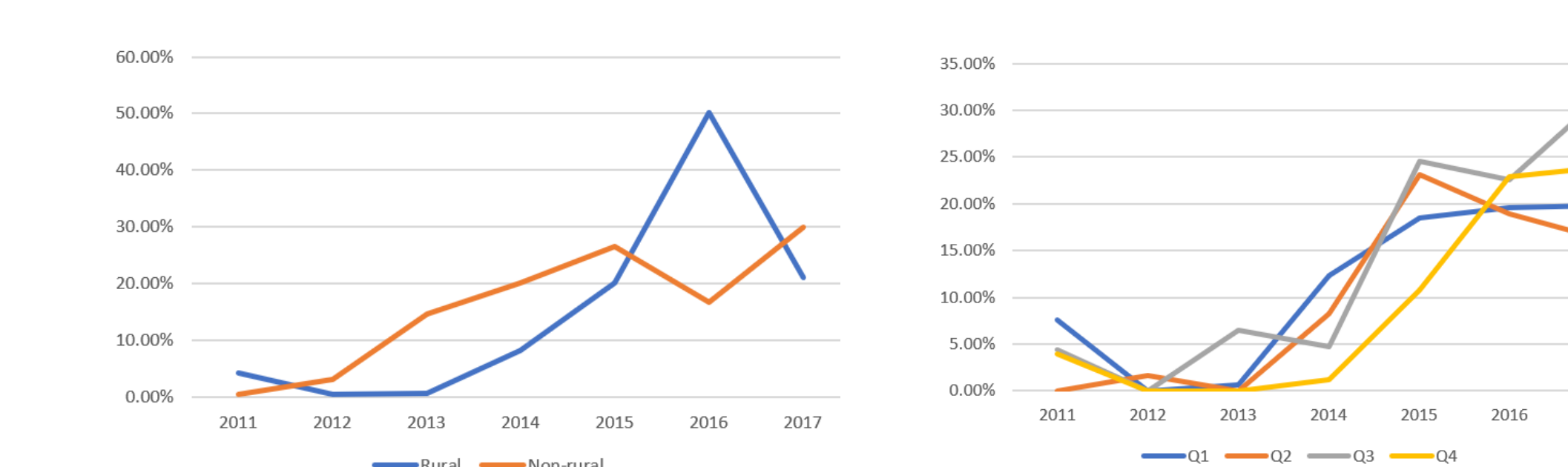


**Figure 3.** The annual trend of the percentage of naloxone dispensed paid for by Medicaid in rural and non-rural areas (left) as well as in rural quartile groups in 3-digit ZIP code areas from 2011 to 2017.



## CONCLUSIONS

- At 3-digit ZIP code level, the naloxone dispensing rate increased as the percentage of the rural population increased.

- The average rate of naloxone prescriptions dispensed per 100,000 after Medicaid expansion increased more significantly in rural areas compare to non-rural areas. The mean differences of naloxone dispensing rates ranged from 0.14 to 0.57 more in rural areas compared to non-rural areas In rural areas, the most rural quartile group had higher naloxone dispensing rate.

- The percentage of naloxone prescriptions dispensed paid by Medicaid increased over the time which increased by 16.74% and 29.49% in rural and non-rural areas, respectively

- Future regression models will provide more robust evaluation of the association between Medicaid expansion and naloxone prescriptions dispensed by urban/rural composition.

Reference (1) Sohn M, Talbert JC, Delcher C, Hankosky ER, Lofwall MR, Freeman PR. Association between state Medicaid expansion status and naloxone prescription dispensing. *Health Serv Res.* 2020;55(2):239-248. doi:10.1111/1475-6773.13266