

# **Rural/Urban Differences in Opioid Use, Misuse, and Treatment**



**New Mexico Statewide Epidemiological Outcomes Workgroup  
White Paper Series**

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*Produced by Coop Consulting, Inc. on behalf of the  
New Mexico Statewide Epidemiological Outcomes Workgroup*

**Mission** New Mexico's Statewide Epidemiological and Outcomes Workgroup (SEOW) reviews and disseminates data about substance abuse and misuse and their consequences. It also identifies best practice information about evidence-based prevention strategies, policies and practices that can lead to successful outcomes for New Mexicans. The purpose of this two-fold work is to inform communities so that they can better target behaviors and risk factors that can be positively impacted by the implementation of well-chosen, evidence-based prevention approaches that are appropriate for the population. The important work of the SEOW is directed by the Office of Substance Abuse Prevention (Behavioral Health Services Division, Human Services Department) and supported by federal funding from the Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.

### **Statewide Epidemiology and Outcomes Workgroup (SEOW) Members**

#### **BHSD Office of Substance Abuse Prevention**

Karen Cheman, Prevention Director,  
NPN & SEOW Director  
Heather Burnham, Program Manager  
Antonette Silva-Jose, Program Manager  
Anwar Walker, Program Manager

#### **Behavioral Health Services Division (BHSD)**

Wayne Lindstrom, Ph.D., Director and CEO,  
Behavioral Health Collaborative  
Mika Tari, Deputy Director  
Tiffany Wynn, Clinical Services Director

#### **Department of Finance and Administration**

Julie Krupcale, DWI Bureau Chief

#### **Children Youth and Families Department, Behavioral Health Services**

Michael Hock, Program Manager

#### **DOH Epidemiology and Response Division**

Jim Davis, Epidemiologist  
Dan Green, Epidemiologist  
Kathryn Lowerre, Program Evaluator  
Ihsan Mahdi, Epidemiologist  
Annaliese Mayette, Epidemiologist  
Carol Moss, Epidemiologist  
Luigi Garcia Saavedra, Epidemiologist  
Laura Tomedi, Epidemiologist

#### **Community Members\***

Ann DelVecchio, Owner, Alpha Assessment  
Associates  
Shelley Moeller, Program Planner &  
Evaluator, M&O Consulting  
John Steiner, Program Manager, UNM  
CASAA/COSAP  
Sharz Weeks, Program Specialist, Bernalillo  
County Community Health Council

#### **Pacific Institute for Research & Evaluation (PIRE), NM State Level Evaluator**

Liz Lilliott, Ph.D  
Martha Waller, Ph.D  
Lei Zhang, Ph.D

#### **Coop Consulting, Inc., Project Staff**

Michael Coop  
Andrea Niehaus  
Tina Ruiz  
Tim Werwath

\*Community preventionists across the state attend and contribute using the SEOW as a resource for work in the larger New Mexico prevention system. For more information, contact Karen Cheman, karen.cheman@state.nm.us or Michael Coop, michaelcoop@newmexico.com.

## Introduction

This SEOW white paper seeks to better inform public health efforts surrounding opioid-related issues by examining in more depth the similarities and differences between people who use and misuse opioids in rural versus urban areas. In this paper, we discuss differences in the prevalence and abuse of opioids, as well as differences in routes of administration, morbidity and mortality, and the availability of medically-assisted treatment.

## Prevalence and Abuse

Rural areas of the United States have higher opioid prescribing rates than urban areas, and overall declines in opioid prescribing since 2014 have occurred at a slower rate in rural areas.<sup>1</sup> This is attributable to rural areas generally having larger elderly populations with chronic pain and individuals working in industries such as farming that require heavy amounts of manual labor. Additionally, a focal point in the marketing of OxyContin by Purdue Pharma in the late 1990s was to target physicians who had the highest opioid prescribing rates, in turn disproportionately targeting rural communities in their efforts to sell more OxyContin.<sup>2</sup>

Higher rates of opioid prescribing are associated with higher rates of prescription opioid abuse. A study of the geographical variation in this relationship found that it is disproportionately stronger in rural areas of the United States.<sup>3</sup> Overall, rural populations are more likely to abuse prescription opioids compared to their urban counterparts.<sup>4</sup> A comparison of rural and urban substance abuse treatment admissions found that 21.8% of urban residents and 3.1% of rural residents listed heroin as the primary substance of abuse, while 10.6% of rural residents and 4.0% of urban residents were admitted for prescription opioid abuse.<sup>5</sup>

Specific subpopulations show significant urban/rural differences in opioid abuse:

- Data from the 2008 National Survey on Drug Use and Health showed that rural adolescents were 26% more likely than urban adolescents to have abused prescription opioids, after taking into account differences in demographics and other substance use.<sup>6</sup>

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<sup>1</sup> Garcia, Macarena, et al. "Higher opioid prescribing rates among primary care providers in rural vs. urban counties—United States, 2014–2017." *Annals of Epidemiology* 27.8 (2017): 517-518.

<sup>2</sup> Van Zee, Art. "The promotion and marketing of oxycontin: commercial triumph, public health tragedy." *American Journal of Public Health* 99.2 (2009): 221-227.

<sup>3</sup> Cicero, Theodore J., et al. "Relationship between therapeutic use and abuse of opioid analgesics in rural, suburban, and urban locations in the United States." *Pharmacoepidemiology and Drug Safety* 16.8 (2007): 827-840.

<sup>4</sup> Young, April M., Jennifer R. Havens, and Carl G. Leukefeld. "A comparison of rural and urban nonmedical prescription opioid users' lifetime and recent drug use." *The American Journal of Drug and Alcohol Abuse* 38.3 (2012): 220-227.

<sup>5</sup> Substance Abuse and Mental Health Administration. *A Comparison of Rural and Urban Substance Abuse Treatment Admissions*. 2012.

<sup>6</sup> Havens, Jennifer R., April M. Young, and Christopher E. Havens. "Nonmedical prescription drug use in a nationally representative sample of adolescents: Evidence of greater use among rural adolescents." *Archives of Pediatrics & Adolescent Medicine* 165.3 (2011): 250-255.

- A study of pregnant women entering detoxification units found that rural pregnant women were 8.4 times more likely to report opiate abuse and 5.9 times more likely to report injecting drugs than urban pregnant women.<sup>7</sup>
- Among women that had experienced domestic violence, rural residency was significantly associated with a higher likelihood of opiate abuse.<sup>8</sup>

Other ecological factors help to contribute to greater prescription opioid abuse among rural population besides increased availability through prescribing. Keyes et al. argue that “ties to the community are often stronger in rural areas, and greater value is placed on maintaining strong social capital...tight kinship and social networks allow faster diffusion of nonmedical prescription opioids among those at risk.” Furthermore, they argue that “increasing economic deprivation and unemployment [in rural areas] create a stressful environment that places individuals at risk”.<sup>9</sup>

### **Morbidity and Mortality**

Compared to their urban counterparts, rural populations had higher rates of drug overdose deaths in 2015, although urban areas had higher drug overdose death rates as recently as 2005 (see Figure 1).<sup>10</sup> While overdose deaths from prescription opioids have been increasing in all areas of the country since 1999, the rate of increase was 371% for non-metropolitan counties compared to only 52% for large metropolitan counties.<sup>11</sup>

Routes of administration used by people who abuse prescription opioids vary by rural/urban status. Young et al. found that swallowing is the most common route of administration for urban residents who abuse prescription opioids, while rural users are more likely to use alternative routes of administration such as snorting, smoking or injecting opioids.<sup>12</sup> The authors argue that these differences in routes of administration may be linked to drug problem severity, citing previous studies showing that frequency of substance abuse is directly tied to the transition to injection from other routes of administration.

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<sup>7</sup> Shannon, Lisa M., Jennifer R. Havens, and Lon Hays. "Examining differences in substance use among rural and urban pregnant women." *The American Journal on Addictions* 19.6 (2010): 467-473.

<sup>8</sup> Cole, Jennifer, and T. K. Logan. "Nonmedical use of sedative-hypnotics and opiates among rural and urban women with protective orders." *Journal of Addictive Diseases* 29.3 (2010): 395-409.

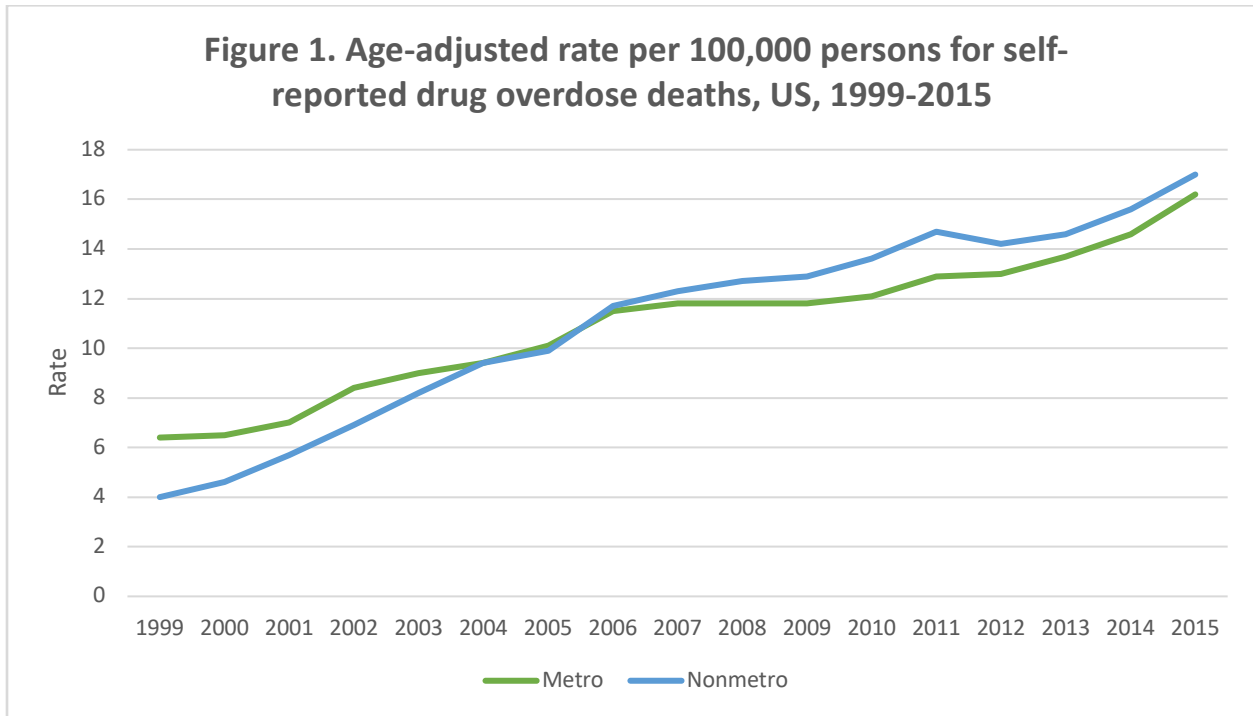
<sup>9</sup> Keyes, Katherine M., et al. "Understanding the rural–urban differences in nonmedical prescription opioid use and abuse in the United States." *American Journal of Public Health* 104.2 (2014): e52-e59.

<sup>10</sup> Mack, Karin A., Christopher M. Jones, and Michael F. Ballesteros. "Illicit Drug Use, Illicit Drug Use Disorders, and Drug Overdose Deaths in Metropolitan and Nonmetropolitan Areas-United States" *Morbidity and Mortality Weekly Report* 66.45 (2017): 1262-1262.

<sup>11</sup> Paulozzi, Leonard J., and Yongli Xi. "Recent changes in drug poisoning mortality in the United States by urban–rural status and by drug type." *Pharmacoepidemiology and Drug Safety* 17.10 (2008): 997-1005.

<sup>12</sup> Young, April M., Jennifer R. Havens, and Carl G. Leukefeld. "Route of administration for illicit prescription opioids: a comparison of rural and urban drug users." *Harm Reduction Journal* 7.1 (2010): 24.

These findings have significant implications for rates of opioid morbidity in rural areas, as alternative routes of administration such as injection tend to be more harmful to the body and provide greater opportunities for infectious diseases to enter the bloodstream.<sup>13,14</sup>



Source: National Vital Statistics System

The incidence of neonatal abstinence syndrome (NAS) increased by nearly 5 times since 2000, concurrent with rising rates of opioid misuse.<sup>15</sup> NAS is a condition in which continued use of opiates by pregnant mothers causes withdrawal symptoms in newborn infants. While rates of NAS were similar in rural and urban areas in 2004, the incidence of NAS increased at a higher rate in rural counties from 2004 to 2013 relative to urban counties (see Figure 2).<sup>16</sup>

### Barriers to Treatment and Harm Reduction

Rural areas face numerous challenges in providing adequate substance abuse treatment services. Rural areas disproportionately lack basic services relative to urban areas, and rural residents utilize available services less frequently than urban residents.<sup>17</sup> Geographic isolation

<sup>13</sup> Hahné, Susan JM, et al. "Tetanus in injecting drug users, United Kingdom." *Emerging Infectious Diseases* 12.4 (2006): 709.

<sup>14</sup> Buxton, Jane A., et al. "Chasing the dragon-characterizing cases of leukoencephalopathy associated with heroin inhalation in British Columbia." *Harm Reduction Journal* 8.1 (2011): 3.

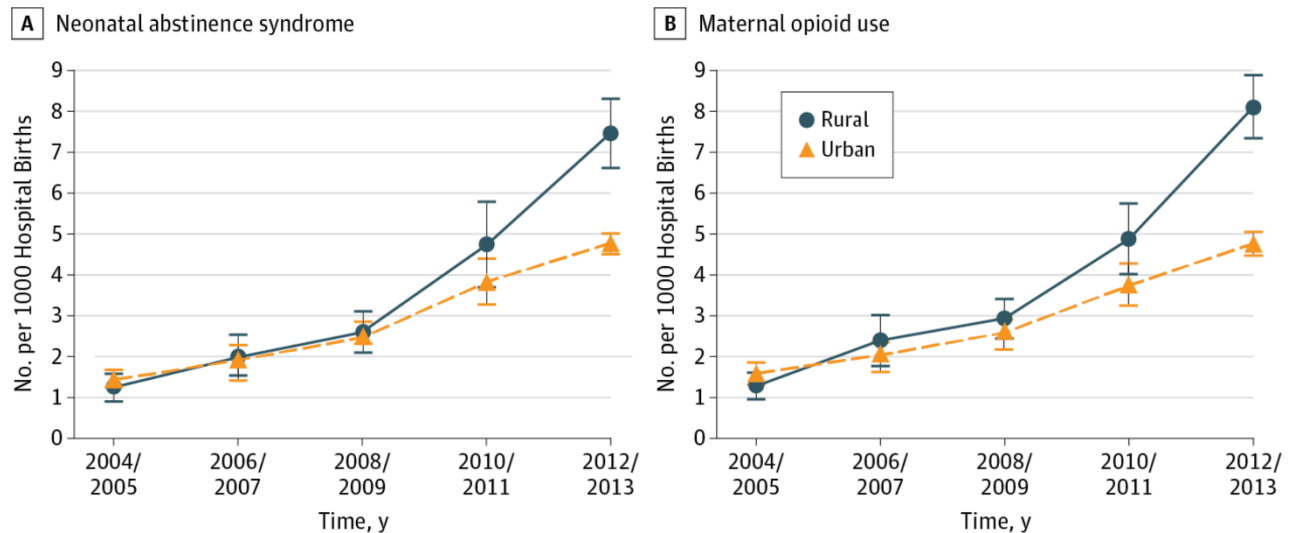
<sup>15</sup> Patrick, Stephen W., et al. "Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012." *Journal of Perinatology* 35.8 (2015): 650.

<sup>16</sup> Villapiano, Nicole LG, et al. "Rural and urban differences in neonatal abstinence syndrome and maternal opioid use, 2004 to 2013." *JAMA Pediatrics* 171.2 (2017): 194-196.

<sup>17</sup> Borders, Tyrone F., and Brenda M. Booth. "Research on rural residence and access to drug abuse services: where are we and where do we go?" *The Journal of Rural Health* 23.1 (2007): 79-83.

and limited transportation options make accessing services in these areas very difficult. Ethnographic research suggests a greater social stigma of addiction in rural communities; seeking substance abuse treatment often means a lack of anonymity, deterring people from receiving treatment who might otherwise in another context.<sup>18</sup>

**Figure 2. Frequency of neonatal abstinence syndrome (A) and maternal opioid use (B) per 1000 hospital births by rural vs urban status, displayed as 2-year combined estimates**



Source: National Inpatient Sample, Agency for Healthcare Research and Quality

Research suggests that naloxone administration by emergency medical services is lower in rural areas due to the fact that there are fewer highly trained EMTs in the workforce that are more likely to administer naloxone in the event of an overdose.<sup>19</sup> In addition, the large sparsely-populated geographic areas EMTs are responding in hinder the quick arrival of emergency services. Expanding the use of naloxone by first responders and layperson access to naloxone is essential to reducing the harm associated with opioid abuse in rural areas.

Telemedicine has emerged as a key strategy for expanding access to medically-assisted treatment in rural areas and has been shown to be an effective alternative to in-person treatment.<sup>20</sup> New Mexico is one of five states that have expanded Medicaid to cover medically-assisted treatment delivered via telemedicine. Project ECHO, operated out of the University of New Mexico, has been very successful in using teleconferencing to train rural providers in medically-assisted treatment and provide support for them in managing patients.<sup>21</sup>

<sup>18</sup> Pullen, Erin, and Carrie Oser. "Barriers to substance abuse treatment in rural and urban communities: Counselor perspectives." *Substance Use & Misuse* 49.7 (2014): 891-901.

<sup>19</sup> Faul, Mark, et al. "Disparity in naloxone administration by emergency medical service providers and the burden of drug overdose in US rural communities." *American Journal of Public Health* 105.S3 (2015): 26-32.

<sup>20</sup> Eibl, Joseph K., et al. "The effectiveness of telemedicine-delivered opioid agonist therapy in a supervised clinical setting." *Drug & Alcohol Dependence* 176 (2017): 133-138.

<sup>21</sup> Komaromy, Miriam, et al. "Project ECHO (Extension for Community Healthcare Outcomes): a new model for educating primary care providers about treatment of substance use disorders." *Substance Abuse* 37.1 (2016): 20-24.