

# **The Biomedical Burden: Sociological Analysis of the Opioid Crisis in Rural America**

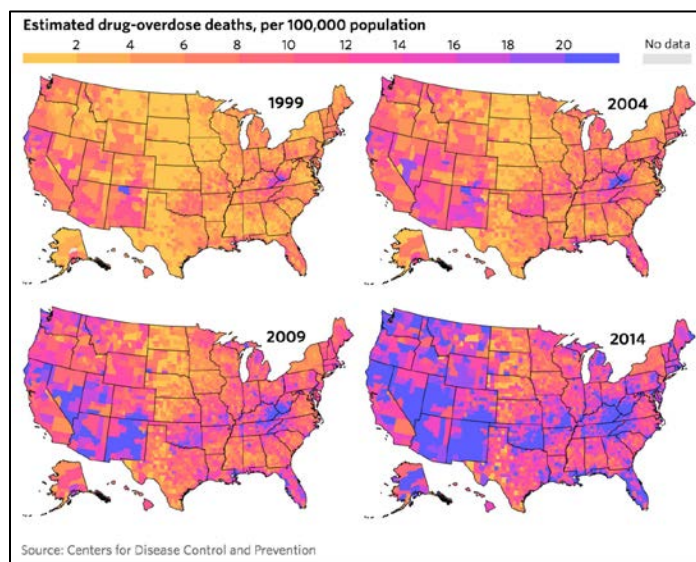
Ryan Hodgson  
Washington and Lee University  
POV 423

*I would like to thank Professor Eastwood, Professor Chin, and my fellow classmates in helping guide me through this project.*

## Introduction

Opioid addiction: the purportedly unprejudiced killer. Taking the lives of over 600,000 people from 2000 to 2016, the opioid crisis has become a dire public health emergency. In 2016, approximately 115 people died of an opioid overdose each day ("Opioid Overdose"). Even beyond overdose rates, opioids impact a growing number of people currently living with addiction in a variety of ways: "The CDC estimates that for each prescription painkiller death in 2008, there were 10 treatment admissions for abuse, 32 emergency department visits for misuse or abuse, 130 people who were abusers or dependent, and 825 nonmedical users." Prior to this crisis, midlife mortality in the United States had been steadily declining for 20 years; however, this downward trend abruptly changed course as rates began to increase in 1998, closely intertwined with the rapid proliferation of opioid-related deaths (Case and Deaton).

Technically, any person should face equal risk of falling victim to opioid addiction, regardless of demographic or socioeconomic backgrounds. However, the national epidemic is not so evenly dispersed, growing rapidly in isolated pockets over time (Figure 1).



**Figure 1:** Growth of drug overdose rates in the United States from 1999-2014 (Whalen)

Mirroring this spatial variability, headlines frequently arise with reports such as “Opioid crisis hits rural America hard” or “America’s forgotten towns: Can they be saved or should people just leave?”. In public discourse and media, rural areas have received heightened attention for the devastation occurring as consequence of opioid-related deaths. Now, these stories are not just unsupported perceptions – in analyzing the geographic spread of the opioid crisis across the country, varying and disparate overdose rates illustrate the disproportionate impact of this epidemic on rural areas. More recently, rural America has seen significantly higher numbers of opioid-related deaths for relatively smaller populations (Keyes et al.). As reported in 2015, the opioid-related overdose rate in non-metro areas exceeded that of metro areas by 45% (O’Brien). Looking more specifically at central Appalachia, where this opioid crisis reportedly saw its earliest origins, these rural areas experienced profoundly rapid increases as compared to the rest of the country between 1999 and 2014: in West Virginia, the overdose rate spiked eightfold, and in Kentucky, fivefold (Popovich). So, even if opioid addiction truly can impact any person, how is it that certain rural sub-populations are so disproportionately vulnerable to this epidemic? While a wide variety of compounding factors both perpetuate and shape the unequal impact of opioid disparities across the country, this paper approaches the issue from a sociological standpoint, questioning what role societal mentalities of healthcare may have in further exacerbating disproportionate opioid burden.

## The Biomedical Model of Medicine

Our current medical system relies heavily on what's known as the Biomedical Model of medicine, strictly focusing on the biological basis of ailments and how they can be treated through medical intervention. By definition,

The biomedical model is based on the premise that every disease has a specific pathogenic origin whose treatment can best be accomplished by removing or controlling its cause using medical procedures. Often this means administering a drug to alleviate or cure symptoms (Cockerham 6).

Whether or not this approach to medicine provides the best care in all cases, it seems to be the model most widely accepted and promoted by the majority of stakeholders in the medical field, whether that be patients, doctors, pharmaceutical companies, or insurance agencies. In his book *Social Causes of Health and Disease*, medical sociologist William Cockerham highlights how this biomedical mindset of illness and treatment goes unquestioned as the “taken-for-granted” mentality in our society: doctors often seek to treat ailments with medications while patients simultaneously expect to receive medications when consulting their doctors (Cockerham 6).

The biomedical model primarily gained its widespread success through the development and efficacy of drug-based treatment for infectious diseases; now, it has expanded throughout the medical field creating a norm in which drugs are seen as “magic bullets,” able to fix whatever affliction may arise (Cockerham 7). With regards to the opioid epidemic, that specific affliction is pain, and its supposed magic bullet: opioids. However, such a narrowed approach lacks consideration of additional outside factors that, though not part of the direct pathology, still have a potentially detrimental impact on health outcomes. Cockerham presents Type 2 diabetes as both a biologically and socially influenced disease, illustrating the potential shortfalls in a strictly biomedical focus. Type 2

diabetes most commonly arises in adults, when their body still produces insulin, but it no longer functions to regulate blood sugar levels. Now, full reliance on the biomedical model would restrict treatment of diabetes to the biological processes impeding one's health: insufficient insulin activity. For this, patients can, and do, take medications to better control blood sugar when their own body cannot. However, analysis of a growing diabetes crisis in New York City in 2006, in which there was a 140% increase in the percentage of diabetics over 10 years, uncovers significant non-biological factors aggravating this heightened prevalence. Most notable are social influences related to both income and race. Income disparities impact this rise in diabetes through disproportionate exposure to unhealthy diets, low levels of exercise, and poor medical care. As for race, areas of the city with higher concentrations of black or Hispanic populations experienced significantly higher rates of diabetes than predominantly white areas. Expanding the focus of diabetes care beyond simply insulin processes allows for consideration of both the individual's lifestyle and behaviors (for example: eating junk foods), as well as the characteristics of the disadvantaged areas they may live in (for example: broader health food disparities) (Cockerham 14-15). In identifying a broader realm of factors affecting one's health and well-being, the scope of treatment options simultaneously expands, providing a greater variety of pathways to potentially improve health outcomes.

Despite this biomedical model typically framing the infrastructure of our healthcare system, alternative approaches also exist that broaden the scope of medical care as seen in the diabetes example, allowing for consideration of factors beyond just treatment of physical symptoms. One such model, known as the biopsychosocial model, includes and recognizes psychological and social factors that may impact a person's illness experience,

along with the more objective pathology ("Do Biomedical Models of Illness Make for Good Healthcare Systems?" 1398). A similar unlabeled model proposed by Derick Wade and Peter Halligan mirrors these premises, similarly expanding the realm of medical treatment, taking into account a greater variety of contextual factors influencing patient experience. Additionally, their model views illness within both physical and social/cultural environments, and incorporates an individual's personal context ("beliefs, attitudes, expectations, values etc."), their free will, and their lifestyle or activities. With these factors in mind, treatment shifts to focus on which aspects of social, personal, or physical context must be altered or improved.

Recently, some areas of medical care have started to increasingly embrace the more holistic approach illustrated in these two similar models. The World Health Organization even uses many of the premises of the biopsychosocial model as a core foundation of their International Classification of Functioning, Disability and Health, published in 2002. However, financially and politically, the unquestioned biomedical model still garners more support, impeding increased use of alternative models in our healthcare system. Healthcare funding is primarily rooted in the biomedical premise that "healthcare is strictly limited to the diagnosis and treatment of disease" ("The Biopsychosocial Model of Illness: A Model Whose Time Has Come" 997/1000-1001). No matter the model, such overarching approaches to medicine impact the experiences and interactions between patients and their doctors, influencing the type of healthcare provided and received ("Do Biomedical Models of Illness Make for Good Healthcare Systems?" 1398).

## Methodology

Using the core premises of the biomedical model of medicine as an analytical lens, this paper presents a synthetic literature review analyzing the various narratives, arguments, and background information regarding the country's current opioid epidemic and more specifically, its impact on rural America. Though this epidemic is a highly complex and multifaceted issue, the research focuses in on the particular aspects seeming to be most closely intertwined with this biomedical model. Considering the overall opioid crisis, key components of the drugs' introduction and promotion for pain treatment both rely on and perpetuate the structure of this biomedical framework. These include the proliferation of OxyContin as an all-healing "wonder drug"; the designation of "pain as the fifth vital sign" ("Section II: Assessment of Pain"); and the role of third-party insurance companies in determining which methods of pain treatment to reimburse and cover. In analyzing how this framework underlies current research and discussions of the opioid epidemic, the goal is then to map a connection between (1) our society's emphasis on a biomedical model, (2) the perpetuation of this model through the rapid spread of opioids for pain care, and finally (3) the heightened vulnerability to opioid addiction and overdose in rural America, when relying on the biomedical model to fill in gaps of insufficient healthcare.

## Introduction and Marketing of a Wonder Drug

Throughout the 1990's pharmaceuticals across the board sought to release the new "blockbuster drug" for any ailment: "The industry's business model was based on creating a pill—for cholesterol, depression, pain, or impotence—and then promoting it with growing

numbers of salespeople” (Quinones 133). As mentioned, pain was no exception. OxyContin entered into this pill-focused, biomedical infrastructure in 1995 upon receiving FDA approval (Poitras 31). Prior to this point, opioids had only been prescribed for acute cancer pain or end-of-life care. Immediately, Purdue Pharma initiated vigorous marketing strategies, aiming to both dispel previous controversies and fears surrounding the addictive nature of strong opioids, and simultaneously increase the breadth of ailments for which OxyContin could be prescribed. New Yorker writer, Patrick Radden Keefe, writes, “[Purdue] funded research and paid doctors to make the case that concerns about opioid addiction were overblown, and that OxyContin could safely treat an ever-wider range of maladies” (Keefe 34).

These pharmaceutical companies fed their sales personnel with unsupported information, and provided them with strategies for convincing physician clients of the efficacy of opioids in pain treatment. These strategies are particularly prominent and encouraged in a mailing sent to the “royal crusaders” (i.e. sales reps) of Abbott Laboratories, another large healthcare agency working with Purdue Pharma to promote and sell OxyContin. This document highlights “key selling benefits to be featured in every OxyContin sales discussion” as tips for those pharmaceutical representatives meeting with doctors. These include:

1. “Ease of q12h single-entity dosing”
2. “Analgesic efficacy with prompt onset”
3. “No acetaminophen or aspirin” (Armstrong)

In addition, Purdue Pharma created a commercial for the promotion of OxyContin, in which Dr. Alan Spanos reiterates the supposed low addiction risk of opioids, encouraging the increased use of these drugs for pain patients:



“There’s no question that our best, strongest, pain medicines are the opioids; but these are the same drugs that have a reputation for causing addiction and other terrible things. Now, in fact, the rate of addiction amongst pain patients who are treated by doctors is much less than 1%. They don’t wear out, they go on working. They do not have serious medical side effects. And so these drugs, which I repeat, are our best, strongest pain medications, should be used much more than they are for patients in pain.” (“Purdue Pharma OxyContin Commercial”)

Such sales strategies simultaneously relied on societal acceptance of the biomedical model – exploiting patient and doctors’ assumed draw to the rapid and simple pain treatment solution that a single pill offered – while also perpetuating this model, gradually reshaping the protocol of pain care.

In reinforcing the efficacy of opioids in alleviating pain, pharmaceutical reps could also capitalize on physicians’ assumed ambition to help their patients as best possible. In discussing the suggestion of prescribing opioids even as an antidepressant, one psychiatrist concedes, “One of the most painful experiences of being a psychiatrist is having a patient for whom none of the available therapies or medications work” (Fels). Considering this strain, it would then be difficult to ignore claims that “[OxyContin] could be prescribed to people with chronic pain in their backs, knees, or other joints, chronic pelvic pain, or fibromyalgia, or to women after giving birth” (Quinones 132). In expanding the types of issues that could be treated with OxyContin, Purdue’s claims further perpetuated the biomedical goals of treating specific symptoms with specific drugs.

The proliferation of opioids throughout the medical field also strayed from physicians’ typical approach to prescribing medications. A patient requesting increasingly higher doses of a drug should normally indicate that drug’s failure to treat the given symptoms. However, in the changing world of opioid pain treatment, this instead shifted to denote that the doctor had not prescribed an adequate dose (Quinones 109). One woman’s

anecdote of seeking pain treatment after breaking her ribs in a car accident particularly illustrates this shift:

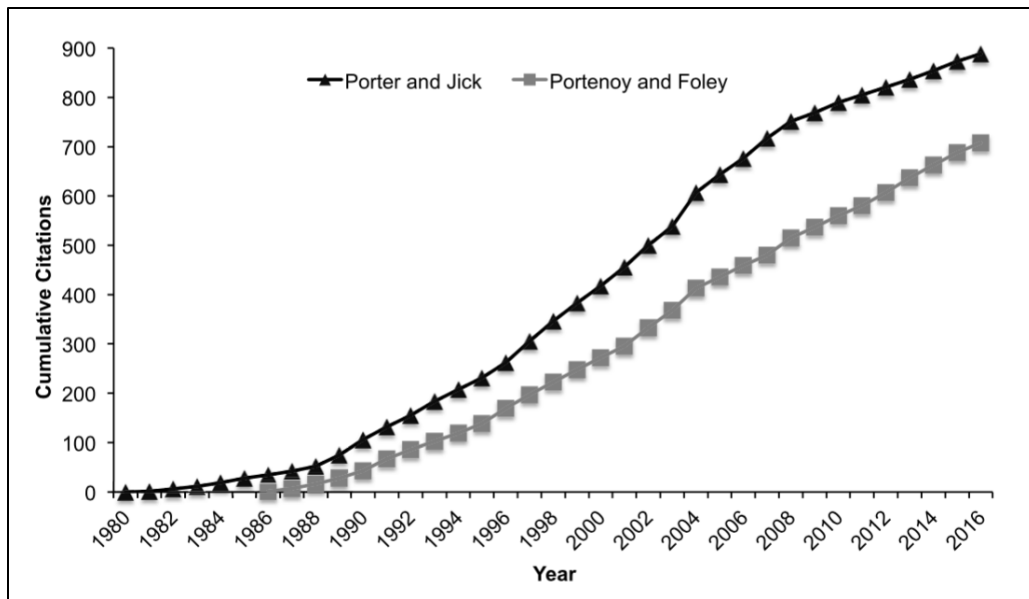
It seemed every physician in town was under the influence of opiates' remarkable painkilling potential. Anyway, she could find no doctor in Portsmouth offering a pain solution that didn't involve opiates. "They'd be, like, 'Well let's try you on Lorcet tens.' 'Oh, that didn't work for a month? Let's move you on to twenties,'" Kathy Newman said... The other truth, though, is that opiates were all most patients demanded in southern Ohio by then. (Quinones 156)

On one hand, this altered response to increased patient demand could be due in part to the leverage patients gained over their physicians, as repercussion of the "pain as the fifth vital sign" movement, described in greater detail in the next section ("Section II: Assessment of Pain."). Even considering these pressures, though, with such intense promotion of the safety and efficacy of opioids for chronic pain, pill prescription became the default treatment option for physicians, and the preferred diagnosis for patients.

With the biomedical mindset creating an inherent faith in drugs' curing abilities, OxyContin prescriptions rapidly increased, often for chronic pain; this was a major shift from opioids' previous restricted use for acute pain. By definition, acute pain is usually sharp, quick (not lasting longer than six months), and has a specific cause, as experienced, for example, with broken bones or after surgery. However, chronic pain, such as headaches, arthritis, or back pain, usually endures longer than six months, potentially for years. It can last beyond alleviation of the original ailment causing the pain, or even arise without a clear instigating injury ("Acute Pain vs. Chronic Pain"). Despite the marked difference in the types of pain being treated, in expanding the applicability of opioid use from acute to chronic pain, OxyContin quickly achieved the label of "the most prescribed brand-name narcotic medication for treating moderate-to-severe pain" in 2001 (Poitras 31). However,

much of Purdue's marketing strategy and campaign was grounded in false claims from overly-cited articles regarding OxyContin's addiction risks. Sales representatives would report that the chances of addiction were less than 1%: misinterpreted estimates coming from a 1980 letter by Porter and Jick on opioid treatment for short-term acute pain, not the chronic pain management they proposed (Poitras 36; Tompkins et al. S14). The acute-pain patients referenced in this letter were being monitored by doctors in hospitals and receiving very small, controlled doses – a significantly different circumstance from that of the newly accrued chronic pain patients receiving bottles of multiple pills to take home (Quinones 107).

Further misguidance on opioids' risk for addiction arose from a 1986 paper published by Russel Portenoy and Kathy Foley in the medical journal *Pain*. Shifting from claims regarding the inherently addictive nature of opioid pills, this paper placed increased focus on the characteristics of people taking the opioids. Of 38 cancer patients in their study being treated with opiates for chronic pain, the only two who grew addicted had previous histories of drug abuse. Portenoy and Foley conclude in their abstract that "...opioid maintenance therapy can be a safe, salutary and more humane alternative to the options of surgery or no treatment in those patients with intractable non-malignant pain and no history of drug abuse" (Portenoy and Foley 1986). Thus, by the paper's recommendations, doctors simply had to take the time to assess their patients and their backgrounds in order to mitigate the risk for addiction and avoid prescribing to past abusers. These two small studies became heavily cited with the rapid spread of opioids to further dispel previous fears of addiction risk (Figure 2; Tompkins et al. S14).



**Figure 2:** Rise in citations of two articles in subsequent literature noting supposed low risk of opioid addiction. The 1980 Porter and Jick letter reported the 0.03% risk of addiction for acute pain; the 1986 Portenoy and Foley paper implied that only patients with a history of drug abuse were at risk for opioid addiction when used in pain care (Tompkins et al. S14-S17).

In addition, during this time the American Pain Society also released a statement claiming, “risk of addiction [is] low when opiates are used to treat patients in pain,” believing that patients’ pain would counteract opiates’ euphoric, and thus, addictive side effects (Quinones 92-94). Overall, much of the uncertainty surrounding opioid addiction risk seemed to stem from a lack of adequate research to support the transition of opioids from acute cancer pain treatment to long-term chronic pain treatment.

Finally, while leveraging opioid’s seemingly debatable addiction risk, Purdue implemented additional marketing strategies including targeting physicians with a history of high opioid prescribing, as well as providing doctors with free drug samples to get their patients started. Though some of these doctors may have recommended different pain treatment options, they also realized that these free samples mitigated the burdens of medical costs for their patients (Poitras 37). This aggressive promotion of opioids for chronic pain management within an established biomedical framework masked many

potential alternatives for non-opioid pain management, some of which will be discussed in later sections.

### Repercussions of Designating Pain as the 5<sup>th</sup> Vital Sign

In 1996, very closely following OxyContin's introduction and rapid proliferation among pain patients, the American Pain Society shifted the way doctors assessed and treated patient pain, coining the slogan "Pain: The Fifth Vital Sign" (Quinones 94-95). Though the intention was to improve previous issues of undertreated pain, consequently, this movement has altered both the physician's role in pain treatment and the patient's expectations for how their pain should be treated. Pain management transformed to essentially become "every doctor's mandated responsibility," with patients believing "any kind of pain, physical or mental, is indicative of pathology and therefore amenable to treatment." Not only did this shift heighten sensitivity towards pain assessment, but it also created a system in which doctors could be penalized for not prescribing opioids for a patient's pain (Lembke). Patients can evaluate their doctors in satisfaction surveys on the basis of how well their pain is managed, potentially impacting that doctor's reimbursement depending on the ratings and feedback they receive (Fiore). This leverage has been shown to be closely tied to increased opioid prescribing by a 2012 national study reporting that "health care facilities that have highest patient satisfaction scores reported greater expenditures on prescription drugs than those with lowest satisfaction scores" (Tompkins et al. S14). In more extreme cases beyond reimbursement, hospital lawyers even warned of the patients' ability to sue for not receiving adequate pain treatment i.e. a prescription of drugs (Quinones 137).

Though this shifting concept of pain assessment places increased focus on ensuring adequate treatment, often doctors do not have proper training to sufficiently assess their patient's condition and provide them safe, effective methods for alleviating pain:

Many clinicians do not know what the appropriate response is because they lack adequate education in the approach, examination, and management of patients in pain and do not know that prescribing opioids may be an incomplete response (Morone and Weiner 2).

Even if opioids can mitigate the immediate pain sensation someone feels, this approach may not always be sufficient on its own for healthy, long-term relief. Additionally, proper pain assessment and management takes time that often the doctors dealing with these patients do not have (i.e. primary care physicians, emergency department physicians, etc.) (Morone and Weiner 3). Pharmaceuticals even targeted these types of providers: “These drugs were advertised mostly to primary care physicians who had little pain management training and were making their money by churning patients through their offices at a thirteen-minute clip.” Primary care doctors constituted more than half of the pool of OxyContin prescribers by 2003. However, when diagnosing chronic pain patients, the doctor needs ample time for open-ended questions that allow them to comprehensively understand their patient and their situation (Quinones 97-98; 137-138).

Combining the restrictive pressures of financial risk, insufficient education, and time constraints, we begin to see doctors' susceptibility to increased opioid prescribing as the seemingly effective and efficient method of treatment, often unknowing of the long-term health risks. This major medical mentality shift in expectations for pain assessment and its resulting pressure on physicians expedited the acceptance of opioids as a predominate method for pain treatment: “Had that not happened—had there been no insistence that pain was undertreated and that pain was now a fifth vital sign—OxyContin would likely not

have found the market it did” (Quinones 137). With a medical system so engrained in the biomedical model, reinforcing the expectation that physical symptoms (pain) require drug treatment (opioids), it becomes difficult for doctors to stray from this norm of quick pill prescription when facing these sorts of obstacles.

### The Role and Restrictions of Insurance Coverage

Now, not all pain management necessarily requires pharmacological intervention – this has just become the predominant mentality, and one that has been financially reinforced as well. Beyond the patient-doctor interaction, insurance policies determine both the treatment patients can afford and the services physicians are reimbursed for. With regard to pain management, such restraints arise with more insurance companies reimbursing for pill prescriptions, and lacking coverage for other therapies that may not be strictly medical (Quinones 124). Prior to this opioid boom, in 1960 anesthesiologist John Bonica established the first pain clinic at University of Washington School of Medicine (later named the Center for Pain Relief), recognizing the complexity of pain management. This clinic focused on pain therapy primarily through a biopsychosocial approach, providing patients with more comprehensive treatment plan to help alleviate their pain. Specifically, Bonica established a model in which multiple physicians from a broad variety of disciplines – neurology, psychiatry, orthopedics, etc. – would collaborate to provide patients with effective and functional pain relief. Further, in establishing this clinic, he ensured that all of the specialists simultaneously formulating patients’ pain care plans were working in the same vicinity, both facilitating effective collaboration among doctors and mitigating patient burden of having to travel to multiple locations. This team approach

showed “improvement in overall patient functioning, reductions in health care expenditures and an increase in rate of patients returned to employment,” with limited reliance of opioid treatment (Tompkins et al. S12-S13). Moving beyond the biomedical approach, Dr. John Loeser (who took over the Center for Pain Relief upon Bonica’s retirement) noted, “Chronic pain is more than something going wrong inside the person’s body. It always has social and psychological factors playing a role. Physicians have traditionally ignored such things.” Though their multidisciplinary methods proved successful and were replicated in hundreds of other clinics across the country, ultimately this approach could not be sustained due to restrictive insurance coverage policies (Quinones 86-87).

This biomedical preference in healthcare policy can be seen in the types of care covered by Medicaid. While Medicaid includes some non-opioid alternatives for pain management, most states do not explicitly require or encourage use of these services. As of 2012, Medicaid benefits in 44 states reimbursed for at least one type of alternative pain treatment – these include physical therapy services, psychologist services, occupational therapy services, and chiropractic services. However, only 12 states responded to a survey by the National Academy for State Health Policy reporting that they had implemented policy encouraging use of these resources for chronic pain treatment. Granted, research backing such alternative treatments is scarce, assumedly driving the skepticism in altering coverage policies (Dorr and Townley). Part of this limited research stems from the heightened focus on opioid treatment for pain management – overemphasis of this method in medicine consequently results in less literature regarding alternatives for chronic pain management (Tompkins et al. S14). Even still, there is growing evidence finding



interdisciplinary chronic pain management to be more clinically effective and cost-efficient for long-term pain management. One particular study on workers compensation patients found that those receiving Schedule II opioids were six times more likely to experience chronic work loss than those not receiving opioids. Within this group, patients prescribed opioids for 90 days or more experienced an even further increased likelihood of experiencing this work loss as well (Schatman 416-417). Again, while additional research is necessary to better support alternative multidisciplinary treatment options, it's important to note that studies on long-term opioid treatment are also still limited: as of 2016, a systematic review of research surrounding opioid treatment of chronic pain found "no well-controlled long-term studies indicating that opioid treatment for pain beyond twelve weeks effectively relieves pain or improves function" (Tompkins et al. S14). However, this method of pill prescription for pain management more closely reflects the accepted and trusted biomedical approach to care.

Even if prescriptions can effectively alleviate some patients' pain, third-party motives are often more economically driven, with less regard for the resulting medical implications for the patient. Michael Schatman – a clinical psychologist who focuses on multidisciplinary chronic pain management, and who was named the 2011 Clinical Pain Educator of the Year by the American Society of Pain Educators ("Michael E. Schatman, PhD, DASPE, CPE") — argues:

Perhaps the most egregious manner in which the health insurance industry interferes with the provision of adequate pain management is through its refusal to reimburse clinicians for services that will potentially reduce suffering. (Schatman 416)

Similar to Dr. Bonica, Schatman urges the necessity of applying a biopsychosocial approach to chronic pain care – whether that entails coverage for referrals to specialists or options

for alternative care such as physical therapy (Schatman 418). Though biomedical standards influence healthcare insurance coverage, with more recent formal recognition of the opioid epidemic in 2011, the CDC has begun to shift medical recommendations to a similarly holistic approach. In their guidelines for reducing painkiller prescriptions, they advise, “opioids should not be considered first-line or routine therapy for chronic pain,” suggesting treatments such as physical therapy as alternatives (Keefe 47). Even still, a clear lag seems to exist between these shifting recommendations for chronic pain care, and the available funding for non-opioid methods of treatment (“The Biopsychosocial Model of Illness: A Model Whose Time Has Come” 1001).

### The Opioid Epidemic in Rural America

Now, the previously discussed factors exacerbating the spread of opioids assumedly impact any patient seeking pain treatment, regardless of demographics, location, or background. However, upon closer analysis of the regions of the country particularly disadvantaged by this crisis early on, rural areas experienced disproportionate burden (Popovich). Such differentiation could be aggravated by the accepted predominance of this biomedical approach in healthcare and more specifically, for pain management. Rural areas may experience increased reliance on the biomedical influence, and consequently, opioids for chronic pain management, as a result of (1) a marked shortage of medical resources, (2) increased availability of opioids, and (3) characteristics of the patient populations.

## Rural Healthcare Disparities

Generally speaking, rural areas often lack adequate access to quality healthcare. Analysis of survey responses from randomly selected healthcare professionals in Alaska and New Mexico revealed “rural healthcare providers face more challenges in providing care than providers in urban communities” for a wide variety of limitations (Brems et al. 111-113). These states are not isolated instances. Across the country, rural disparities impeding healthcare access are particularly evident through physician shortages, geographic dispersion and travel difficulties, and inadequate training for the variety of cases rural providers must treat. Considering the sheer numbers of primary care physicians in different regions, estimates show far reduced doctor to patient ratios when comparing urban and rural communities (based on national averages):

- Urban: 72 primary care physicians per 100,000 people
- Rural: 55 primary care physicians per 100,000 people
- More isolated rural: 36 primary care physicians per 100,000 people (Warren and Smalley 16)

Further, 63% of all primary care health professional shortage areas, as designated by the Health Resources and Services Administration (HRSA), are found in rural or frontier areas; given these shortages, alleviating such disparities would require more than 4,000 new rural-practicing primary care providers (Warren and Smalley 2).

With limited numbers of doctors in an area, patients often must travel longer distances to receive even basic healthcare. In urban areas, about 9% of nonelderly residents travel more than 30 minutes to reach their medical care source, as compared with 14% of rural residents. While this may not seem like a significant time commitment, when considering the increased probability of rural residents engaging in low wage jobs –

often with minimal medical leave time, if any – distance becomes a much more significant burden (Warren and Smalley 17). Other compounding barriers with this increased travel time include poor or lacking public transportation along with higher prevalence of poverty, further impeding healthcare access through geographic dispersion (Warren and Smalley xiii). These travel distances impact the frequency with which patients visit their doctor – a 2006 study reports findings that rural residents generally visit their physicians less than urban residents (Chan et al. 143). Additionally, travel considerations not only impact patients, but also rural health providers, especially those in very small rural communities; many note similar difficulties reaching patients, reiterating the burden of this geographic divide on their ability to serve (Brems et al. 114).

Beyond primary care, the shortage and greater dispersion of medical specialists in rural areas is even more pronounced and consequently, rural physicians have limited ability to refer more complex patients (i.e. chronic pain patients) as necessary. Thus, when people are unable to afford, travel to, or even find more specialized care, primary care physicians often take on this larger patient pool, further straining their system (Warren and Smalley 18). Along with these issues of time and number of patients, rural doctors also face limited access to proper training for the variety of cases they must diagnose and treat: “Training means travel for rural providers who are already overburdened and underpaid; hence it is not surprising that they perceive access to training as a great barrier to rural healthcare.” With limited staff and, again, inadequate time to best care for their disproportionately high number of patients, rural healthcare providers often struggle to pursue additional training and education, more so than urban providers (Brems et al. 115).

These rural healthcare disparities exacerbate the pressure on rural doctors to care for multiple patients. For chronic pain treatment, assumed lack of time based on the dispersion of rural physicians and decreased frequency of visits, as well as lack of training and general medical resources in the area, all impact the overall availability of alternative non-opioid treatment options for physicians to prescribe:

For more than a decade, opioids have been a key part of a rural doctor's pain management for patients...when there's a lack of treatment options in a rural area, alternatives like physical therapy are out of the question and drugs are a prime option (Runyon).

When doctors do not have the time or training to properly assess chronic pain patients, or the ability to refer them for alternative therapy, simply treating symptoms with medication becomes the most viable option. Of course, these kinds of resource limitations affect most healthcare providers, whether urban or rural; but physicians in rural, and especially small rural, regions of the country face a much greater disadvantage (Brems et al. 113).

### Increased Opioid Availability

Alongside these pressures stemming from disproportionately limited resources, many rural areas experience a noticeably higher availability of opioids; despite smaller populations, these regions have received shocking amounts of prescription opioids. In comparing national prescription rates, patients in rural Appalachia as well as those in rural communities of California and Oregon have a much higher chance of being prescribed opioids. One report reveals “doctors and dentists in the worst-hit counties wrote six times more prescriptions for opioids than did providers in the lowest-prescribing counties” (Wilson). Part of this variation was also intentional – rural communities were aggressively

targeted through the 1990s and early 2000s, during the early marketing campaign for OxyContin (Keyes et al. 54; Popovich).

Such a profound difference in opioid availability was particularly evident in West Virginia. Eric Eyre, reporter for the *Charleston Gazette-Mail* who won the Pulitzer Prize for his investigative reporting, uncovered data on the massive quantities of pills being sent to some of the smallest and poorest towns of West Virginia. Eyre reports, “In six years, drug wholesalers showered [West Virginia] with 780 million hydrocodone and oxycodone pills...The unfettered shipments amount to 433 pain pills for every man, woman and child in West Virginia.” Local pharmacies in rural counties of Southern West Virginia received 1.4 million to 4.7 hydrocodone pills per year from wholesalers; comparatively, one of West Virginia’s busiest Wal-Mart stores in Charleston received around 5,000 oxycodone and 9,500 oxycodone pills per year (“Eric Eyre of Charleston Gazette-Mail, Charleston, WV”). While some of this variation could be explained by the characteristics of the patient population in rural areas, they do not fully account for the significant differentiation of prescription rates across the United States. (Guy).

### Rural Patient Characteristics

In addition to the healthcare disparities identified in rural regions, as well as the high prevalence of opioid prescriptions, various other common characteristics of rural patient populations consequently exacerbate their vulnerability and exposure to opioids. For one, rural residents are disproportionately likely to engage in strenuous, manual labor, increasing chances of chronic pain (Figure 3). Some of the main industries include coal mining, agriculture, and timbering (Popovich).

**TABLE 2-6 Age-Adjusted Rates of U.S. Adults Reporting Pain in the Last 3 Months, Selected Causes, by Place of Residence, 2009**

Cause of Pain	Residence within Metropolitan Statistical Area (MSA) (%)	Residence outside MSA (%)	Ratio Non-MSA/MSA
Severe headache or migraine	15.5	19.3	1.25
Low back pain	27.1	33.3	1.23
Neck pain	14.6	17.7	1.21
Knee pain	18.8	23.0	1.22
Shoulder pain	8.6	10.7	1.24
Finger pain	7.4	8.9	1.20
Hip pain	6.6	9.1	1.38

SOURCE: CDC and NCHS, 2010.

**Figure 3:** percentages of people reporting chronic pain in metropolitan vs. non-metropolitan areas. Each different category of pain shows increased levels in non-metropolitan areas. (*Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*)

With involvement in heavy labor occupations being so common, some research also indicates that prescription drug use has been integrated as a part of the local culture in rural areas with the goal of maintaining workflow (Keyes et al. 54). Combining a higher susceptibility to chronic pain with a mentality that drugs are the most efficient treatment method seem to further concentrate the burdens of opioid addiction within rural areas.

Another compounding factor affecting many rural areas is the increased prevalence of poverty and unemployment, and more specifically, Medicaid beneficiaries. According to the National Academy for State Health Policy, Medicaid patients have received opioid prescriptions at twice the rate of those patients not insured by Medicaid. In analyzing overdose deaths in Washington, the CDC reported that “45.4% of [prescription opioid overdose] deaths were among persons enrolled in Medicaid” (Poitras 40). On one hand, this difference may result from a concentration of particular types of patients insured by Medicaid, potentially concentrating opioid users and distorting the data. Even still, with a high prevalence of Medicaid patients living in rural areas, their seemingly heightened vulnerability to opioid addiction as Medicaid patients would consequently be concentrated in these rural areas as well.

## A Complicated Map: Shifting Standards of Pain Treatment, Perpetuation of the Biomedical Model, and Prevalence of Opioids as a Default Response to Rural Disparity

Approaching pain from a biomedical standpoint (in which a symptom can be treated with medical intervention) narrows the concept of pain and thus, effective pain treatment: “When both patients and clinicians view pain as purely a sensory experience then management is necessarily limited to managing the sensation (and the increased prescription of pain medications)” (Morone and Weiner 1). In this vein, three core aspects of the opioid epidemic— (1) the broadening scope for opioid prescription, (2) the medical paradigm shift stemming from “Pain as the 5<sup>th</sup> Vital Sign,” and (3) the restrictive insurance reimbursement for pain treatment— simultaneously work together to reinforce a biomedical model already so engrained in our healthcare system.

First, expanding beyond acute or cancer pain and increasing the variety of ailments alleviated by opioids encourages the practice of treating specific symptoms with a specific drug. Second, classifying pain, a subjective sensation, with other objectively measurable vital signs places increased pressure on doctors to essentially eliminate pain, despite a lack of proper education or adequate time to do so. This re-classification also altered patients’ expectations for the types of treatment they should be receiving from their doctor, while simultaneously providing them leverage to assess that doctor based on how well their pain was treated. Such a paradigm shift, further convoluted by inadequate pain treatment education, limited time with chronic pain patients, and reimbursement threats for insufficient care (as perceived by the patient), almost forces physicians towards pill prescription. Physicians treating chronic pain patients may not know how to properly assess and treat pain, often have a brief window of time to meet with patients, and fear poor reviews from patient’s expecting pain pills for their treatment (despite potentially



more effective alternatives). Alongside all of this, pharmaceuticals like Purdue Pharma bombarded physicians with false marketing regarding the supposedly minimal addiction risk of opioids. Considering these pressures alongside the advertised efficacy of opioids in pain treatment, pills became the simple and practical answer. They're what the patients wanted and what the doctors could quickly prescribe, again, further reinforcing this generally accepted idea that pain (the specific symptom) warrants a pharmacological solution (the specific drug).

Finally, insurance companies restrict the treatment options patients can afford, and consequently, the alternatives available for physicians to both provide patients and to receive reimbursement for. While many doctors stress the necessity of diagnosing and treating pain from a multidisciplinary approach, for both medical and profit-driven reasons, the reimbursement and coverage policies implemented by insurance companies often limit pain management to a narrower biomedical approach. Together, each of these three core aspects of the opioid epidemic's rise not only functioned to reinforce the biomedical model in general healthcare practices, but also specifically drove pain treatment to rely heavily on this standard through increased prescription of opioids.

#### Placing Rural Disparity within a Biomedical Framework of Pain Management

Within the biomedical framework shaping our society's perceptions pain treatment, particular disparities in rural regions —heightened opioid availability and compounding characteristics of rural patient populations, alongside general medical resource shortages — then drive physicians and patients to rely even more heavily on the biomedical model (i.e. opioids) for pain treatment. The prescription of opioids almost becomes a filler for the

many gaps that typically disadvantage rural health systems, impeding adequate pain assessment and care. Though the previously discussed mechanisms encouraging opioid prescription may similarly persist across the country (regardless of rural vs. urban differences), particular characteristics very heavily localized in these rural areas further exaggerate exposure to and dependence on the biomedical model, seemingly making these areas more vulnerable and disadvantaged by the current opioid epidemic.

Two particularly intertwined risk factors in rural areas are the likelihood of exposure to strenuous labor, increasing susceptibility to chronic pain, along with the higher availability and marketing of opioids in these areas. As mentioned, release of OxyContin into the market was accompanied by the notion that opioids could treat not just acute pain, but also now chronic pain. With the concentration of manual labor in many of these areas, targeting rural physicians and patients became an economic strategy for pharmaceuticals in promoting opioids: “Low-income, rural populations where heavy manual labor can lead to numerous chronic pain problems are well suited to such a strategy, eg, mining towns of rural Appalachia and logging towns of Maine and Washington state” (Poitras 40).

Pharmaceutical sales representatives, whether consciously or subconsciously, could rely on societal acceptance of the biomedical model in marketing their “wonder-drug.”

Additionally, the rural work force provided an even larger population of patients that would benefit from the pain-killing abilities of opioids. Introduction of a new painkilling drug appeases patients similarly influenced by the biomedical model in their expectations for medical care. Given the option of a daily pill versus a more drastic lifestyle change, most patients would probably prefer the simple medication that allows them to go about their daily tasks.

The heightened number of Medicaid patients in rural areas also means more patients restricted to this particular insurance policy. At least with regard to pain management, as shown by the lack of promoted alternative care policies by state, Medicaid relies heavily on the biomedical model in determining which types of treatment to cover. Although Medicaid includes some non-opioid methods for pain treatment in their coverage policy, these methods are usually not required of physicians or encouraged for the patients (Dorr and Townley 1). This influence of the biomedical standard on Medicaid coverage, in combination with an increased susceptibility to chronic pain in rural areas, further exacerbates the prevalence of opioids, increasing risks for addiction and overdose. With a larger population of Medicaid patients in rural areas, and thus, assumedly, a greater population of patients with limited means to pursue alternative pain treatments or less strenuous work opportunities, opioids become prominent in these particular regions.

Finally, these overall shortages of quality healthcare in rural areas could create a multitude of obstacles between the patient and adequate pain care, in which case opioid prescription becomes the default. First, time constraints on overburdened physicians means less time to properly assess pain and ensure an effective method of treatment – if not in the amount of time spent in the office, than at least the frequency with which rural residents visit their doctors. Though such pressures can impact doctors in any region of the country, rural or urban, the burden is particularly exaggerated for rural healthcare providers. Pressured by these time constraints, while being inundated with information about the efficacy of opioids in pain treatment, it seems logical that doctors would turn to this method in an effort to aid a larger number of patients. Without time to consider alternatives, the subconscious standard to fall back on is prescription of pills to alleviate

symptoms of pain. In addition to time pressures, like many opioid prescribing physicians, rural doctors face the restraints of inadequate pain treatment training; however, limited access to both additional training as well as nearby specialists for consultation makes this burden particularly profound in rural areas, as compared to more urban. With the biomedical model well established within our healthcare system, and considering these various restraints on rural medicine, we begin to see the draw towards biomedical practices, consequently concentrating opioid prescription and the repercussions of over prescription within these regions.

### Discussion and Conclusions

The current opioid epidemic is a highly complex issue, and as such, claims of direct causation seem nearly impossible. Yet another challenge arises in attempting to determine which components of the overall epidemic more significantly impact rates of opioid addiction and overdose. This paper simply aims to introduce yet another perspective for consideration in the ongoing discussion surrounding the opioid crisis, as its death toll continues to rise. Analyzing the early introduction and promotion of opioids for chronic pain care illustrates the prevalence of the biomedical framework in our society – gaining success in its treatment of infectious disease, providing a platform for pharmaceuticals to promote opioids, and being further reinforced through our shifting expectations for pain care. Then placing rural health systems within this infrastructure, we see how rural providers inevitably rely more heavily on this biomedical model as the default solution in pain treatment, when burdened with decreased availability of alternative resources. With limited access, patients and providers in these rural areas are ultimately cornered into the

norm of biomedical approaches to medicine – regardless of its ability or inability to adequately treat all types of ailments.

Overall, the progression from the introduction of opioids for chronic pain care in the 90's to now a nationwide epidemic allows us to observe and analyze the flaws of the biomedical model on a grand scale, with clearly defined consequences. In seeing the devastating consequences of the opioid crisis, in part due to the exploitation and unquestioned trust of this framework of medicine, we must raise the question of “what next?” – If not to completely avoid a similarly detrimental epidemic, then at least to mitigate the level of disparity that may have been similarly preventable in the opioid crisis.

## Works Cited

- "Acute Pain vs. Chronic Pain." Cleveland Clinic. January 26, 2017. Accessed April 9, 2018. <https://my.clevelandclinic.org/health/articles/12051-acute-vs-chronic-pain>.
- Armstrong, David. "Secret Trove Reveals Abbott's Bold 'crusade' to Sell OxyContin." STAT. September 22, 2016. Accessed April 9, 2018. <https://www.statnews.com/2016/09/22/abbott-oxycontin-crusade/>.
- "Section II: Assessment of Pain." *Pain: Current Understanding of Assessment, Management, and Treatments*. Accessed April 9, 2018. [http://americanpainsociety.org/uploads/education/section\\_2.pdf](http://americanpainsociety.org/uploads/education/section_2.pdf).
- Brems, Christiane, et al. "Barriers to Healthcare as Reported by Rural and Urban Interprofessional Providers." *Journal of Interprofessional Care* 20, no. 2 (March 2006): 105-18. Accessed April 9, 2018. doi:10.1080/13561820600622208.
- Case, Anne, and Angus Deaton. "Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21<sup>st</sup> century." *PNAS* (December 8, 2015): 15078-15083. Accessed April 9, 2018. <http://www.pnas.org/content/112/49/15078>.
- Chan, Leighton et al. "Geographic Access to Health Care for Rural Medicare Beneficiaries." *The Journal of Rural Health* 22, no. 2 (2006): 140-46. Accessed April 9, 2018. doi:10.1111/j.1748-0361.2006.00022.x.
- Cockerham, William C. *Social causes of health and disease*. Cambridge, UK: Polity Press, 2015.
- Dorr, Hannah, and Charles Townley. "Chronic Pain Management Therapies in Medicaid: Policy Considerations for Non- Pharmacological Alternatives to Opioids." *National Academy for State Health Policy*, August 2016. Accessed March 13, 2018. <https://nashp.org/chronic-pain-management-therapies-medicaid-policy-considerations-non-pharmacological-alternatives-opioids/>.
- "Eric Eyre of Charleston Gazette-Mail, Charleston, WV." The Pulitzer Prizes. 2017. Accessed January 22, 2018. <http://www.pulitzer.org/winners/eric-eyre>.
- Fels, Anna. "Are Opioids the Next Antidepressant?" The New York Times. June 04, 2016. Accessed April 9, 2018. <https://www.nytimes.com/2016/06/05/opinion/sunday/are-opioids-the-next-antidepressant.html>.
- Fiore , Kristina. "Opioid Crisis: Scrap Pain as 5th Vital Sign?" Medpage Today. April 13, 2016. Accessed February 12, 2018. <https://www.medpagetoday.com/publichealthpolicy/publichealth/57336>.

- Guy, Gery P., et al. "Vital Signs: Changes in Opioid Prescribing in the United States, 2006–2015." *MMWR. Morbidity and Mortality Weekly Report* 66, no. 26 (July 07, 2017): 697-704. Accessed April 9, 2018. doi:10.15585/mmwr.mm6626a4.
- Keefe, Patrick Radden. "The Family That Built an Empire of Pain." *The New Yorker*. December 12, 2017. Accessed January 22, 2018. <https://www.newyorker.com/magazine/2017/10/30/the-family-that-built-an-empire-of-pain>.
- 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, no. 2 (February 2014). Accessed February 12, 2018. doi:10.2105/ajph.2013.301709.
- Lembke, Anna. "Why Doctors Prescribe Opioids to Known Opioid Abusers." *New England Journal of Medicine* 368, no. 5 (October 25, 2012). Accessed February 12, 2018. doi:10.1056/nejmc1214553.
- Quinones, Sam. *Dreamland: the true tale of America's opiate epidemic*. New York: Bloomsbury Press, 2015.
- "Michael E. Schatman, PhD, DASPE, CPE." American Society of Pain Educators. Accessed April 9, 2018. <https://www.paineducators.org/home/board-of-directors/schatman/>.
- Morone, Natalia E., and Debra K. Weiner. "Pain as the Fifth Vital Sign: Exposing the Vital Need for Pain Education." *Clinical Therapeutics* 35, no. 11 (October 18, 2013). Accessed February 12, 2018. doi:10.1016/j.clinthera.2013.10.001.
- O'Brien, Doug. "Overcoming Opioid Overdose in Rural America." National Archives and Records Administration. September 21, 2015. Accessed April 9, 2018. <https://obamawhitehouse.archives.gov/blog/2015/09/21/overcoming-opioid-overdose-rural-america>.
- "Opioid Overdose." Centers for Disease Control and Prevention. August 30, 2017. Accessed April 9, 2018. <https://www.cdc.gov/drugoverdose/epidemic/index.html>.
- Poitras, Geoffrey. "OxyContin, prescription opioid abuse and economic medicalization." *Medicolegal and Bioethics*, 2012. Accessed February 12, 2018. doi:10.2147/mb.s32040.
- Popovich, Nadja. "A deadly crisis: mapping the spread of America's drug overdose epidemic." *The Guardian*. Accessed February 12, 2018. <https://www.theguardian.com/society/ng-interactive/2016/may/25/opioid-epidemic-overdose-deaths-map>.

- Portenoy, Russell K., and Kathleen M. Foley. "Chronic Use of Opioid Analgesics in Non-malignant Pain: Report of 38 Cases." *Pain* 25, no. 2 (May 1986): 171-86. Accessed April 9, 2018. doi:10.1016/0304-3959(86)90091-6.
- "Purdue Pharma OxyContin Commercial". YouTube video, 0:37, September 22, 2016. <https://www.youtube.com/watch?v=Er78Dj5hyeI>.
- Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*. Washington, D.C: National Academies Press, 2011.
- Runyon, Luke. "Why Is The Opioid Epidemic Hitting Rural America Especially Hard?" NPR Illinois. January 4, 2017. Accessed January 22, 2018. <http://nprillinois.org/post/why-opioid-epidemic-hitting-rural-america-especially-hard#stream/0>.
- Schatman, Michael E. "The Role of the Health Insurance Industry in Perpetuating Suboptimal Pain Management." *Pain Medicine* 12, no. 3 (March 2011): 415-26. Accessed April 9, 2018. doi:10.1111/j.1526-4637.2011.01061.x.
- Tompkins, D. Andrew, et al. "Providing Chronic Pain Management in the "Fifth Vital Sign" Era: Historical and Treatment Perspectives on a Modern-day Medical Dilemma." *Drug and Alcohol Dependence* 173 (December 31, 2016): S11-21. Accessed April 9, 2018. doi:10.1016/j.drugalcdep.2016.12.002.
- Wade, Derick T., and Peter W. Halligan. "Do Biomedical Models of Illness Make for Good Healthcare Systems?" *BMJ* 329, no. 7479 (December 11, 2004): 1398-401. Accessed April 9, 2018. doi:10.1136/bmj.329.7479.1398.
- Wade, Derick T., and Peter W. Halligan. "The Biopsychosocial Model of Illness: A Model Whose Time Has Come." *Clinical Rehabilitation* 31, no. 8 (July 21, 2017): 995-1004. Accessed April 9, 2018. doi:10.1177/0269215517709890.
- Warren, Jacob C., and K. Bryant. Smalley. *Rural Public Health: Best Practices and Preventive Models*. Springer Publishing Company, 2014.
- Whalen, Jeanne. "For Small-Town Cops, Opioid Scourge Hits Close to Home." The Wall Street Journal. September 28, 2016. Accessed April 9, 2018. <https://www.wsj.com/articles/for-small-town-cops-opioid-scourge-hits-close-to-home-1475074699>.
- Wilson, Reid. "Urban-rural Divide Exacerbates Opioid Crisis, despite Prescription Drop." The Hill. July 09, 2017. Accessed April 9, 2018. <http://thehill.com/homenews/state-watch/341041-urban-rural-divide-exacerbates-opioid-crisis-despite-prescription-drop>.