

**Breaking Down the Barriers Inhibiting the Introduction of Emerging Industries into
Central Appalachia**
(Technical Paper)

Redefining the Role of Pharmaceutical Companies in the Appalachian Opioid Crisis
(STS Paper)

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Prospectus

The heart of Appalachia is well-known across the nation for leading with some of the highest rates of overdose deaths alongside poverty and unemployment rates. Problem-stricken, helpless, and continuously exploited, central Appalachia is seemingly left behind. Regardless of the stereotypes and biases that surround the mountainous region, the issues and people that exist there are real and demand tangible help. Addressing the difficulties that reside in central Appalachia is a hard ask; the regionally-rooted plight is a complex network of nontrivial subproblems. Thus, in determining a solution, the mental processes that have allowed poverty and unemployment, among other issues, to coexist in this region must first be understood. In recognizing those mental processes, a behavioral analysis can be performed on a given solution. The solutions that can be visited in addressing the problem in central Appalachia are endless, however, the exit of coal mining – historically, the region’s dominating industry – provides an opportune time to introduce an emerging industry to the devastated region left behind. In a desperate attempt to aid Appalachia and its kind people, a sociotechnical analysis of recognizing central Appalachia as the American center of cannabis cultivation, production, manufacturing, and distribution will be executed. The sociotechnical analysis described will result in a final report highlighting the barriers that prevent new industries from being brought into the central Appalachian region.

High poverty and unemployment rates have seemed to exist side-by-side in central Appalachia but more recently, a third high rate of something far more fatal has joined the picture. Notably since 1999, opioid overdose rates have been on the rise, particularly in central Appalachia. The crisis-turned-epidemic can be analyzed in three phases: prescription opioids; illicit opioids; and synthetic opioids (Centers for Disease Control and Prevention, 2021). While

the first phase of the opioid epidemic is attributed mostly to drug companies, namely Purdue Pharma's promotion of OxyContin in the mid-nineties, the causes of subsequent phases of the crisis are much more nuanced. The degree to which drug companies' actions played in the start of, and contributed to, the epidemic must be analyzed as their involvement in the crisis presents yet another devastating example of how the people and resources present in Appalachian communities have been exploited through time then left with yet another complication and no accompanying resolution. In hopes of redefining the known role of pharmaceutical companies in the Appalachian drug crisis, a research paper will be produced exploring the extent of the impact of drug companies in the multi-decade crisis.

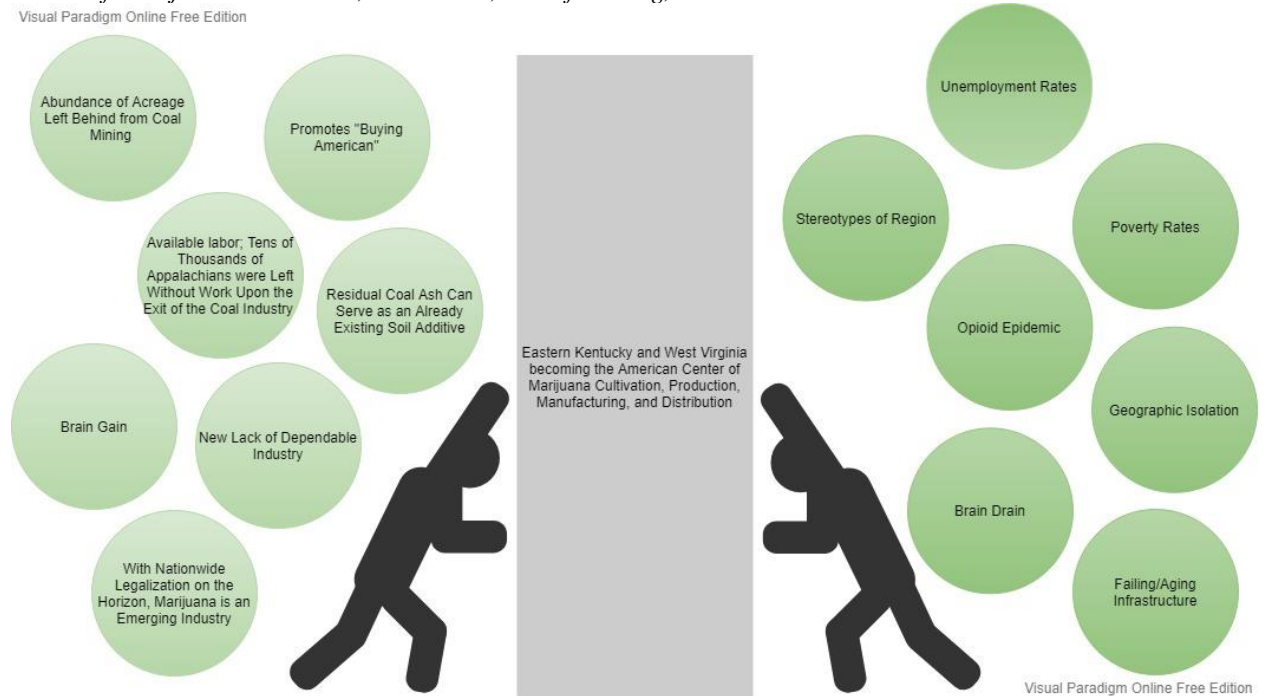
Breaking Down the Barriers Inhibiting the Introduction of Emerging Industries into Central Appalachia

After unemployment rates in the United States reached a peak between 2007 and 2009, employment as a whole has seemed to be gradually increasing (The Investopedia Team, 2020). Yet, in central Appalachia – namely in eastern Kentucky and West Virginia – poverty and unemployment rates remain higher than those seen before the recession. The previously-stated fact is not particularly cited as an area of concern as there is not sufficient research surrounding the concurrence of poverty and unemployment in central Appalachia. As design cognition refers to the cerebral processes that go into the process of design, the purpose of this technical project is to merge theory in design and in psychology to first understand the mental processes that have allowed poverty and unemployment to coexist in central Appalachia and in recognizing those mental processes, perform a behavioral analysis on a possible solution.

This project seeks to provide more information surrounding the mental processes, such as stereotyping, that have led to and enabled poverty and unemployment to exist side-by-side in

central Appalachia without the introduction of a substantial solution. Utilizing the found mental processes, this project will explore the recognition of central Appalachia as the American center of marijuana cultivation, production, manufacturing, and distribution as a possible solution (see Figure 1).

Figure 1
Force Field Analysis Showing the Pressures for and Against Central Appalachia Being Recognized as the American Center of Marijuana Cultivation, Production, Manufacturing, and Distribution



Note. This graphic was created using Visual Paradigm Online. From Force Field Analysis. Visual Paradigm Online. (n.d.). Retrieved November 1, 2021, from <https://online.visual-paradigm.com/w/sdagnnio/drive/#diagramlist:proj=0&open>.

Because central Appalachia was once seen as the American center of the coal mining industry; the recent exit of coal mining provides a favorable time to introduce an emerging industry to the region.

The Capstone Project – *Breaking Down the Barriers Inhibiting the Introduction of Emerging Industries into Central Appalachia* – will provide much-needed research surrounding the issue of poverty and unemployment in the central Appalachian region while exploring a possible solution to be considered in the rebuilding of this region that is recognizing central

Appalachia as the American center of marijuana cultivation, production, manufacturing, and distribution. In order to complete the above stated research and analysis in its entirety, documentary research, surveying, interviewing, and discourse analysis methods will be used. Unemployment and poverty data will be collected and evaluated for central Appalachia and consequently compared to the rest of the United States. Additionally, two surveys are intended to reach at least 50 people of diverse backgrounds – particularly people of different ages and regions across the United States – and interviews will be conducted with a variety of stakeholders including existing investors, government officials, and coal miners. The purpose of the first survey is to gauge people’s knowledge regarding the severity of the issues of poverty and unemployment in the region of interest. Responses from the first survey as well as interviews with investors will not only be useful in gauging people’s knowledge surrounding the issues but also in recording biases surrounding the region first-hand. The second survey will be used as a tool to gauge people’s feelings surrounding establishing central Appalachia as the American center of the marijuana industry. Responses from the second survey and the interviews with government officials and retired coal miners will be useful in recognizing forces against the introduction of the marijuana industry to the region. The final deliverable, a report, will use the exploration of the marijuana industry in central Appalachia as a tool to illustrate the barriers that prevent new industries from being brought into the region and the good that accompanies it.

Redefining the Role of Pharmaceutical Companies in the Appalachian Opioid Crisis

In 1995, Purdue Pharma got approval from the U.S. Food and Drug Administration, for OxyContin, a controlled-release medication and first form of Oxycodone to allow dosing every 12 hours (FDA, n.d.). Following an aggressive marketing scheme, Purdue Pharma’s sales quickly soared as they asserted that OxyContin was “less addictive, less prone to tolerance, and less

prone to abuse than other opiates” (Chakradhar & Ross, 2019). Despite these claims, four years later, 221,000 Americans had already abused OxyContin; that year, 1999, marked the start of the American opioid crisis (Tough, 2001). As a result of the targeted clientele for OxyContin being characterized as “non-cancer patients with chronic pain,” Purdue Pharma found a very dedicated market in the coal-filled mountains of Appalachia (Chakradhar & Ross, 2019). It is noted that from 1998 through 2000, some areas, West Virginia, eastern Kentucky, and southwestern Virginia being among them, prescribed hydrocodone and (non-OxyContin) oxycodone 2.5 to 5.0 times more than the national average. By 2000, some counties in these areas were prescribing OxyContin up to 5 to 6 times more than the national average (Van Zee, 2011). OxyContin tore through the poverty-stricken communities of Appalachia in the early 2000s with those dependent on the drug found themselves paying up to \$25 a pill to maintain their high (Tough, 2001). In an interview with Paul Tough, an editor for The Times Magazine, a 21-year-old addict staying at a rehabilitation center outside of Pittsburgh, Pennsylvania stated, "I was spending a hundred bucks a day on oxy, that's why I switched to heroin. You get really high off two bags, which is 30 bucks a day. That's a big savings." As more and more OxyContin abusers switched over to the use of heroin, 2010 marked the “start” of the second phase of the opioid crisis with heroin being the leading drug (Centers for Disease Control and Prevention, 2021). Data from 2011 showed that approximately 80 percent of people who used heroin first misused prescription opioids (Moody et al, 2017). Only three years later, in 2013, the opioid crisis progressed to its third stage, dominated by synthetic opioids, particularly illicitly-made fentanyl (Centers for Disease Control and Prevention, 2021). Similar to the phase transition from prescription opioids to heroin, fentanyl was found to be cheaper and easier than its counterpart. However, because fentanyl is often used as a cutting agent for heroin, the drug was not uncommon in Appalachia

prior to the start of what is known as phase three (Crane, 2021). As of 2021, the opioid crisis remains in phase three; however, no wave is independent of the other and the epidemic remains roaring.

The impact of the past thirty years of the opioid crisis is evident in Appalachian communities. Pharmaceutical companies may have been blamed only for the start of the epidemic; however, they are not absolved from the progression that has resulted. Purdue Pharma and their development, manufacturing, and marketing of OxyContin is to be held liable for the Appalachian communities and families left devastated by the abuse of prescription opioids, heroin, and fentanyl. Purdue Pharma's launch of OxyContin presents a prime example of the Science, Technology and Society field framework of problematization as well as technological determinism. In selling their product, Purdue Pharma assured medical professionals that their patients would not become addicted to the opioids and not even 10 years later, the first wave of the opioid crisis was in full force. This introduction of the new controlled-release opioid and the crisis that resulted is a great example of the problematization of science and technology, highlighting that science and technology are non-neutral. The opioid epidemic serves as an example that even with great technological fixes (the introduction of the first controlled-release pain reliever), there are inevitable consequences (an opioid overdose epidemic and its impact on communities). Additionally, the impact of OxyContin proves the existence of technological determinism which is outlined in *Does Technology Drive History?: The Dilemma of Technological Determinism* by M.R. Smith. Smith, who is a professor of the history of technology at MIT, describes technological determinism as the idea that while there is a chance for human freedom to shape technology, technology remains the guiding force in societal development. While supporters of the concept of the social construction of technology might

disagree, there is more than enough evidence to support the fact that the development of OxyContin became a primary force in the development of Appalachian communities in the early 2000s and remains so today. First exploited for their lumber and rich coal, the people of central Appalachia were then targeted by Purdue Pharma in their selling of OxyContin due to the large demographic of people living with chronic pain stemming from years of heavy lifting and working in tight spaces. This research will address the following research question: What is the role of drug companies in the Appalachian opioid crisis?

Research Question and Methods

This paper will provide research following the opioid crisis in central Appalachia, with a focus on the drug companies' impact on the regionally-rooted epidemic. To pursue the research question stated prior, documentary research, interviewing, and discourse analysis methods will be employed. Mortality statistics concerning overdoses from prescription opioids, heroin, and synthetic opioids will be collected and evaluated for central Appalachia as well as compared to the rest of the United States. Similarly, prescription statistics will be collected and evaluated for central Appalachia and compared to the United States at large. Moreover, records of Purdue Pharma's marketing tactics via email and advertisements will be assessed.

Appalachian doctors and their respective families will be interviewed in order to provide newly documented firsthand experiences with the marketing ploys of pharmaceutical companies at the time of OxyContin's release. Lastly, in conjunction with the other methods, existing interviews, documentaries, and books will be used in order to best estimate the role of drug companies in the Appalachian opioid crisis.

Conclusion

While beautiful and once flourishing, central Appalachia is now an area characterized by its problems; its poverty, unemployment, and opioid overdose rates are already among the highest in the country and only seem to be growing. Although the depressed region has seen large amounts of emigration in recent years, the heart of Appalachia remains home to millions and without help, the area will have no choice but to fall even further behind the progression of the rest of the nation. In an attempt to address the problem of poverty and unemployment in central Appalachia, the capstone project will provide much-needed research surrounding these issues while exploring the resulting impacts that the introduction of the emerging marijuana industry could have on the devastated region. While this capstone project will not solve the issue presented due to its complexity, this project will rather provide information and a better understanding of the problem to promote further research and eventually, a substantial solution to the issue. In an effort to provide answers for all those affected by the Appalachian opioid crisis, the accompanying research paper will attempt to redefine the role of pharmaceutical companies in the epidemic. A better understanding of the context of the opioid crisis can only serve to better facilitate the community's understanding and work towards solutions geared towards their own wellbeing. With greater awareness of the issues in central Appalachia as well as adequate research, the Appalachian region can grow back to be stronger than ever before.

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