



# The impact of clandestine methamphetamine labs on property values: Discovery, decontamination and stigma<sup>☆</sup>



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## ARTICLE INFO

### Article history:

Received 5 November 2016

Revised 8 March 2017

Available online 10 March 2017

### Keywords:

Substance abuse

Methamphetamine

Crime

Hedonic pricing model

Property values

## ABSTRACT

While a large literature addresses the societal cost of substance abuse across a number of domains, little is known about the impact of substance abuse on property values. This study uses unique data from Linn County, Oregon and a spatial, difference-in-difference identification strategy to test the impact of the discovery and the subsequent decontamination of clandestine methamphetamine (meth) laboratories (labs) on property values. Results suggest that even though meth labs are typically found in less-desirable neighborhoods with lower home prices, the discovery of a lab causes the price of nearby homes to drop by approximately six and a half percent. Further, the decontamination of homes used as meth labs results in an increase in property values by approximately five percent. Overall, these results suggest that beyond the potential direct benefits of reducing domestic meth production (e.g., reductions in crime, child abuse), disrupting domestic meth production has another important benefit in mitigating negative effects on property values. Also, state laws mandating the decontamination of meth labs and corresponding decontamination programs may yield significant positive net benefits. Finally, the fact that meth lab decontamination does not fully offset the impact of discovery (homes recover about 75%) suggests a potential stigma effect associated with meth lab discovery.

Published by Elsevier Inc.

## 1. Introduction

Substance abuse imposes a substantial economic burden in the US, where it is estimated that the cost of illegal drug abuse exceeds \$226 billion per year (Caulkins et al., 2014). While a number of studies have investigated the economic burden of substance use disorders, there are still a number of aspects about these social costs that are not well-understood. For instance, it is common for economic studies of substance use disorders to focus on three outcome domains (increased health care costs, crime and lost productivity), when the true cost of substance use extends to a number of areas that are still relatively unexplored. Notably, there are relatively few examples of previous work evaluating the impact of illicit drug production on property values. This study evaluates the impact of illicit drug production on property values in a

particularly relevant domain: the impact of clandestine methamphetamine (meth) laboratories (labs) on proximal residential property values. Additionally, this paper evaluates the subsequent impact of meth lab decontaminations on property values.

For background on meth, it is a particularly devastating and cheap drug, with a relatively long half-life (Shoptaw and Reback, 2007), and use in the US has increased substantially in recent years (Gruenewald et al., 2013). While causality is actively debated (Mialon et al., 2014), individuals under the influence of meth commonly engage in higher rates of risky sexual behavior (Purcell et al., 2005) and violent behavior (Dawe et al., 2009). Also, meth use has been found to be associated with child neglect, child abuse, and an increased burden on the foster care system (Cunningham and Finlay, 2013). It is estimated that in the US, the annual societal burden of meth is nearly \$23.4 billion (Nicosia et al., 2005). Beyond the standard cost estimates, clandestine meth labs are often located in residential neighborhoods, and can pose health risks and potential damage to the personal property of individuals living in nearby homes. Recent policies at both the state and the federal level have helped to curb the incidence of domestic

<sup>☆</sup> This article was prepared by the author in his private capacity. No official support or endorsement by the US Food and Drug Administration is intended or should be inferred.

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residential meth production.<sup>1</sup> But, supplemented by foreign production, the meth supply chain has continued to meet demand and domestic meth consumption continues to be a substantial problem.

An important issue facing policy makers is how to manage properties where meth labs have already been discovered. Meth becomes airborne during the cooking process, contaminating the surfaces of homes (counters, walls, carpets, air ducts, etc.). Additionally, meth production poses an environmental risk. One pound of meth yields five to six pounds of hazardous waste, which is often dumped in the surrounding area (Nicosia et al., 2005). Between 2004 and 2012, over 118,000 clandestine meth labs were discovered in the US, and while labs have been discovered in every state, fewer than half have adopted legislation requiring decontamination (Bobo, 2013).

To help expand our understanding of the full impact of drug abuse, the objective of this study is to explore the impact of illicit drug production on property values. Previous work by Congdon-Hohman (2013) studied the impact of meth labs on property values in Summit County, Ohio and found that individuals are willing to pay a considerable amount to avoid locating near a defunct meth lab. The study also finds that there is a lasting stigma effect associated with meth labs. This study evaluates the impact of clandestine meth labs on proximal residential property values in Linn County, Oregon. This county is an ideal location for this study because of its unique combination of high-quality data on both meth labs and property sales and its historically high incidence of meth-related events. Empirically, the impact of meth lab discovery and meth lab decontamination on nearby home prices is investigated using a quasi-experimental, difference-in-difference, spatial identification strategy, which mitigates the natural endogeneity that occurs when empirically investigating the relationship between crime and property values (Congdon-Hohman, 2013; Linden and Rockoff, 2008).

A unique aspect of the dataset used in this study is that it includes sophisticated meth lab discovery and decontamination data collected by the state of Oregon in order to actively manage properties which have been contaminated by meth production. Specifically, Oregon has an established agency tasked with collecting information about discovered meth labs and administering the decontamination process. Using data obtained from this agency, this study incorporates more comprehensive information about discovered meth labs in the state and includes information on the timing of meth lab decontamination. Utilizing this data allows for a more precise estimation of the impact of meth lab discovery on proximal property values before and after decontamination.

Results suggest that when a meth lab is discovered, there is an approximately six and a half percent reduction on property values within close proximity to a lab, even when accounting for the fact that meth labs are generally located in less-desirable neighborhoods with lower home prices. Additionally, nearby property values significantly increase (by approximately five percent) after a meth lab has been decontaminated. This suggests that recent state laws mandating the decontamination of meth labs may yield positive net benefits. Finally, as nearby home values do not fully recover following lab decontamination (homes only recover approximately 75%), this study suggests that there may be a lasting stigma effect associated with meth lab discoveries, which is consistent with previous work (Congdon-Hohman, 2013).

The next section provides background on clandestine meth labs and the policies used to decrease the incidence; Section 3 discusses the empirical approach; Section 4 describes the study area and data; Section 5 presents the results, including numerous auxiliary models included to test the robustness of the empirical results; and, Section 6 discusses and concludes the study.

## 2. Clandestine meth laboratories

Numerous state and federal government policies have been adopted in order to disrupt the supply of meth. Many of these policies have involved placing restrictions upon access to precursor chemicals used to produce meth (e.g., ephedrine and pseudoephedrine). Unfortunately, meth can be produced using numerous processes and various precursor chemicals. As a result, the meth supply chain has been able to recover quickly from these shocks. Moreover, in the notable instances where policies have been able to significantly disrupt the supply of meth (in terms of both price and purity), the market has been able to adapt and recover quickly (Cunningham et al., 2015; Dobkin and Nicosia, 2009). Additionally, as domestic meth producers are increasingly subject to the stringent regulations on precursor chemicals, larger quantities of meth are being imported from Mexico (Brouwer et al., 2006). Recently, perhaps due to increased regulation, domestic meth labs have become smaller and more urban, which has caused them to potentially be more dangerous.

While the low-probability threats associated with meth production (e.g., chemical fires, explosions, and the release of toxic gases) are commonly known, less well-known are the systemic negative health impacts and environmental pollution generated by meth production. For instance, numerous media outlets have reported negative effects experienced by individuals moving into homes that were not known to be contaminated with meth by the previous occupants (see Dewan and Brown (2009)). Moreover, meth production has been known to cause adverse health effects for drug manufacturers, law enforcement officers, fire and police personnel and residents living near laboratory sites (Nicosia et al., 2005). However, while clandestine meth labs have appeared in every state in the US, less than half of the states have recognized the need to decontaminate homes where meth has been produced (Bobo, 2013).

An example of a state which has adopted mandatory decontamination legislation is the state of Oregon. In 1990, the Oregon Health Authority's (OHA) Clandestine Drug Lab Program (CDLP) was created and tasked with administering the decontamination of meth (and other clandestine drug) labs discovered in the state. By statute, all state and local agencies that suspect a property has been used in the illicit manufacture of drugs must report the discovery to the CDLP for an inspection (Or. Rev. Stat. Ann., 1989a). Homeowners are also legally required to report their property for inspection if there are "reasonable grounds to believe that the property has been used as an illegal drug manufacturing site." Furthermore, property owners who knowingly sell or rent a property that has been used as a drug lab (without providing necessary disclosure which includes reporting the CDLP) are committing a Class B misdemeanor (Or. Rev. Stat. Ann., 1989b).<sup>2</sup>

The CDLP is tasked with documenting lab discovery and administering decontamination. While the CDLP does not directly clean facilities nor facilitate payment directly, they help to ensure that suspected drug labs are not re-occupied until the chemical contamination associated with meth production has been re-

<sup>1</sup> At the federal level, the Combat Methamphetamine Epidemic Act (CMEA) of 2005 considerably restricted access to meth precursors (see, e.g., *Combat Methamphetamine Epidemic Act (2006)*). Prior to, and following the passage of the CMEA, individual states have enacted more stringent controls on meth precursors. In 2006, Oregon adopted legislation requiring individuals to obtain a prescription in order to purchase medications which contain meth precursors (Freeman and Talbert, 2012). Mississippi also passed prescription-only legislation in 2010. See Cunningham et al. (2015) for more details.

<sup>2</sup> The Oregon statute does not specifically outline any civil or criminal penalties for government agencies failing to report a suspected lab. However, given that agencies have a duty to report, failure to perform that duty may subject them to civil liabilities if an individual purchases a home that has been discovered to have been used as a lab, but not reported.

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