Economic Cost of Prescription-Only Pseudoephedrine Legislation in WV

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# EXECUTIVE SUMMARY

West Virginia legislators are debating legislation that would restrict sales of pseudoephedrine (PSE) - containing drugs that are currently sold over-the-counter (OTC). Under one policy proposal, consumers would be required to have a doctor’s prescription to purchase products that contain the decongestant pseudoephedrine (PSE). The proposal would limit consumers’ over-the-counter access to medications used to treat cold, flu, and allergy symptoms. The primary intention of such a policy is to reduce the availability of PSE products to those who would purchase them to manufacture methamphetamine, a Schedule II controlled substance.

The first section of this analysis highlights the changes in the meth market resulting from recent regulatory efforts covering PSE-containing medications. The second section offers estimates of the additional costs associated with a shift to a prescription-only requirement in West Virginia.

**Section One Highlights**

* Oregon and Mississippi (states with prescription-only laws) and neighboring states (non-prescription-only states) experienced a decline in meth lab-related incidents over the same time periods.
* According to the Drug Enforcement Administration (DEA), nearly eighty percent of all meth sold in the U.S. is manufactured in Mexico and smuggled across the border by various drug cartels.
* Since 2006, purchase restrictions on PSE-containing medication have been in effect in West Virginia. Meth-lab incidents decreased initially until 2007, spiked until 2010 and decreased again from 2010 until 2012.
* According to Trust for America’s Health, West Virginia had the highest prescription-drug related, per capita death rate in the United States since 2011.

**Section Two Highlights**

* If the West Virginia General Assembly passed a prescription requirement, the number of doctor’s office visits for upper respiratory infections is estimated to increase by 78,817 annually.
* The proposed legislation could cost $1.83 million to uninsured West Virginians.
* The annual direct cost to households in West Virginia is estimated to be slightly more than $3.7 million in West Virginia.
* The proposed prescription-only legislation is estimated to impose an additional burden of $8.3 million a year through lost productivity in the following forms: time spent for doctor’s office visits and inability to have immediate access to medication for adults and children.
* Foregone sales tax revenue is calculated to be $321,309 annually in West Virginia.
* Over a 10-year period, the total cost of this policy change is expected to be $247.6 million.

# INTRODUCTION

Public policies are designed and implemented in an effort to benefit the overall welfare of society. One factor that is often given significant consideration by policymakers is the economic impact that a particular policy may have; this usually translates to attempting to quantify the costs and benefits of a policy. Generally, the task of determining the economic impact of a policy is quite complicated; this is due to the fact that there are unforeseeable ramifications and unquantifiable variables involved in determining the efficacy of a policy. Despite the existence of imprecision in determining the economic impact of many policies, policymakers must consider the information that they have available to implement a policy. Economic analysis is intended to ease the decision making process by providing estimates for costs and benefits of the potential policy change.

In West Virginia, a potential policy is being discussed about limiting sales of pseudoephedrine- (PSE) containing products that are currently sold over-the-counter (OTC). Under the proposed policy, consumers would be required to have a prescription from a doctor to purchase PSE-containing products. This will limit immediate access to medications used to treat cold, flu and allergy symptoms.. The primary intention of such a policy is to reduce the availability of PSE-based products to those who would purchase them to manufacture methamphetamine, a Schedule II controlled substance.

Several options have been suggested and/or implemented to combat the manufacturing of methamphetamine using PSE-containing medication. One such option is imposing regulations limiting the quantities of PSE-containing medication which can be sold to individuals over a specified time interval. Another option is maintaining records of individuals who purchase PSE-containing medications, and requiring all PSE-containing medications to be held behind the counter at retailers.

One of the options discussed in the previous paragraph is part of a real-time, stop-sale technology program known as the National Precursor Log Exchange (NPLEx). NPLEx enables retailers to track all PSE sales electronically and block purchases made by individuals who have exceeded their purchasing limit in real time and across state lines. Law enforcement officials also have real-time access to this information and can use it to track suspects, build cases or make arrests. NPLEx is currently used by 29 states including West Virginia as of January 1, 2014 .

Policies which regulate the sale of goods typically involve significant costs. These costs can include but are not limited to: decreased sales revenues for businesses; decreased tax revenues for local, state, and federal governments; increased prices of the regulated goods; and increased costs to financial intermediaries (i.e. insurance companies) which will likely be transferred to consumers and employers over time.

The purpose of this study is to compute and analyze the economic costs impacted by any policy change regarding prescription-only access to cold, flu, and allergy medicines containing PSE in the state of West Virginia.

# Background

## *Relationship between Methamphetamine and OTC Medicine*

 Many common over the counter medications used to treat cold, flu, and allergy symptoms contain the common decongestant pseudoephedrine (PSE), a substance that can also be used as a precursor in the production of methamphetamine. Small scale methamphetamine manufacturers often purchase PSE-containing medications for use in manufacturing methamphetamine.

The proposed prescription-only legislation is designed to combat small-scale meth manufacturers. Proponents of this legislation assume that restricting access to PSE-containing medication will prevent small scale methamphetamine manufacturers from acquiring the necessary precursors, rendering them unable to manufacture the illicit substance and thus resulting in a decrease in the overall number of methamphetamine related incidents.

## *Oregon and Mississippi*

The state of Oregon passed a prescription-only law in 2006 based on the assumption that more stringent laws regulating the sale of PSE-containing medications would reduce small-scale meth lab operations and incidents. Although meth lab related incidents did decrease in Oregon after the regulatory legislation was passed, data suggests that the legislation was not a primary factor in the reduction of meth-lab incidents. In fact, studies suggest Oregon’s steady decline in meth-lab incidents actually began before the prescription-only law was adopted. Additionally, meth lab incidents also decreased significantly in California and Washington over the same time period. Neither of those states requires a prescription for PSE medicines. (EIG, 2011). Figure-1 illustrates this trend.

 (Source: justice.gov, 2013)

Mississippi followed Oregon’s example and passed a similar prescription-only law in 2010. A similar trend to that of Oregon, Washington, and California occurred among Mississippi, Louisiana, and Alabama. Although meth-lab incidents did decrease in Mississippi after the prescription-only law passed, meth-lab incidents also decreased in neighboring states of Louisiana and Alabama where no such regulation exists. Figure-2 illustrates this trend.

 (Source: justice.gov, 2013)

Oklahoma’s meth-lab incidents declined after its state legislature passed a bill in 2004 limiting the amount of PSE-containing medication, which could be sold to individuals over specified intervals and requiring PSE-containing medication to be sold behind the counter. From 2004 to 2007, meth lab incidents continued to decrease in Oklahoma, as well as in Missouri and Arkansas. From 2007 to 2009, meth lab related incidents in all three states increased (EIG, 2011). Figure-3 illustrates this trend.

 (Source: justice.gov, 2013)

The decrease in meth lab incidents in states with and without prescription requirements for PSE-containing medications is evidence that the legislation passed in Mississippi and Oregon may not be a primary factor in their respective decreases. Increasing methamphetamine supply from Mexico as a substitute to domestically produced methamphetamine is more likely the primary reason for the decrease in methamphetamine lab incidents in these states (EIG, 2011).

## *Meth Problem in the USA*

Meth poses a serious problem in the United States. According to the 2006 study by Scott and Dedel for Community Oriented Policing Services, production of methamphetamine generally occurs in one of two types of labs: the large scale, high-product yielding super lab and the small scale, low-product yielding mom and pop lab.

Purchasing PSE-containing medication is only one of many ways that methamphetamine manufacturers can acquire the substance. Other methods of acquiring PSE for illicit uses include theft, smuggling, intentional mislabeling of containers containing the substance, or even synthesizing the substances through chemical processes using unregulated substances etc. (Scott & Dedel, 2006).

According to recent estimates by the Drug Enforcement Administration (DEA), 80 percent of American meth is smuggled into this country from foreign sources, especially Mexico.[[1]](#footnote-1) The DEA’s 2013 Drug Threat Assessment Summary reported that Mexican dominance of the American meth market has been increasing rapidly over the past several years—so too has the purity and affordability of the Mexican product.

Ultimately, there are various alternative methods for acquiring methamphetamine, and obtaining nonprescription PSE for illegal use is only one means of making or acquiring methamphetamine

## *Meth Problem in WV*

The West Virginia Board of Pharmacy published an article in June 2006 that outlined the effects of the Federal Combat Methamphetamine Epidemic Act, which went into effect in April that year. Under the law, retailers are prohibited from selling more than 3.6 grams of PSE per day per consumer, consumers are prohibited from purchasing more than 9 grams of PSE per 30 day period, non-liquid forms of PSE containing products must be sold in blister with no more than two dosages or in unit dose packages or pouches and mail-order companies are prohibited from selling more than 7.5 grams of PSE-containing medication to any one customer within a 30 day period.

As of September 30, 2006, all PSE-containing medications must be placed behind a counter inaccessible to customers or locked in a display case. Retailers must give the product directly to the customer. Retailers must maintain a logbook of information on transactions involving PSE-containing products. The logbook must contain the purchaser’s signature, name and address, the date and time of the sale, the name of the product sold, and the quantity of the product sold. Retailers may only sell PSE-containing medication to customers with a state or federal government identification card. Retailers must train applicable sales personnel to ensure that they understand the requirements of PSE-containing product sales and submit self-certifications to the attorney general in this regard. In West Virginia specifically, single active ingredient products are required to be kept behind the pharmacy counter, and electronic reporting of sales of single active ingredient products was required to be put into effect by January 1, 2007 (nabp.net).

Figure-4 illustrates meth lab related incidents in West Virginia from 2004 to 2012. Incidents increased from 2004 to a peak in 2005 and began to decline significantly into 2006. In late September 2006, the new PSE purchasing restrictions went into effect in West Virginia. Meth-lab incidents continued to decline in West Virginia until 2007, but began to rise again from 2007 to 2008. From 2008 to 2010, meth lab related incidents continued to rise in West Virginia before beginning to decline again from 2010 to 2012. Despite a two-year increase in 2007-2008, overall meth lab related instances have decreased by 64% between 2006 and 2012.

 (Source: justice.gov, 2013)

In 2012, WV mandated electronic tracking of all PSE-containing medication sales, which utilizes the NPLEX software beginning January 1, 2013. According to the West Virginia Retailers Association, NPLEx has blocked the sale of over 9,900 boxes of PSE-containing medication as of August 14, 2013 since West Virginia implemented the system at the beginning of 2013. (prnewswire.com).

## *Prescription Drug Abuse in the USA and WV*

Prescription requirement may limit the access of drugs to those who demand them for illicit means but doesn’t solve the drug abuse completely. According to the Centers for Disease Control and Prevention, prescription drug abuse is an epidemic in the United States[[2]](#footnote-2). The sale of prescription painkillers in the United States increased by 300 percent from 1999 to 2010. The total cost of prescription drug abuse in the United States was 53.4 billion dollars in 2006, of which 42 billion dollars was attributed to lost productivity. (healthyamericans.org.2013).

According to a 2013 study conducted by Trust for America’s Health, West Virginia had the highest per capita death rate attributed to prescription drug abuse in the United States as of 2011. Figure-5 illustrates the increase in deaths per 100,000 residents in West Virginia from 1979 to 2011. Emergency room visits attributed to overdoses of prescription drugs increased by more than one hundred percent from 2004 to 2011 in West Virginia. (healthyamericans.org, 2013).

 (Source:healthyamericans.org, 2013)

# Costs

The data and statistics included thus far in this paper suggest that there is not an established correlation between meth-lab incidents and attempts to regulate the sale of PSE-containing medications. This is likely due to the fact that meth criminals are increasingly reliant on foreign sources of meth, particularly from Mexico. As noted earlier, the DEA has recently estimated that 80 percent of American meth comes from Mexico.

As is the case with any public policy change, there are direct and indirect costs involved in passing prescription-only legislation. Costs involved include but are not limited to: loss of tax revenue for federal, state, and local governments, lost productivity due to absenteeism at work, increased costs to insurance companies, and increased costs to households.

Prescription-only legislation would have a significant impact on government-sponsored health insurance programs such as Medicare, Medicaid, and West Virginia’s Children’s Health Insurance Plan (CHIP). Medicare is a health insurance coverage program funded and administered by the federal government designed to benefit Americans ages 65 and older, certain disabled younger Americans and people with End Stage Renal Disease. Medicaid and CHIP are jointly funded by federal and state governments to provide health care mainly to low income families and families with children, respectively. In 2012, 67 million Americans were covered under Medicaid or CHIP nationwide (Cbpp, 2012).

In 2012, Kaiser Family Foundation (KFF) published a data set showing health insurance coverage by insurance type of the total population in each state. Adjusting these percentages for population growth, the number of enrollees by insurance type can be estimated for 2013. Based on population growth estimates in West Virginia for 2013, 909,489 residents have private or employee-sponsored health coverage, 278,415 residents have no health coverage, 352,659 residents receive Medicaid and/or CHIP benefits and 315,537 residents receive Medicare benefits. According to the U.S. Department of Health and Human Services, there are currently 104 localities in West Virginia that have a shortage of primary care physicians.

## *Potential Costs to Households*

The proposed prescription-only law would have direct and indirect effects on households in West Virginia. Under the proposed legislation, patients are required to have PSE-containing medication prescribed by a physician or authorized medical personnel. Households will have to bear additional costs that require direct outlay of money such as transportation costs, insurance co-pays for doctor’s office visits or a full doctor’s fee (for uninsured only). All of these costs are categorized as out-of-pocket costs.. Another direct cost is the potential price increase in PSE-containing medication if legislation is passed. Because the average drug co-pay is estimated to be less than the average post-policy price of PSE-containing medication, the difference between the final price and drug co-pay will be imposed on insurance companies. However, this additional burden to insurance companies that provide private and employee-sponsored insurance is likely to be transferred back to households through higher insurance premiums.

West Virginia households that would choose to visit doctors’ offices to obtain PSE-containing medication are divided into four groups based on insurance type: uninsured, Medicare recipients, Medicaid and CHIP recipients, and private and employer-sponsored insurance holders. Based on the literature and available data, an average co-pay of 20 percent and 22 percent is used respectively for doctor’s office visits made by Medicare and private/employee-sponsored insurance recipients. While Medicaid and CHIP recipients are not required to pay any co-pay for doctor visits, the uninsured will have to incur entire doctor’s visit fees.

In the spring of 2013, the Asthma and Allergy Foundation of America (AAFA) surveyed 300 West Virginians who personally suffered from nasal allergies, asthma, cold, or flu symptoms during the previous year and purchased non-prescription medication for at least one condition. The median time spent by West Virginia residents for each office visit –including drive time, waiting room time and examination time- is 1 hour and 30 minutes. South Carolina Rural Health Research Center (2006) estimated average distance traveled for medical visit for rural and urban residents to be 17.5 and 8.3 miles respectively. After adjusting these figures for rural and urban population in West Virginia, an average distance of 13.4 miles traveled per doctor visit is estimated and adopted in this study. Using average fuel efficiency and fuel cost data, the average transportation cost is estimated to be $1.90 per office visit.

Medical Expenditure Panel Survey (MEPS) results show that the average fee for an office based physician (General/Family practice) visit was $145 per visit in 2009. Adjusting the 2009 estimate using the change in the Physician Price Index over the 2009-to-2013 period results in an increase to $153 per visit in 2013. The following table summarizes the out of pocket cost per office visit for West Virginians with different insurance types.

|  |  |
| --- | --- |
| Table-1: Out of Pocket Cost per Office Visit |  |
| Average Out of Pocket Cost per Visit for Employee-sponsored/Private Insurance Holders |  **$36**  |
| Average Out of Pocket Cost per Visit for Medicare Recipients |  **$33**  |
| Average Out of Pocket Cost per Visit for Medicaid and CHIP Recipients |  **$2**  |
| Average Out of Pocket Cost per Visit for Uninsured |  **$155**  |

According to Centers for Disease Control and Prevention (CDC) estimates, the annual number of Primary Care Office (PCO) visits for respiratory system diseases in the United States was approximately 77 million in 2010. By adjusting the 2010 approximation for relative population size and growth, 463,629 PCO visits are estimated to have been made in the state of West Virginia in 2013.

According to Avalere Health (2011), Oregon and Mississippi’s PSE sales declined 78% and 88% respectively after they passed prescription-only laws. The rate of decline is likely to decrease in upcoming years due to decreasing demand for phenylephrine (PE)-containing drugs, which are available over the counter. The difference between PE and PSE drugs and their substitutability were explained in 2010 testimony to the U.S. Senate Caucus on International Narcotics Control. Dr. Charles J. Ganley, Director of the Office of Drug Evaluation IV within the Food and Drug Administration included the following comments in his prepared remarks,

*“(p11)* ***Pseudoephedrine****and phenylephrine differ in duration of action so that it is recommended****pseudoephedrine****be taken every four to six hours, but phenylephrine with a shorter duration of action be taken every four hours. FDA considers both****pseudoephedrine****and phenylephrine as safe and effective for their intended uses.*

*(p13) Let me just make one other point regarding, you know -- and this is more from a clinical point of view. I think all of us have experience with different drugs, not just decongestants, but the antihistamines. Some respond better to one drug versus another. There is really no rhyme (ph) or reason, and generally people will stick with a particular drug they find effective or they will switch to another one that they don't.*

*And so you are going to have individuals who perfectly fine with phenylephrine and others who don't respond to phenylephrine. And they have a preference for* ***pseudoephedrine****.”*

According to sales data on PE products in Mississippi—before and after implementation of the prescription-only law— the changes in sales volume for PE products do not appear to show any direct substitution of PE for PSE by consumers (GAO, 2013). The sale of PE drugs decreased by about six percent after the prescription-only policy took effect. This trend suggests that PE drugs may not be a close substitute for PSE drugs due to personal preferences of the patients. Therefore, the substitution effect of PE drugs for PSE drugs is assumed to be non-existent in the long term since more data is need to effectively assess the substitution effect between PE and PSE drugs.

If West Virginia passed a prescription requirement, the state would experience an estimated 78,817 additional doctor’s appointments per year in West Virginia. Because the number of emergency room visits as a result of lack of immediate access to PSE-containing medication is expected to be insignificant, only doctor’s office visits are considered. Using the current distribution of insurance holders in West Virginia, the number of additional visits is estimated and presented in Table-2.

|  |  |
| --- | --- |
| Table-2: Additional Primary Care Office Visits after Prescription-Only Law Enacted |  |
| Additional PCO Visits by Uninsured |  **11,823**  |
| Additional PCO Visits by Private and Employer-Sponsored Insurance Holders |  **38,620**  |
| Additional PCO Visits by Medicare Recipients |  **13,399** |
| Additional PCO Visits by Medicaid and CHIP Recipients |  **14,975**  |

Another important component of direct cost to households is the cost of prescribed PSE-containing medication. During this study, various West Virginia pharmacies were contacted about the average price of over-the-counter and prescription medicine containing PSE. The weighted average price is calculated using the responses received from local pharmacies and the propensity to use generic medicine. The average price of an OTC medicine containing PSE is estimated to be $13. Using Avalere’s estimate of 35 percent post-law price increase; the average price of prescribed PSE-containing drug is calculated as $17.55.

Insurance companies and Medicare/CHIP/Medicaid are expected to include prescribed PSE-containing medication in their drug plans. Generic drugs are most likely included under Tier-1. Co-pay for Tier-1 drugs is used in this study to avoid over-estimation of total cost although brand-name products might carry higher a co-pays. On average, private and employee-sponsored insurance holders are estimated to pay $10 per prescription while the estimated co-pay for Medicare recipients is $8 per prescription. Medicaid/CHIP recipients are estimated to pay $1 per prescription on average. Because co-pay for each insurance type is lower than the average post-law price, there is no direct cost to the recipients. However, the difference between co-pay and price will most likely result in a premium increase over time. The cost to uninsured will be the increase in the price of PSE-containing medication.

Components of direct cost to households are summarized in Table-3.

|  |
| --- |
| Table-3: Direct Costs to Households |
| Doctor Visits |  |
|  | Uninsured |  **$ 1,829,933**  |
|  | Private/Employee-Sponsored Insurance |  **$ 1,373,548**  |
|  | Medicare |  **$ 435,579**  |
|  | Medicaid and CHIP |  **$ 29,050**  |
| Rx Drugs |  |
|  | Uninsured |  **$ 53,793**  |
|  | Total |  **$ 3,721,902**  |

According to Table-3, the majority of direct cost is estimated to be incurred by households with no insurance. Because the uninsured have to pay the entire doctor’s office visit fee and other out-of pocket costs, the total of $1.83 million is estimated to be the direct cost of doctor visits for the uninsured. The price increase in PSE –containing medicine will create an additional burden of $53,793 on households with no insurance. Private and employee-sponsored insurance holders and Medicare recipients are estimated to have $1.37 million and $435,579 additional cost respectively due to mandatory doctor visits. Medicaid and CHIP recipients will experience the lowest direct cost due to zero co-pay requirements. Total annual direct cost to households is estimated to be slightly more than $3.7 million in West Virginia.

## *Potential Costs to the State Government*

Direct cost to the State government is presented in Table-5:

|  |
| --- |
| Table-5: Direct Costs to the State Government  |
|  Doctor Visits  |  |
|  |  Medicaid and CHIP  |  **$ 371,001**  |
|  Rx Drugs  |  |
|  |  Medicaid and CHIP  |  **$ 40,172**  |
|  |  Total  |  **$ 411,174**  |

Doctor’s office visits for patients with Medicaid and CHIP are expected to cost an additional $371,001 to the state government annually. The portion of drug costs paid by the state is estimated to be $40,172. Total direct cost to the State is calculated to be $411,174 annually.

## *Potential Costs to Insurance Companies*

Direct cost to insurance companies consists of doctor’s office visit fees and the cost of prescription drugs. As mentioned before, an average of 22 percent and $10 co-pay are used for doctor visits and prescription drugs respectively. The difference between the actual cost and the portion paid by patients will be an additional burden on insurance companies. However, this additional cost will likely be transferred back to employees and employers through higher premiums. Table-6 summarizes the additional costs to insurance companies.

|  |
| --- |
| Table-6: Direct Costs to Insurance Companies  |
| Doctor Visits |  |  |
|  | Private/Employee S. Insurance |  **$ 4,604,233**  |  |
| Rx Drugs |  |  |
|  | Private/Employee S. Insurance |  **$ 233,267**  |  |
|  | Total |  **$ 4,837,500**  |  |

Total cost of prescription-only policy to insurance companies is estimated to be slightly less than $5 million annually in West Virginia. While the majority of this cost ($4.6 million) is the payments for the doctor’s office visits, the cost of prescription PSE-containing drugs is estimated to be $233,267 annually. This figure is most likely underestimated since it is assumed that patients only pay for generic drugs classified as Tier-1.

## *Lost Productivity*

The proposed prescription-only legislation is expected to involve not only direct costs but also indirect costs. Indirect costs can be defined as resources foregone as a result of switching to a prescription-only policy. There are two types of indirect costs associated with this policy change: lost productivity and lost tax revenue.

Lost productivity can be categorized into two types: absenteeism and presenteeism. In the case of presenteeism, the employee’s work quality is impaired due to physical pain or other health conditions while at work. Lost productivity due to presenteeism is not estimated in this study since the number of people impacted by this potential policy change is hard to quantify and the true significance of resulting productivity loss is questionable.

In the case of absenteeism, productivity is lost due to the employee not being at work physically. Switching to a prescription-only policy could lead to absenteeism in the following forms:

* Foregone wages/business revenue due to time spent for doctor’s office visits.
* Foregone wages/ business revenue due to adults’ inability to have immediate access to OTC PSE-containing medication.
* Foregone wages/ business revenue due to children’s inability to have immediate access to OTC PSE-containing medication.

According to Nicholson (2006), lost productivity is not equal to lost wages due to additional costs associated with absenteeism. Inability to find a replacement employee and lost business revenue due to postponed production are some of the factors that would increase the cost of absenteeism. Nicholson estimated an average multiplier of 1.61 for absenteeism which is adopted in this study.

One of the fundamental challenges of estimating lost productivity cost is the difficulty to quantify the effects on employees and workforce. Using AAFA’s survey results and the Department of Labor’s employment data, it is assumed that while 48 percent of patients who visit primary care offices are unemployed or not counted as a part of labor force, 52 percent are employed (33% are full-time, 9% are part-time and 10% are self-employed).

Using the above numbers, the AAFA’s survey results and the study conducted by Fendrick (2003), we estimated that under a prescription requirement in West Virginia, 24 percent of patients who are employed would miss four hours of work due to limited access to OTC PSE-containing drugs. 34 percent of patients, who are caregivers and employed, would miss eight hours of work due to children’s inability to access OTC PSE-containing drugs. Medicare recipients are not included due to lack of after-retirement employment data.

An hourly wage of $25.15 is estimated using Census data (Census, 2012). This estimate is consistent with the conservative approach followed throughout the study to avoid over estimation of costs. Patients who work and are either on Medicaid or uninsured are assumed to get paid the minimum wage of $7.25 per hour, while patients who work and have Private/Employee-sponsored insurance are estimated to earn $25.15 per hour.

Lost productivity due to time spent for doctor’s office visits is presented in Table-7:

|  |
| --- |
| Table-7: Lost Productivity due to Time Spent for Doctor’s Office Visits |
|  | Uninsured |  |  **$ 107,639**  |
|  | Private/Employee S. Insurance |  |  **$ 1,219,638** |
|  | Medicaid and CHIP |  |  **$ 136,343**  |
|  |  | Total |  **$ 1,463,619**  |

Based on the assumption that uninsured and Medicaid recipients earn minimum wage, their contribution to productivity loss are projected to be significantly lower than those of private/employee sponsored insurance holders. Total productivity loss due to time spent for doctor’s office visits is estimated to be almost $1.46 million annually. Lost productivity because of adults’ inability to have immediate access to OTC PSE-containing medication is summarized in in Table-8.

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| --- |
| Table-8: Lost Productivity due to Lack of Immediate Access (Adults) |
|  | Uninsured |  |  **$ 132,037**  |
|  | Private/Employee S. Insurance |  |  **$ 1,496,089**  |
|  | Medicaid and CHIP |  |  **$ 149,642**  |
|  |  | Total |  **$ 1,777,768**  |

One of the advantages of PSE-containing OTC drugs is to provide immediate and long-term relief for various symptoms. Lack of immediate access to these products is expected to increase absenteeism at the work place. Related productivity loss is estimated to create an additional $1.78 million burden on the West Virginia economy. This figure is most likely underestimated since not all uninsured and Medicaid recipients who work are paid minimum wage. Since children are not part of the labor force, additional doctor’s office visits by CHIP recipients are not included in the calculations. The final part of lost productivity due to children’s inability to access OTC PSE-containing medication is presented in Table-9.

|  |
| --- |
| Table-9: Lost Productivity due to Lack of Immediate Access (Children) |
|  | Uninsured |  |  **$ 370,852**  |  |
|  | Private Insurance |  |  **$ 4,202,058**  |  |
|  | Medicaid and Chip |  |  **$ 469,746**  |  |
|  |  | Total |  **$ 5,042,656**  |  |

Lost productivity due to school days missed is projected to be around $5 million annually in West Virginia. This figure is significantly higher than the other two estimates due to an increasing number of working hours missed (8 hours). When all three parts of lost productivity are included, the estimated annual cost to the state economy is alarming. The proposed policy is estimated to impose an additional burden of approximately $8.3 million on the economy through lost productivity.

## *Lost Tax Revenue*

Lost productivity associated with legislation change is described and documented in the previous section. However, this is not the only indirect cost. Lost productivity can be considered as part of gross domestic product (GDP) in West Virginia since GDP is a good measure of all goods and services produced. It is reasonable to assume that lost productivity will most likely lower business income in the state. Lost federal and state income tax revenue is calculated to provide a better measure of indirect cost of the potential policy change.

The state corporate income tax rate of 6.5 percent is used to estimate lost income tax revenue. Even though the current rate is 7 percent, The West Virginia Department of Revenue announced that it will be implementing a reduction in January 2014 from the current 7 percent to 6.5 percent (taxfoundation.org). Federal corporate income tax rate is approximately 35 percent (taxfoundation.org). However, this is the statutory tax rate which only indicates the amount of tax liability. Effective tax rates (ETR) differ from statutory tax rates in that they attempt to measure taxes paid as a proportion of economic income. According to Government Accountability Office (GAO), the effective federal corporate tax rate was calculated to be only 13% for the tax year 2010. Based on the figures above, the state of WV is projected to lose $538,463 worth of corporate income tax revenue annually. Annual corporate income tax revenue of $828,404 is estimated to be lost at the federal level.

Another important component of indirect cost is the lost sales tax revenue. In the state of WV, OTC drugs are subject to sales tax of 6 percent. However, prescription drugs are exempt from sales tax. Switching to a prescription-only policy is expected to create an additional burden on the state economy through lost sales tax revenue. In addition to statewide sales tax, certain cities and towns are imposing local sales tax ranging from 0.5 percent to 1 percent. The foregone sales tax revenue is calculated as $321,309 annually including the lost local tax revenue of $633.

## *Cost Distribution among Stakeholders*

 In this study, direct and indirect costs are calculated using a realistic yet conservative approach to present useful and unbiased findings to consumers and policymakers. Figure-6 shows the amount of direct and indirect costs. The annual cost of this potential policy change is estimated to be $21,774,064 and $248 million over ten years. While about 46% of this cost is expected to be indirect costs such as lost productivity and lost tax revenue, 54% of total cost consists of direct costs of doctor visits and prescription drugs.

 Figure-7 shows the total cost distribution of the potential legislation change over a 10-year period. Cost to the state economy represents the cost of lost productivity due to absenteeism at the work place. Over a ten-year period, the state economy is projected to lose almost $92 million in total productivity if the legislation is passed. The state and federal governments are expected to lose almost $15.4 and $42 million through lost tax revenue and increasing cost of social insurance programs respectively. Even though total cost to households is expected to be $41.9 million, any additional costs to insurance companies are likely to be transferred to households through higher insurance premiums, increasing the total cost to $98 million. If all of these costs are included over 10 years the total cost of this policy change is expected to be $247.6 million.

One interesting finding of this study is the economic cost of making the OTC PSE-containing drug prescription only. If the prescription-only legislation is passed in WV, the final cost per prescribed PSE-containing drug is estimated to be $276. This is a very significant figure since the average cost before the policy change is only $13. The direct cost to households is expected to increase from $13 to $47 per medication. Costs to the federal and state governments per prescription are $46 and $16 respectively. The additional burden to insurance companies is calculated to be $61 per prescription. For each prescribed PSE-containing drug, WV economy is projected to lose $105 as a result of policy related absenteeism at work.

# CONCLUSION

Analysis of any proposed public policy change requires detailed mapping of potential costs and benefits including those of behavioral changes in the economy. Requiring a prescription for PSE-containing drugs is expected to affect a broad range of stakeholders from households to the state government. Mississippi and Oregon adopted this policy in 2006 and 2010 respectively. The data generated from these two real examples combined with national data trends helped us calculate estimated costs—intended and unintended—associated with the policy change. Without significant evidence, calculating benefits solely based on a prescription-only policy is extremely difficult.

One of the challenges policymakers face is to assess the effectiveness of a prescription requirement in addressing the meth problem given the fact that eighty percent of American meth comes from Mexico. It is not unreasonable to presume that legislation regulating the purchase of PSE-containing medications will have limited impact on the illicit production of methamphetamine. In economics, the price increase of a good or service would increase the demand of a substitute good. Substitute meth can easily be shipped from neighboring states and across the border.

Households, particularly those that rely on PSE-containing drugs solely for medical purposes, will have to bear an additional cost if legislation is passed. The cost of going to primary care offices will impose an additional burden on patients who need immediate access to PSE-containing drugs. Additional cost to insurance companies might lead to higher insurance premiums which will likely be transferred back to employees and employers. Even though costs to primary care offices are not included in this study, it would be reasonable to assume that seasonal shortages during flu and allergy season will most likely occur.

One of the unintended effects of the policy change, which contributes to overall deadweight loss, is lost productivity. Limited access to PSE-containing medication is expected to create absenteeism at work, costing the employers and the state economy millions of dollars in terms of lost productivity. West Virginia and the Federal government will generate less revenue due to lower sales and income tax revenue. Both state and federal governments will face increasing costs from Medicaid and Medicare/CHIP related expenses.

Policymakers shouldn’t overlook one of the most important addiction problems: prescription drug abuse. It cost $53.4 billion to the US economy. West Virginia had the highest per capita death rate attributed to prescription drug abuse in the United States as of 2011. It is crucial for the federal and state governments to search and find effective policy prescriptions to combat this problem before imposing new regulations that could create a similar outcome.

Prescription-only policy and stop-sale technology are two alternatives to control the sales of PSE-containing OTC drugs. Policymakers are advised to collect as much data as possible to make a rational yet effective decision. It is imperative to observe long-term effects of stop-sale technology in the adopted states including West Virginia. Effectiveness of Oregon and Mississippi’s prescription-only law can be assessed thoroughly if more time is passed to measure the costs and benefits in the long-run.

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