

# The Impact of Any Willing Provider Law and Private Option on Health Insurance Market - Supplement

## 1 Project Description

The primary objective of this project is to evaluate the impact of “any willing provider law” (AWP law from here on) and “private option” in Arkansas. AWP law mandates managed care plans to accept any provider who is willing to participate and meet the terms and conditions of the plans. Anecdotal evidence tells us that AWP law may improve the consumer welfare by widening provider networks, but may worsen it by shutting down insurers’ means of lowering the reimbursement rates and premiums. We wish to evaluate how AWP law changes competition among providers and insurers, and thereby, changes rates, premiums and provider networks.

Investigating over AWP in Arkansas necessarily requires an analysis of “private option” policy as well. The private option policy puts the private-option-eligible into private health insurance market instead of the traditional Medicaid market. Anecdotal evidence tells us that it benefits both the eligible and the ineligible by enhancing competition among insurers, and benefits providers by paying market-driven reimbursement rates instead of the government-set. Whether this would be true or not critically on how the market is organized, which is affected by the Any Willing Provider law. Conversely, the way market is organized depends on the demand it faces, which is affected by the private option policy. This intertwined relationship requires researchers to investigate both AWP law and private option policy simultaneously. We are planning to analyze how private option and AWP law interacts, and how the rates, premiums and provider networks would have been changed with and without the other.

## 2 Planned Methodology

### 2.1 General Framework for Analyzing Any Willing Provider Law and Private Option

The project begins with developing an economics-based theoretical model that describes how insurers and hospitals compete and negotiate under AWP law and private option. Compared to the case without AWP law and private option, our model predicts that the reimbursement rate increases through two different channels: 1) insurers cannot lower reimbursement by threatening providers to drop from their networks; 2) insurers engage in price competition to induce providers to participate in their networks. The model also predicts that the premium and the size of network would increase, which are consistent with the anecdotal evidence on the law.

Based on the theoretical model, we build a statistical model that incorporates 1) consumers’ choice over providers and insurance plans; 2) competition and negotiation among insurers and providers. Using the statistical model, we estimate demand-side parameters (such as sensitivity of consumers on the proximity when they choose over hospitals, and on premium when they choose over insurance plans) and supply-side parameters (such as average cost of treating a cardiac patient who is admitted with moderate level of DRG level.).

Once we have the parameters estimated, we run simulations on Arkansas health care market with and without AWP law in it. We also run simulation on Medicaid market with and without private option in it to estimate the effect of private option. Finally, we also simulate how private option would have performed if Arkansas did not have AWP law, which will allow us to predict the effect of private option for states that do not have any willing provider law. The simulations produce predictions on

reimbursement rates, premiums, networks and consumer welfare when the law absents. Comparing the predictions with what are observed in the data allows us to separately identify the effect of AWP law and private options in Arkansas health insurance market.

## **2.2 Arkansas APCD**

One of the key objectives of this research is to evaluate the effect of AWP law. Arkansas has one of the most comprehensive AWP law in the United States, which makes it as an ideal environment to study the law. To bring the framework outlined above to the data, we need data on consumers' choices over insurance plans and providers. We also need data about reimbursement rates, premiums, and provider networks of each insurance plan. Arkansas APCD is one of few data sets that provide us all the key variables we need.

The Enrollment Data provides information about consumer choices over the insurance plans (ME992 HIOS ID). The Medical Claims Data provides information about consumer choices over provider choices (MC026 NPI, MC077 NPI). Premium of the plans (ME123, ME132), reimbursement for each service (MC063) and in-network indicator (MC131).

To implement the project satisfactorily, we may need to link the data to outside sources such as Vericred, SK&A, AHA, HCRIS and Census data. The outside sources provide information about plans and providers, such as provider network and hospital characteristics, which are not included in APCD. The outside sources will be linked through National Provider Identifier or HIOS ID.

Overall, we believe that Arkansas health insurance market and Arkansas APCD provides us a unique opportunity to study AWP law.

## **2.3 Potential Contributions to the Citizens of Arkansas**

We believe that this project would be beneficial for both the academia and the general public including the citizens and policy makers of Arkansas.

First and foremost, this project analyzes how much the Arkansas health insurance consumers have benefited from the AWP law. Both anecdotal evidence and academic researches suggest that the AWP law increases premiums and size of provider networks. This, however, does not answer to the question of whether a AWP is good for consumers, the fundamental question to policy makers. The AWP law can be good if consumers substantially benefit from the broadened provider network while the premiums increase relatively little; it can be bad under the opposite scenario. The framework outlined in the previous chapter allows us to simulate and compare the size of consumer welfare with and without the AWP law, and to tell whether the law have benefited the consumers or not. Among *all* researches, only our project can inform the citizens of Arkansas how much they have benefited from the law.

The welfare analysis is not the only question that our framework is able to answer. One of the questions we may investigate is about designing the optimal AWP law. The way states interpret and apply the law varies from state to state. Arkansas applies one of the most comprehensive AWP law while allowing insurers to pay different reimbursements to different hospitals. Some states apply the law to PPOs but not to HMOs. Some states interpret the law as a uniform pricing law that requires insurers to pay the same rate to any "similar" providers within the network. Some states require insurers to pay the same even to providers outside the network. There are endlessly many tweaks if we go into further details. We are hoping to analyze how each interpretation affects on consumer welfare, and propose which version of the AWP laws would be the best for the citizens of Arkansas.

Furthermore, we are planning to use the framework as a basis for analyzing different policy questions relevant to Arkansas. The private option approach to Medicaid is only one of such examples. We are hoping to analyze questions such as efficacy of Medicaid work requirement and of payment reform. Our

framework provides a natural basis for evaluating whether the claims are true in Arkansas and whether we should expand the alternative model of the Medicaid to other states as well.

### **3 Evaluation Criteria**

This section answers to the five questions in Evaluation Criteria in the data request form.

#### **3.1 Is the request consistent with the Transparency Initiative's goals and purpose?**

The objective of this project is to understand how insurers and providers negotiate and compete under the AWP law, and what are the ramifications of the law. As a byproduct, we also analyze consumer behavior (for example, we analyze how likely it is for a consumer aged in between 20 and 40, living in Little Rock, to purchase BSBC's bronze plan) and how reimbursement rates are negotiated between each insurers and provider (for example, we analyze average reimbursement rate between BSBC and Baptist Health). Furthermore, we are planning to use this framework to analyze various health policy issues as explained in section 2.3, which helps the citizens of Arkansas to have a more predictable and reliable healthcare policies. All these provide a clearer picture on what is going on in health insurance market, which is consistent with the Transparency Initiative's goals and purpose.

#### **3.2 Are there real or potential conflicts of interest or anti-competitive concerns?**

The project analyzes how AWP law has formed the way insurers and providers compete and negotiate, and has ramifications on reimbursement rates, premiums, and provider networks. The project promotes healthy competition among insurers and providers, and well-thought-out regulation on the market by providing a comprehensive analysis of the market.

The project is not funded by any of parties of interest, such as insurance firms and hospitals, in Arkansas to avoid potential conflicts of interest. For any changes in funding source for the project that may potentially cause conflicts of interest or anti-competitive concerns, we will send an e-mail to and arrange with Arkansas APCD team (or any other organization that we are directed to) in advance.

#### **3.3 If IRB approval is required, has the approval been granted?**

IRB at the University of Pennsylvania confirmed that our project does not need IRB approval.

#### **3.4 Does the data request contain the minimum information required?**

Technically, our objective is to analyze consumers' choices over insurance plans and providers, and negotiation between insurers and providers over reimbursement rates and provider networks. The enrollment data is needed to analyze the choice over insurance plans. The medical claims data is needed to analyze the choice over hospitals and the reimbursement rates. The provider data is needed to analyze how each provider negotiates with insurers. Almost all variables within each dataset can potentially be useful in improving efficiency of estimation and therefore are requested.

#### **3.5 Does the request minimize the risk of re-identification of individuals?**

This study uses information about individuals to estimate the consumer demand for insurance plans and hospitals. To estimate the demand, what we need is distributional information on how many people with each demographic characteristic has purchased which plan and used which hospital, not

each individual's personal information. For example, we would like to know "100 people living in Little Rock, aged in between 20 and 30, have purchased BCBS Silver plan, while 50 people of the same condition have purchased Humana Bronze plan, etc.," but do not want to know "Changhwa Lee living in Little Rock is aged 28 and have purchased BCBS Silver plan." Our request is designed to analyze the distributional information but does not attempt to re-identify each individual's personal information.

## 4 Justification for Variables

**5-digit ZIP code:** The project involves estimating consumers' demand for hospitals. Consumers' demand for hospitals depend on how close the hospitals are to consumers. The more accurate information on each enrollee's geographic location we have, the more accurate we can estimate the demand for hospitals. This is why 5-digit ZIP code is preferred to 3-digit ZIP code.

**Carrier Identifiers:** The project involves estimating consumers' demand for insurance plans. Consumers' demand for insurance plans depend on premium, plan characteristics such as deductibles and provider network, and brand of the firm. To analyze the consumers' demand function correctly, I need to know which carrier each consumer has purchased from. This is why I requested for carrier identifiers for commercial payers in the Payer-Level Detail section.

**HIOS:** Consumers' demand for insurance plans depend on plan characteristics such as deductibles and provider network. To analyze the consumers' demand function correctly, I need to map each plan to its plan characteristics. Vericred data provides information about plan designs and provider network, and can be linked to APCD using HIOS ID.

## 5 External Datasets

This section describes other datasets that we may potentially link with Arkansas APCD. All datasets will be linked and analyzed by ourselves. Arkansas APCD will not be shared with any other individuals or organizations including the ones below.

### 5.1 Vericred

Vericred is a healthcare data company that is specialized in collecting data on plan design and rate, provider network, and plan formulary of various individual and small-group health insurance plans across the nation. We will use this dataset to recover rates and provider network of each plan. The data set has been increasingly used in academic researches as in Polsky, Candon, Chatterjee and Chen (2018) and Daniel, Vu, Huang and Karaca-Mandic (2017).

### 5.2 SK&A / AHA / HCRIS

SK&A, AHA and HCRIS are datasets that contain information about characteristics, ownership, location and service costs of physicians and hospitals. They are standard datasets widely used in academic researches about physicians and hospitals. These datasets will be linked with APCD through National Provider Identifier (NPI)

**AHA** American Hospital Association survey is an annual, nation-wide survey that documents various hospital characteristics for each hospital. The characteristics include location, teaching status, a

for-profit indicator, the number of beds and nurses per bed, and variables summarizing the cardiac, cancer, imaging, and birth services provided by the hospital. We will use this data to estimate consumers' demand for hospitals which may differ depending on hospitals' characteristics. The dataset is widely used by many researchers such as Agha (2014) and Ho and Lee (2018).

**SK&A's Office Based Physician Database** SK&A's Office Based Physician Database provided by IQVIA is an annually-updated, nation-wide dataset about physicians. More specifically, it keeps track of the location and service being provided by each provider. It also keep track of which hospital or hospital systems a provider belongs to. We will use this dataset to identify locations of physicians. The dataset is widely used by many researchers such as Scheffler and Arnold (2017) and Capps, Dranovec and Ody (2018).

**HCRIS Healthcare Cost Reporting Information System (HCRIS)**, collected and maintained by Centers for Medicare & Medicaid Services, is a dataset on the cost of various healthcare facilities and services such as hospitals, nursing facility and hospice services. We will use this dataset to estimate the cost of provider service. This dataset is also widely used by many researchers such as Carey and Lin (2016) and Kahn, Cicero, Wallace, and Iwashyna (2014).

### 5.3 Census

Census data will be linked to obtain demographic distribution such as income for each ZIP code, which will improve accuracy of demand estimation.

## 6 References

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