

## **The Story of Booze: Alcohol Regulations and Alcohol-Related Intoxication in the Russian Region**

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The paper focuses on harm reduction as a specific goal of the national alcohol policy in any country including Russia. In addition to public health advocacy, a more straightforward set of measures that are able to regulate the behavior of alcohol users is connected with direct governmental interventions in the system of the alcohol trade. These measures can influence both the supply and the demand for the alcoholic beverage. There is a variety of literature which demonstrates that alcohol consumption is negatively connected with the alcohol price: the empirical data from the developed countries confirms that availability of alcohol for different groups of the population matters significantly<sup>1</sup>. A problem that this literature pays lesser attention to is the unofficial alcohol beverage, developing countries and decentralized political systems (where the regulation of alcohol policy is partly delegated to the subnational level).

Russia is an appropriate case to study the effects of different public health interventions. It is a developing country with a relatively higher level of alcohol-related intoxication. In 2005, the Russian government initiated a reform that introduced a number of such measures. The least-scrutinized among them became the introduction of the minimum authorized capital for companies that want to obtain licenses for the sale of alcohol. It is to be determined by the regional governments (10,000 — 1,000,000 RUR). Taking this into account, our presentation will answer the following question: *How does region's minimum authorized capital required for companies that want to obtain alcohol distribution licenses affect mortality associated with alcohol poisoning?*

Based on the assumption that availability of alcohol beverage matters for the volume and particularities of its consumption, we expect that the minimum share capital is capable to regulate the availability either through the restriction of the quantity of supply (number of companies) or through the restriction of demand (price level). Also, we take into account the level of poverty and ineffective law enforcement which in sum lead to the growth of unofficial alcohol consumption. To put it simply, we expect that economically poor and badly governed regions, that set a high bar for entering the official market, push the companies into a black zone, where the state is unable to do both, to enforce the regulation and to stop people from drinking liquids. So, our general expectation was that **a higher level of minimal share capital established in a region positively affects mortality associated with alcohol poisoning.**

We use panel data collected manually from a variety of sources for the analysis. The data range is 2000 – 2015. Our **central independent variable** is the level of minimum authorized capital in the region that was manually collected from the regional legislations and executive orders (we analyzed a set of legislations from each region in the period of 2005-2015). The dependent and control variables are gathered from Rosstat databases. Our **dependent variable** is an adult mortality rate (100,000 people) caused by fusel oil and alcohol poisoning (x45-ICD-10). We also control for the regional GDP/capita, the level of

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<sup>1</sup> World Health Organization, *Global Status Report on Alcohol and Health, 2014* (World Health Organization, 2014); Esser, M.B., Jernigan, D.H. Policy Approaches for Regulating Alcohol Marketing in a Global Context: A Public Health Perspective, in: *Annual Review of Public Health*. 2018. Vol. 39. P. 385-401.

urbanization, the density of population, life expectancy and the level of poverty across the Russian regions.

This is mixed-method research. First, we employ panel-data regressions with random effects for analyzing the impact of regulation on the cross-regional level. We analyze the entire population but then subsample rich and poor regions using the median of the regional GDP/capita in 2005. However, the main part of the research uses a quasi-experimental synthetic control method which allows us to trace the development of the region as if it was not affected by the intervention.

Synthetic control is an innovative method for impact evaluation<sup>2</sup>. We use the Synth package in R, originally developed by Alexis Diamond and Jens Hainmueller<sup>3</sup> for automatically evaluating the effects of the treatment when no control units are available. The synthetic control method uses the preexisting conditions of the unit under analysis and its “neighboring” units to assess the impact of an intervention. The method is particularly useful for us because we do not have any group to control for the absence of the treatment (the reform affected all regions).

The preliminary panel-data RE results show a statistically weak but negative association of the intervention with the alcohol mortality in rich regions (less alcohol-related mortality with a higher level of authorized capital). The opposite results emerge when analyzing poor regions (more alcohol-related mortality with a higher level of authorized capital). The synthetic control analysis gives a couple of insightful findings. Pictures 1 and 2 show the results for the rich regions: Belgorodskaya and Vologodskaya oblasts. Belgorod authorities had set a comparatively low level of minimum authorized capital and overperformed its synthetic control (pic 1). The results are statistically significant ( $p=.02$ ). We do not achieve statistically significant results for Vologodskaya oblast due to the statistically weird behavior of data (a too rapid decline of mortality rates after the intervention). The results are available in picture 2.

A vivid picture emerges when analyzing poor regions (pictures 3 and 4). The results give robust and statistically significant evidence that a high level of minimum authorized capital heavily increases the alcohol-related mortality rates in comparison with both, the average level and the “synthetic” control.

We preliminarily conclude that the low level of the minimum authorized capital tends to bring better public health outcomes than strict regulations of alcohol supply. It is so mostly because of poor regions (2005) that they tend to be unable to enforce compliance with the regulation. However, additional indicators should be investigated because in some regions we explicitly see data artifacts (Vologodskaya obl).

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<sup>2</sup> Alberto Abadie, Alexis Diamond, and Jens Hainmueller, “Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California’s Tobacco Control Program,” *Journal of the American Statistical Association* 105, no. 490 (June 1, 2010): 493–505, <https://doi.org/10.1198/jasa.2009.ap08746>; Alberto Abadie, Alexis Diamond, and Jens Hainmueller, “Comparative Politics and the Synthetic Control Method,” *American Journal of Political Science* 59, no. 2 (2015): 495–510, <https://doi.org/10.1111/ajps.12116>.

<sup>3</sup> Alberto Abadie, Alexis Diamond, and Jens Hainmueller, *SYNTH: Stata Module to Implement Synthetic Control Methods for Comparative Case Studies*, Statistical Software Components, 2014, <https://econpapers.repec.org/software/bocbocode/s457334.htm>.

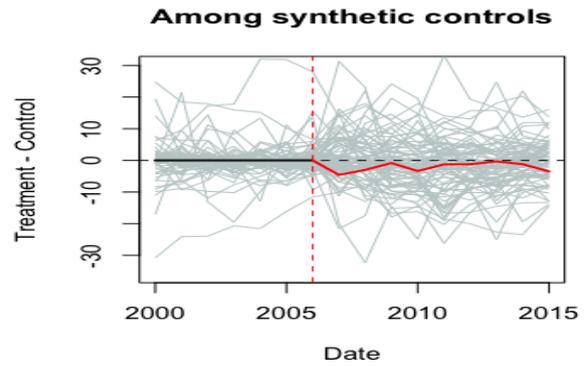
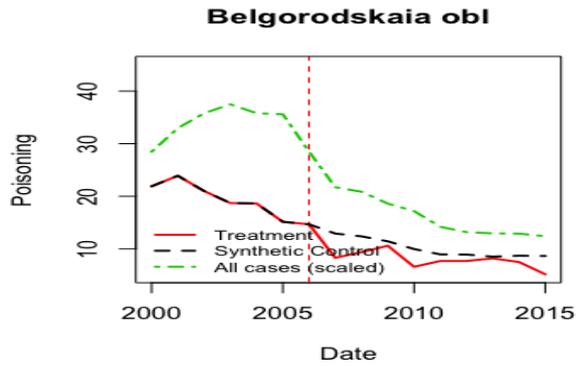


Figure 1. A rich region with low minimum authorized capital

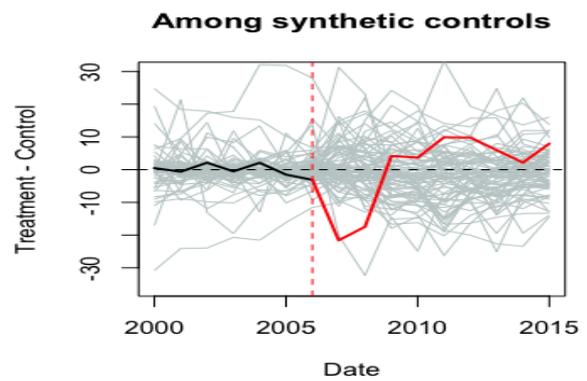
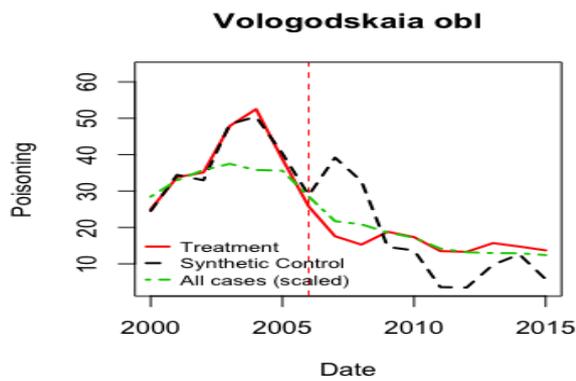


Figure 2. A rich region with high minimum authorized capital

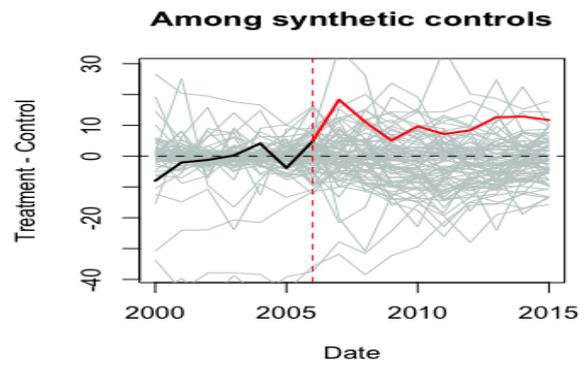
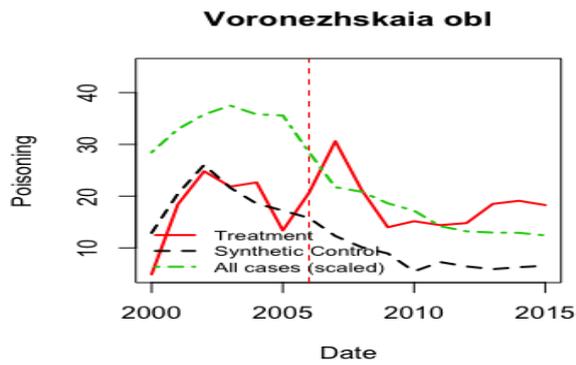


Figure 3. A poor region with high minimum authorized capital

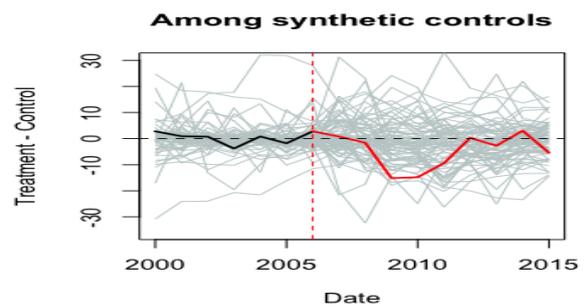
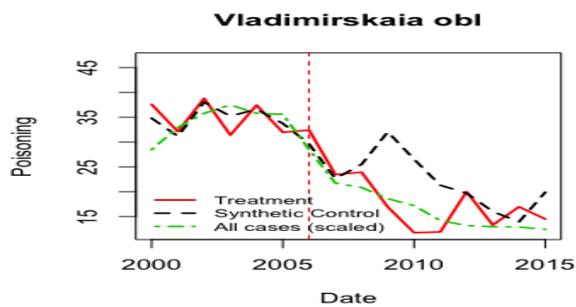


Figure 4. A poor region with low minimum authorized capital