Consumption of addictive goods in Russian regions and its impact on the quality of human capital

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ABSTRACT

Research relevance. Consumption of addictive goods and its impact on the human capital is widely discussed in contemporary research literature, not only on the micro- and macro- but also on the meso-level. At the present stage of the ongoing transformations we are prompted to reassess current approaches to this problem and to re-evaluate its public significance; moreover, practical application of available research outcomes should also be reconsidered. In Russia, consumption of addictive goods is subject to significant regional variations determined by socio-economic and other factors.

Research aim. The study is aimed at investigating the impact of consumption of addictive goods (alcohol) on the quality of Russian consumers’ human capital and at building a system of indicators to estimate this impact.

Data and methods. The study uses the methods of comparative analysis, expert estimation, ranking, and economic-statistical analysis, it also proposes a spatial approach to problems associated with regional variations in human capital of consumers of addictive goods. The study relies on the Russian and international research evidence; the data of the Federal State Statistics Service and its regional offices; expert estimates and the authors’ own calculations.

Results. The study demonstrates the connection between consumption of addictive goods and consumers’ human capital. It also describes a system of statistical indicators that can be used for estimating the impact of alcohol consumption on human capital and the criteria such indicators should meet. Based on the proposed indicator set, the study analyzes and compares the trends in human capital deterioration on the regional and national levels. As a result of cross-regional analysis, regions with the highest and lowest figures of human capital deterioration are identified.

Conclusions. As their addiction progresses, alcohol consumers face an increasing devaluation of their human capital. This parameter varies significantly across Russian regions due to a range of climatic, regional, and socio-economic factors, which should be taken into account when devising and implementing regional alcohol policies. The existing system of statistical observations uses a limited set of indicators that needs to be expanded to allow for a more comprehensive cross-regional analysis.

KEYWORDS

addictive goods, consumer behaviour, theory of consumer demand, government regulation, human capital, regional variation, regional policy

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Introduction

Consumption of harmful addictive goods presents an interesting problem for researchers. G. Becker [1], G. Edwards [2], J. Gruber [3], J.V. Koch, and S. Group [4] devote considerable attention to consequences of addictive consumer behaviour, in particular the development of bad habits. The scale of the negative consequences of consumption of goods posing health risks and the rapid deterioration of consumers' human capital determine the practical relevance of research in this area. Consumption of addictive goods and its negative consequences are determined by a range of economic, social, psychological and other factors, which vary considerably across regions and countries. That being said, significant regional variations are observed in consumption patterns as well. In Russia, the level of consumption of addictive goods is quite high, although there has been a long-term downward trend. For example, in the commodity market, the retail turnover of alcoholic beverages and tobacco products fell from 19% in 1970 to 9% in 2015 [5; 6]. However, there are multifold regional differences in the consumption of these goods and in its negative effects.

In the light of the above, the purpose of this study is to describe the changes in the human capital of consumers of addictive goods in Russian regions by focusing on alcohol consumption.

The following research objectives would facilitate the achievement of this aim. First, we are going to characterize the existing approaches in Russian and international research to the choice of indicators for analysis of the deterioration of human capital due to consumption of addictive goods. Second, we are going to develop a system of indicators to estimate the impact of alcohol consumption on consumers' human capital and apply these indicators for cross-regional comparative analysis (our findings can be used for devising national and regional alcohol policies). Finally, we will rank Russian regions depending on the levels of deterioration of the human capital caused by alcohol consumption.

Literature review

Economic analysis of addictive consumer behaviour relies on a range of methodological and theoretical frameworks, such as neoclassical economics, institutionalism and neoinstitutional-
lism. G. Becker and K. Murphy’s model of ‘rational addiction’ [7] laid the foundation for a large number of theoretical and practical studies, such as A. Maynard and A. Wagstaf’s study of government intervention into the illicit drug markets in the UK [8]; F. Chaloupka and K. Warner’s study of the myopic behaviour of consumers underestimating the risks of smoking [9]; D. Gieringer’s study of cannabis legalization [10]; mathematical analysis justifying controlled partial legalization of currently illicit drugs and the analysis of the data on cocaine and marijuana demand among the youth by F. Chaloupka, M. Grossman and J. Tauras [11]; liquor consumption analysis by B. Baltagi and J. Griffin [12]; K. Wangen’s discussion of the problems arising in the course of econometric implementation of rational addiction theory [13]; models of alcohol consumer behaviour in different stages – ‘periodic bingers’, ‘in recovery’, and ‘detox’ [14]; B. Gordon and B. Sun’s dynamic model of rational addiction [15]; and D. Evans’s study of the socio-economic impacts of marijuana legalization [16]. In Russia, there are comparatively few studies that use economic models of addictive behaviour with the exception of the research published by M. Levin [17], K. Filippov [18], M. Ponomareva [19] and L. Timofeev [20].

Although, according to the classical rational addiction theory, consumers of addictive goods are expected to behave as rational utility maximizers, in reality their behaviour tends to be more complex and inconsistent as they may lose sight of their budget constraints and ignore the future consequences (‘conscious’ lifetime utility maximization leading to the lethal outcome), which requires further analysis.

International research of the alcohol market, which is a typical addictive market, distinguishes between two types of consumption: the northern type characterized by heavy drinking of strong liquors while the southern type, by the prevalence of wine and beer consumed in relatively small doses1 [2; 15; 16]. There are also different forms of state regulation of addictive markets such as state monopolies over retailing alcoholic beverages or monopolies on manufacturing and distribution of alcohol; the use of state licensing to control the competition on the alcohol market [21–23]. In both cases, state plays a key role in this market.

Despite the diversity of consumption types and market regulation models as well as considerable regional disparities in socio-economic development, Russia continues to implement a unified federal alcohol policy.

**Indicators to measure the alcohol-related deterioration of consumers’ human capital**

Personal consumption is crucial for the formation of human capital. Consumption of vital goods ensures simple reproduction of human capital while consumption of such commodities as education, science, and medicine provides expanded reproduction of human capital. The human capital of an employee who has begun to consume addictive products in abnormal doses will decline. For a woman, it takes on average about 3–5 years to develop an addiction; for men, 8–9 years of regular consumption of alcoholic beverages [24]. According to the Labour Code of Russia, an employment contract can be terminated by the employer if an employee shows up to work in the state of alcohol, drug or toxic intoxication [25].

Top executives of enterprises consider alcohol abuse as the third most important health issue facing their employees (after smoking and cardiovascular diseases). Most top executives (74%) believe that alcohol abuse has a negative impact on their companies’ performance [26]. Alcohol addicts are likely to lose a stable source of income and engage in low-paid menial work. The share of unskilled labor in GDP of developed and developing countries, including Russia, is shrinking, and in technologically advanced countries it is already vanishingly small [26], so the human capital of unskilled workers will increase together with the growth rate of the real gross domestic product of the world economy or may remain unchanged.

C. Loveland-Cherry brought to light the inverse relationship between academic performance and alcohol consumption among students [27]. They also showed a positive relationship between increasing alcohol consumption, on the one hand, and low academic performance and school absenteeism, on the other. P. Cook and M. Moore found that heavy drinking in high school (consumption of alcohol twice a week) reduces the average number of years of schooling completed after high school by 2–3 years [28]. V. Kim and S. Roschin demonstrated that alcohol abuse among males has a significant negative effect on employment op-

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1 Economic forecast «The World in 2050» (2015). Joint Stock Company «PricewaterhouseCoopers Audit». (In Russ.) Retrieved from: http://www.pwc.ru/ru/press-releases/2015/economic_forecast_2050.html
portunities, wage level and the number of hours worked [6].

The WHO, G. Edwards [2], E. Andreev and I. Zbarskaya [29] show that consumption of addictive goods has a negative impact on people’s physical and mental health and increases their vulnerability to various illnesses. V. Grigoryev and Y. Zeitlin explain the increase in new HIV diagnoses since 1996 in Russia by the spreading substance use and abuse [30]. Alcohol plays an important role in Russian ‘supermortality’ – deaths from such causes as homicide, suicide, road accidents, injuries, fatalities and so on [31]. In Russia, 61% of deaths from external causes are alcohol-related. According to D. English, in developed countries, 34% of deaths from drowning, falls and road injuries as well as 47% of homicides, 41% of suicides and 44% fire deaths were attributable to alcohol consumption.

The influence of addictive goods on life expectancy was discussed by K. Danishevsky [32], A. Korotaev and D. Khalturina [33], A. Nemtsov and A. Podlazov [26; 34–35]. It is shown that an increase in effective consumption of 1 litre per person a year lowers the average life expectancy for men by 0,84 ± 0,04 years and for women, by 0,32 ± 0,03 years [34].

There is a broad range of indicators reflecting different aspects of alcohol-related human capital deterioration, which makes systematization of these indicators a problem in its own right [36; 37]. In the context of our study, however, the main challenge is to select the indicators suitable for estimating the influence of alcohol consumption on human capital and for making cross-regional comparisons. In our view, these indicators should meet the following criteria:

– they should be among the indicators used for regular monitoring by the official statistical and other state agencies or by expert organizations;

– they should include regional and federal-level data;

– they should reflect direct rather than indirect influence of alcohol consumption on the quality of human capital.

It is necessary to have access to long-term statistical observations in order to detect random variations, make forecasts, and use methods of economic-statistical analysis and modeling to formulate evidence-based guidelines and recommendations. Availability of the regional-level data, in its turn, enables us to draw cross-regional comparisons and bring to light the role of different factors in specific regions in shaping alcohol consumption patterns. As for the third requirement, it helps us eliminate ambiguity in the interpretations of the results. Table 1 summarizes the indicators we are going to use in our analysis.

| Table 1 |
|---------------------------------|
| Indicators of alcohol-related deterioration of human capital in Russian regions |
| Indicator | Notation |
|---------------------------------|
| Number of deaths from alcohol poisoning per 100,000 people, ths people | HC1 |
| Number of alcohol-related crimes per 100,000 people, units per year | HC2 |
| Household consumption expenditures on alcoholic beverages, % of aggregate consumer expenditures | HC3 |
| Number of newly diagnosed cases of alcoholism and alcohol-induced psychosis per 100,000 people | HC4 |
| Number of cases of recurrent alcoholism and alcohol-induced psychosis per 100,000 people | HC5 |
| Percentage of adult non-drinkers, % | HC6 |

Indicator HC1 is calculated by the Federal State Statistics Service (Rosstat) as a ratio of the number of alcohol-related deaths to mid-year population.

Indicator HC2 is calculated as a ratio of the number of alcohol-related crimes (from the number of investigated crimes) to mid-year population. For this indicator we used the data from Form ‘3-EGS’ of the Federal Statistical Monitoring ‘Data on Registered, Solved and Unsolved Crimes’, based on the reports of the information centres of regional law enforcement agencies.

Indicator HC3 relies on the data of the household sample surveys conducted by Rosstat.

Indicator HC4 is computed by Rosstat as an integer of the number of newly diagnosed cases of alcoholism and alcohol-induced psychosis and...
the end of year population by using the following formula:

\[ HC_4 = \frac{a}{b} \cdot 100,000, \]

where \( a \) is the number of newly diagnosed cases of alcohol and alcohol-induced psychosis and \( b \) is the end of year population;

Indicator \( HC_5 \) is the number of cases of recurrent alcoholism and alcohol-induced psychosis per 100,000 people calculated by Rosstat the same way as indicator \( HC_4 \).

Indicator \( HC_6 \) is based on the data provided by the Russian Public Opinion Research Center (VTsIOM). Their telephone survey covered 1,600 respondents aged 18 or older. The survey was conducted by using stratified dual-frame random sample based on a complete list of landline and mobile phone numbers operating in Russia. So far VTsIOM has provided no geographic breakouts of their survey data for Russian regions.

Analysis of the impact of alcohol consumption on human capital (national and regional aspects)

The above-described indicators were tested and found suitable for analyzing the impact of alcohol consumption on human capital in Russia on the regional and national levels. Table 2 illustrates the level of deterioration of human capital associated with alcohol consumption in Russia.

Overall, we can observe downward trends in the indicators characterizing the alcohol-related deterioration of human capital in Russia. The most remarkable trend is an almost 30% decrease in the number of deaths from alcohol poisoning. Interestingly, the share of alcohol in consumer expenditures of households has remained virtually unchanged. There is a gradual decrease in the number of alcohol-related crimes as well as in the number of people suffering from alcoholism and related psychiatric disorders. Nevertheless, these figures are still quite high in Russia.

At the next stage of our analysis, we compared these figures in different Russian regions by using the ranking method. First, each region was ranked for each of the indicators \( H_1 \)–\( H_5 \). Then, the total score for each region was calculated by summing its positions in each of the indicators. The regions were ranked (R) from the most successful (top of the ranking) to those lagging behind (bottom of the ranking). The less the region scored, the more successful it was and the higher was its position in the ranking. Since the information for some regions was incomplete, we used the data for 2015, which proved to be sufficient for our calculations and we could systematize the data for all the chosen indicators. Indicators \( HC_3 \) and \( HC_6 \) were excluded due to the lack of the necessary regional data [37]. Table 3 summarizes the results of our analysis.

The top of the ranking is occupied by such regions as Ingushetia, Chechnya, Dagestan, St. Petersburg and Moscow cities, North Ossetia, Krasnodar region, Karachay-Cherkessia, Belgorod and Stavropol regions. Religion is an important factor shaping consumer behavior in Muslim-majority regions: Ingushetia has the lowest rates of deaths caused by alcohol poisoning, alcoholism and alcohol-induced psychic disorders; Chechnya has the lowest level of alcohol-related crimes; Tatarstan ranks 12th, after Kabardino-Balkaria. Surprisingly, however, religion appears to be less significant in Bashkortostan, which has the 30th position in our ranking.

Table 2

| Indicator | 2014 | 2015 | 2016 | 2017 | 2018 |
|-----------|------|------|------|------|------|
| Number of deaths from alcohol poisoning per 100,000 people, ths people | 10.71 | 10.41 | 9.56 | 8.36 | 7.5  |
| Number of alcohol-related crimes per 100,000 people, units per year | 241.86 | 273.92 | 300.09 | 257.43 | 239.46 |
| Household consumption expenditures on alcoholic beverages, % of aggregate consumer expenditures | 1.7  | 1.8  | 1.7  | 1.6  | 1.6  |
| Number of newly diagnosed cases of alcoholism and alcohol-induced psychosis per 100,000 people | 74.6  | 70.9  | 64.9  | n/a  | n/a  |
| Number of cases of recurrent alcoholism and alcohol-induced psychosis per 100,000 people | 1155.4 | 1076.2 | 984  | n/a  | n/a  |
| Percentage of adult non-drinkers, % | n/a  | n/a  | n/a  | 39   | 40   |

Compiled by the authors by using the data of the Unified Interdepartmental Statistical Information System. Retrieved from: https://gks.ru/emiss (Accessed: 11.04.2020).
### Table 3

#### Ranking of Russian regions in terms of alcohol-related deterioration of human capital

| Regions                      | RHС₁ | RHС₂ | RHС₄ | RHС₅ | ΣRCH  | R ΣRCH |
|------------------------------|------|------|------|------|-------|--------|
| **Central Federal District** |      |      |      |      |       |        |
| Belgorod region              | 9    | 15   | 18   | 18   | 60    | 9      |
| Bryansk region               | 47   | 47   | 64   | 81   | 239   | 61     |
| Vladimir region              | 79   | 52   | 42   | 74   | 247   | 65     |
| Voronezh region              | 67   | 18   | 70   | 58   | 213   | 49     |
| Ivanovo region               | 85   | 37   | 68   | 86   | 276   | 75     |
| Kaluga region                | 57   | 33   | 41   | 38   | 169   | 35     |
| Kostroma region              | 48   | 46   | 43   | 78   | 215   | 51     |
| Kursk region                 | 24   | 45   | 62   | 52   | 183   | 41     |
| Lipetsk region               | 80   | 22   | 48   | 75   | 225   | 56     |
| Moscow region                | 49   | 11   | 19   | 40   | 119   | 21     |
| Orel region                  | 50   | 32   | 60   | 67   | 209   | 47     |
| Ryazan region                | 33   | 19   | 32   | 66   | 150   | 28     |
| Smolensk region              | 79   | 52   | 42   | 74   | 247   | 65     |
| Tver region                  | 67   | 18   | 70   | 58   | 213   | 49     |
| Tula region                  | 50   | 32   | 60   | 67   | 209   | 47     |
| Voronezh region              | 34   | 19   | 32   | 66   | 150   | 28     |
| Yaroslavl region             | 67   | 18   | 70   | 58   | 213   | 49     |
| City of Moscow               | 24   | 45   | 62   | 52   | 183   | 41     |
| **North-Western Federal District** |      |      |      |      |       |        |
| Republic of Karelia          | 61   | 72   | 81   | 77   | 291   | 74     |
| Republic of Komi             | 84   | 86   | 55   | 44   | 269   | 69     |
| Arkhangelsk region           | 73   | 67   | 46   | 57   | 243   | 63     |
| Komiysk Autonomous District  | 53   | 70   | 82   | 68   | 273   | 69     |
| Arkhangelsk region without autonomous districts | 75 | 66 | 46 | 56 | 243 | 63 |
| Vologda region               | 37   | 76   | 30   | 32   | 175   | 38     |
| Kaliningrad region           | 76   | 35   | 44   | 33   | 188   | 42     |
| Leningrad region             | 70   | 16   | 10   | 17   | 113   | 19     |
| Murmansk region              | 56   | 42   | 59   | 15   | 172   | 36     |
| Novgorod region              | 86   | 54   | 54   | 79   | 273   | 69     |
| Pskov region                 | 51   | 40   | 61   | 64   | 216   | 52     |
| City of St. Petersburg       | 18   | 4    | 4    | 4    | 30    | 4      |
| **Southern Federal District** |      |      |      |      |       |        |
| Republic of Adygea           | 46   | 21   | 25   | 73   | 165   | 33     |
| Republic of Kalmykia         | 42   | 20   | 13   | 31   | 86    | 14     |
| Republic of Crimea           | 38   | 12   | 67   | 36   | 153   | 29     |
| Krasnodar region             | 11   | 14   | 9    | 8    | 42    | 7      |
| Astrakhan region             | 23   | 30   | 15   | 30   | 98    | 16     |
| Volograd region              | 28   | 31   | 27   | 19   | 105   | 17     |
| Rostov region                | 5    | 9    | 12   | 34   | 60    | 9      |
| City of Sevastopol           | 19   | 10   | 75   | 16   | 120   | 22     |
| **North Caucasian Federal District** |      |      |      |      |       |        |
| Republic of Dagestan         | 3    | 3    | 3    | 3    | 12    | 3      |
| Republic of Ingushetia       | 1    | 2    | 1    | 1    | 5     | 1      |
| Kabardino-Balkarian Republic| 16   | 7    | 29   | 12   | 64    | 11     |
| Karachay-Cherkess Republic   | 7    | 8    | 7    | 29   | 51    | 8      |
| Republic of North Ossetia    | 4    | 5    | 17   | 7    | 33    | 6      |
| Chechen Republic             | 2    | 1    | 2    | 2    | 7     | 2      |
| Stavropol region             | 21   | 13   | 6    | 23   | 63    | 10     |
### Regions RHC1 RHC2 RHC4 RHC5 ∑RCH R ∑RCH

### Volga Federal District

| Region                          | RHC1 | RHC2 | RHC4 | RHC5 | ∑RCH | R | ∑RCH |
|---------------------------------|------|------|------|------|------|---|------|
| Republic of Bashkortostan       | 26   | 56   | 38   | 35   | 155  | 30| 185  |
| Mari El Republic                | 65   | 49   | 56   | 70   | 240  | 62| 302  |
| Republic of Mordovia            | 42   | 24   | 45   | 46   | 157  | 31| 188  |
| Republic of Tatarstan           | 20   | 23   | 22   | 14   | 79   | 12| 91   |
| Udmurt Republic                 | 78   | 78   | 66   | 53   | 275  | 71| 346  |
| Chuvash Republic                | 52   | 51   | 69   | 76   | 248  | 66| 314  |
| Perm region                     | 68   | 73   | 74   | 63   | 278  | 73| 351  |
| Kirov region                    | 43   | 79   | 31   | 60   | 213  | 49| 262  |
| Nizhny Novgorod region          | 71   | 29   | 33   | 82   | 215  | 51| 266  |
| Orenburg region                 | 39   | 53   | 76   | 22   | 190  | 43| 233  |
| Penza region                    | 41   | 34   | 77   | 54   | 206  | 46| 252  |
| Samara region                   | 6    | 28   | 23   | 24   | 81   | 13| 94   |
| Saratov region                  | 29   | 25   | 35   | 50   | 139  | 24| 163  |
| Ulyanovsk region                | 58   | 44   | 72   | 55   | 229  | 57| 286  |

### Ural Federal District

| Region                          | RHC1 | RHC2 | RHC4 | RHC5 | ∑RCH | R | ∑RCH |
|---------------------------------|------|------|------|------|------|---|------|
| Kurgan region                   | 77   | 85   | 63   | 42   | 267  | 68| 335  |
| Sverdlovsk region               | 60   | 58   | 40   | 9    | 167  | 34| 201  |
| Tyumen region                   | 15   | 62   | 34   | 27   | 138  | 23| 161  |
| Khanty-Mansiysk Autonomous District (Yugra) | 10   | 50   | 36   | 20   | 116  | 20| 136  |
| Yamalo-Nenetsk Autonomous District | 27   | 65   | 79   | 62   | 233  | 59| 292  |
| Tyumen region without autonomous districts | 14   | 71   | 34   | 26   | 145  | 27| 171  |
| Chelyabinsk region              | 74   | 68   | 51   | 39   | 232  | 58| 290  |

### Siberian Federal District

| Region                          | RHC1 | RHC2 | RHC4 | RHC5 | ∑RCH | R | ∑RCH |
|---------------------------------|------|------|------|------|------|---|------|
| Republic of Altai               | 44   | 87   | 26   | 25   | 182  | 40| 222  |
| Republic of Buryatia            | 69   | 84   | 16   | 11   | 180  | 39| 219  |
| Republic of Tyva                | 32   | 81   | 5    | 45   | 163  | 32| 205  |
| Republic of Khakassia           | 36   | 83   | 53   | 48   | 220  | 54| 274  |
| Altai region                    | 13   | 77   | 73   | 47   | 210  | 48| 258  |
| Zabaikalye region               | 63   | 82   | 57   | 41   | 243  | 63| 306  |
| Krasnoyarsk region              | 30   | 64   | 65   | 21   | 180  | 39| 219  |
| Irkutsk region                  | 31   | 59   | 71   | 49   | 210  | 48| 258  |
| Kemerovo region                 | 59   | 80   | 21   | 13   | 173  | 37| 206  |
| Novosibirsk region              | 34   | 36   | 11   | 10   | 91   | 15| 101  |
| Omsk region                     | 64   | 38   | 14   | 28   | 144  | 26| 170  |
| Tomsk region                    | 25   | 55   | 20   | 5    | 105  | 18| 113  |

### Far Eastern Federal District

| Region                          | RHC1 | RHC2 | RHC4 | RHC5 | ∑RCH | R | ∑RCH |
|---------------------------------|------|------|------|------|------|---|------|
| Republic of Sakha (Yakutia)     | 35   | 60   | 84   | 59   | 238  | 60| 308  |
| Kamchatka region                | 45   | 39   | 52   | 85   | 221  | 55| 276  |
| Primorye region                 | 8    | 57   | 39   | 37   | 141  | 25| 166  |
| Khabarovsk region               | 17   | 61   | 80   | 61   | 219  | 53| 272  |
| Amur region                     | 66   | 69   | 58   | 51   | 244  | 64| 308  |
| Magadan region                  | 81   | 75   | 85   | 84   | 325  | 78| 393  |
| Sakhalin region                 | 40   | 63   | 83   | 83   | 269  | 69| 338  |
| Jewish Autonomous District      | 55   | 48   | 78   | 69   | 250  | 67| 317  |
| Chukotka Autonomous District    | 87   | 74   | 86   | 87   | 334  | 76| 410  |

- **Successful regions**
- **Lagging regions**

Compiled by the authors by using the data of the Unified Interdepartmental Statistical Information System. Retrieved from: [https://gks.ru/emiss](https://gks.ru/emiss) (Accessed:12.02 2020).
Regions of the North-Caucasian Federal District – Dagestan, Ingushetia, Kabardino-Balkaria, Karachay-Cherkessia, North Ossetia, Chechnya and Stavropol region – are in the top of the regions that drink the least alcohol. It may seem surprising that the cities St. Petersburg and Moscow, Krasnodar and Belgorod regions are also at the top despite their relatively high alcohol consumption levels. Their results can be explained by greater efficiency of regional health care and law enforcement agencies. The cities Moscow and St. Petersburg and Krasnodar region have comparatively low alcohol-related crime rates and fewer cases of alcohol-induced disorders and alcoholism. Another driver of these regions’ performance is the higher income level, which means that their inhabitants can afford to consume more expensive and, therefore, less toxic alcohol.

The heaviest drinking regions are Chukotka Autonomous District, Karelia, Perm, Magadan and Ivanovo regions, Udmurtia, Nenets Autonomous District, Novgorod region, the Komi Republic, Sakhalin and Kurgan regions, and Jewish Autonomous District. Chukotka Autonomous District and Magadan region have the highest rates of deaths due to alcohol poisoning, alcohol-related crime and the number of cases of alcoholism and alcohol-induced psychosis. Karelia has a high incidence of alcohol-related crime and high rates of alcoholism and alcohol-induced disorders. Perm region also has to struggle with high rates of alcohol-related crime and newly diagnosed cases of alcoholism and alcohol-induced psychosis. Ivanovo region has the highest rate of deaths caused by alcohol poisoning and also the largest number of cases of recurrent alcoholism and alcohol-induced psychosis. In Udmurtia and Kurgan region, there are high rates of deaths caused by alcohol poisoning and alcohol-related crimes. The level of the latter is also high in Nenets Autonomous District, which also suffers from a high incidence of alcoholism and alcohol-induced psychosis. In Novgorod region, the alcohol-related death rate is one of the highest in Russia (in this indicator, Novgorod region is preceded by Chukotka Autonomous District) and a high rate of alcoholism (number of cases of recurrent alcoholism and alcohol-induced psychosis). The Republic of Komi has an extremely high level of alcohol-related violence and rate of deaths caused by alcohol poisoning. Both Sakhalin region and Jewish Autonomous District have high rates of alcoholism (reflected by the two indicators – the number of newly diagnosed cases of alcoholism and alcohol-induced psychosis and the number of cases of recurrent alcoholism and alcohol-induced psychosis).

In this case, it is evident that the high level of deterioration of human capital is closely linked to the general state of economic depression in some regions and the low level of per capita income. Another important characteristic shared by the lagging regions is that they are located remotely from large economic centres.

Conclusion

The results of our study have lead us to the following conclusions:

1. As the addiction progresses, consumption of addictive goods entails more and more severe deterioration of human capital of consumers. There is an inverse relationship between the value of the human capital and the costs incurred by the alcohol consumer.

2. Consumption of addictive goods and its negative consequences is determined by a range of economic, social, psychological, cultural and other factors, which vary considerably across regions and countries. Such regional variation of factors shapes the regional consumption patterns.

3. There is a great variety of indicators that can be used for assessment of the degree of human capital deterioration resulting from alcohol consumption. Their choice depends on the research goals and availability of reliable statistical data. For our study we chose a set of indicators that are regularly monitored on the national and regional level in Russia and that reflect the direct influence of alcohol consumption on human capital.

4. Our analysis based on the proposed set of indicators has shown that there are considerable regional variations in terms of human capital deterioration. Regions with higher income levels and those where religion plays an important role tend to be in a more favorable position than others. What causes more serious concern is that the group of lagging regions is quite large and includes 12 regions. The highest concentration of such regions is found in the Far Eastern and North-Western federal districts. These are peripheral, economically disadvantaged areas.
5. Our findings can be useful for devising and implementing regional policies aimed to curb consumption of goods with health risks. Such policies should focus on alcoholism prevention at the stages of family and community socialization and socialization in the schooling process. It should be noted, however, that, to achieve a long-term effect, such policies require stable macro-economic conditions and equalization of regional disparities.

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