

Social Factors that Make Work in Arctic Region Attractive

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Abstract — The article presents the results of the sociological research, aimed to find the social factors of the attractiveness of the Arctic for the young people. The authors, analyzing the motivation of the young specialists, ready to fulfil themselves professionally in the Arctic region, pay special attention to the study of such aspects as infrastructure development, working conditions, climatic features and the state of health of the respondents. The methods of the research allowed differentiating the respondents' answers by gender and by the degree of readiness to work in the Arctic. In other words, the authors were able to identify the difference in the assessment of the proposed factors between men and women, as well as between those who with different probability are going to be realized in the Arctic.

Key words – *Arctic, youth, motivation, social factors, attractiveness.*

I. INTRODUCTION

Currently, the importance of developing the Arctic region is growing both nationally and internationally. A focus on these areas is attributable to several objective processes, one of them being climate-related and the other being geopolitical. However the last event logically continues the first one with warmer climate and the melting of Arctic ice enhancing the role of the part of the globe in question for navigation and world trade. In its turn, this increases its geopolitical importance sharply. Let us add up significant hydrocarbon reserves in the Arctic and people's yearly growing demand for them.

There is a good reason why Russia, being one of the few countries with an extended national border in the Arctic zone, is actively striving to develop this region. And the challenge here is to recruit young skilled experts who would use their professional knowledge and skills to strengthen Russia's positions in the world with an increasing fight for resources and economic and political independence.

Not only politicians, but also scientists will be responsible for the improvement of the image of the Arctic for young talents since scientists can obtain objective empirical data to identify problem areas in the "employee demands/region opportunities" chain.

Foreign and national science accumulated some experience in studying the Arctic as a problem area [1-12]. However, currently we miss comprehensive studies of the aspects that can make the Arctic attractive to young talents. And this comprehensive review encompassing various science domains is most promising theoretically and practically. On the one hand, this approach facilitates further development of the Arctic as a concept and, on the other hand, it presents statistically proven data to be used by the government when implementing specific Arctic development initiatives.

The data presented here are the result of a focus on the comprehensive study of a mechanism that will mobilize young talents to work in the Arctic. This approach helped the research group consisting of economists, psychologists, and sociologists to achieve their goals and objectives and test their hypotheses.

A. Research Goal

The goal of this research is to identify any social factors that increase or reduce the students' willingness to work in the Arctic.

B. Objectives of the research

Objectives of the research are to evaluate the students' willingness to work in the Arctic, to identify their attitude to various aspects of work in the Arctic, expectations regarding their life and work there, as well as medical, social and demographic characteristics.

C. Research Hypothesis

1. Transport availability and ability to maintain a healthy lifestyle are the most significant factors that will make the Arctic attractive for young people.

2. People who are willing to work in the Arctic are less concerned about its climate or unfavourable factors.

3. Infrastructure is less significant when people are more willing to work in the Arctic region.

4. Work in the Arctic region mostly attracts men.

II. MATERIALS AND METHODS

A. Materials

Traditional analysis of documents and questionnaires were used to achieve the goal of the research. Participants were offered to complete a questionnaire to identify the following parameters:

- 1) degree of willingness to work in the Arctic;
- 2) approximate period of work in the Arctic;
- 3) expected income immediately upon arrival and three years later;
- 4) significance of various infrastructure;
- 5) concern about unfavourable factors and climate;
- 6) importance of favourable environmental conditions;
- 7) importance of access to high-tech medical services locally;
- 8) any chronic medical conditions;
- 9) probability of rejecting a job in the Arctic in case of exacerbation of chronic diseases;
- 10) implicit perception of the factors that would promote successful adaptation in the Polar region;
- 11) expected difficulty of adapting to the working conditions in the Arctic;
- 12) causes that could make the respondent reject a job in the Arctic;
- 13) 12 personality traits that impact successful adaptation to the Arctic working conditions;
- 14) assessment of the impact of prior job placement on the desire to work in the Arctic region;
- 15) implicit perception of work in the Arctic region;
- 16) demographics, including: gender, age, marital status, children (if any), course of training, and future profession.

This article only reviews social factors.

B. Data analysis

The statistics processing methods applied to data included the analysis of primary statistics, analysis of cross-tables (for nominative data), and comparative analysis (for metric data). Statistics processing was done using Statistica 10.0 software.

C. Participants

The study enrolled 900 people who were considering work in the Arctic with a varying degree of probability: 188 people considered it possible (“Yes” group), 201 were more likely to consider that possibility (“Yes/No” group), 169 were not likely to consider the possibility of working in the Arctic (“No/Yes” group), 314 were not considering that possibility at all (“No” group), and 28 respondents found it hard to answer (“?” group). A total of 282 out of 314 respondents who were not considering the possibility of working in the Arctic did not

want to work there at all regardless of circumstances, so they did not answer clarifying questions of the questionnaire about various factors that could make work in the Arctic attractive. Therefore, 618 respondents were selected for analysis (average age is 19.68) and answered all questions. Among respondents 335 were men and 283 - women. Overall, 194 respondents were first-year students, 132 respondents were second-year students, 118 were third-year students, 111 were fourth-year students, while 38 and 25 respondents were fifth- and sixth-year students, respectively. Six study participants were officially married, 579 were not married, and 33 found it hard to answer the question.

III. RESULTS AND DISCUSSION

Some Russian leading experts and researchers of social and economic aspects of the Arctic region sustainably mention space and territorial development of the Arctic as a priority. The scientists primarily link the need for improving transport infrastructure to the growth of prospects of the regional economic potential. The well-developed transport system is believed to be the key to attract business to the region. The active entrepreneurial activity will inevitably improve business results in the region and make it even more attractive for a future business community [13-15].

It can be assumed that the transport infrastructure also plays a significant role in attracting young talents to the Arctic zone. In order to test the first three hypotheses, our research group prompted the respondents to select the infrastructure facilities they found important. Cross tables were reviewed and revealed that infrastructure significance varied depending on the degree of the respondent’s willingness to work in the Arctic region (Table 1).

The participants were also prompted to name any unfavourable factors and climate aspects of concern for them in the Arctic region. The review of cross tables also revealed interrelation between the willingness to work in the Arctic and concern about unfavourable factors and climate (Table 2).

TABLE I. SIGNIFICANCE OF INFRASTRUCTURE FOR THE RESPONDENT GROUPS WHO ARE WILLING TO WORK IN THE ARCTIC TO DIFFERENT EXTENTS

Facilities	Groups and statistical differences					
	Yes,%	Y/N,%	N/Y,%	No,%	?,%	χ^2
Sports and wellness facilities	74.47	83.58	84.62	84.38	100.00	14.53 ^a
Hypermarkets	51.06	65.17	84.02	84.38	71.43	48.87 ^b
Coffee shops/ restaurants	35.64	48.76	55.03	78.13	53.57	26.86 ^b
Parks	43.09	68.66	69.23	78.13	67.86	39.74 ^b
Entertainment parks	6.38	7.96	15.98	21.88	7.14	15.07 ^a
Cinemas/theatres	53.72	64.68	75.15	87.50	67.86	25.49 ^b
Museums/ exhibitions	22.87	37.31	46.75	78.13	32.14	46.26 ^b
Airport/ railway station	75.00	88.56	92.31	87.50	89.29	24.88 ^b

^a $p \leq .01$

^b $p \leq .001$

TABLE II. CONCERN ABOUT UNFAVOURABLE FACTORS AND CLIMATE IN THE RESPONDENT GROUPS WHO ARE WILLING TO WORK IN THE ARCTIC TO DIFFERENT EXTENTS

Factors	Groups and statistical differences					
	Yes,%	Y/N,%	N/Y,%	No,%	?,%	χ^2
Lack of sun and warmth	18.09	33.33	53.25	62.50	53.57	61.64 ^d
High humidity	13.30	18.41	30.77	46.88	42.86	34.86 ^d
Strong winds	29.79	48.76	66.27	68.75	53.57	53.17 ^d
Low temperatures	17.02	32.34	49.70	65.63	50.00	59.39 ^d
Snowstorms	27.66	50.25	66.86	78.13	64.29	69.17 ^d
Polar night	13.30	13.93	22.49	21.88	14.29	7.52
Atmospheric pressure fluctuations	19.15	36.82	42.60	59.38	53.57	37.97 ^d
Increased electromagnetic activity	20.74	31.34	40.83	59.38	50.00	31.42 ^d
Low-quality drinking water	82.98	89.05	89.94	84.38	96.43	7.22
Unbalanced diet	63.30	72.14	73.96	78.13	78.57	7.70
Poor infrastructure at places of living	37.77	53.23	74.56	81.25	60.71	58.17 ^d
Harms and hazards in the workplace	50.53	58.71	79.29	90.63	78.57	47.00 ^d
Heavy clothes and shoes	8.51	17.91	30.18	50.00	35.71	47.49 ^d
Stressed working timetable (rotation shifts)	16.49	28.86	51.48	75.00	50.00	77.44 ^d
Limited mobility and communication	31.38	42.79	54.44	65.63	46.43	25.89 ^d
Monotonous environment	27.13	39.30	55.03	78.13	39.29	46.70 ^d
Deficient medical services	72.34	82.59	86.98	81.25	89.29	14.61 ^c
Low availability of transport	39.89	55.72	78.11	84.38	75.00	66.40 ^d
Increased social tension	31.91	40.80	55.62	71.88	42.86	31.36 ^d
Issues with recreation opportunities	42.55	63.68	70.41	81.25	53.57	38.92 ^d

^c. $p \leq .01$

^d. $p \leq .001$

Table 1 shows that the respondents who are likely to consider work in the Arctic care less about the infrastructure described above. Table 2 shows that the respondents who are likely to consider work in the Arctic are less concerned about various unfavourable factors and climate in the Arctic region. Nevertheless, there are some unfavourable factors all respondents are concerned about, which means that no statistically significant differences were identified for those items. They include low quality of drinking water and unbalanced diet, while such factor as polar night almost does not raise concern in either respondent group.

Let us consider in more detail the answers of the respondents who are more likely to consider work in the Arctic. Airports/railway station is a leading infrastructure indicator (75%). It is remarkable that when answering about potential unfavourable factors that raise concern among the respondents and are assumed to have a negative effect on their decision to work in the Arctic, the respondents in this group also mentioned “low availability of transport” (39.89%, Table 2). This proves that well-developed infrastructure is important for potential employees.

One might think that having the respondents’ average age (19.68 years old) such indicators as “coffee shops/restaurants”, “entertainment parks”, or “parks” could lead, but the study demonstrates the importance of transport infrastructure when choosing the Arctic as a potential job location. We speak about housing and utility infrastructure an individual uses almost daily and at least with specific frequency, which increases their value in people’s life. These are airports and railway stations.

The research also revealed the need for developing the entertainment infrastructure. When answering the above question about the infrastructure, the respondents also frequently chose “cinemas/theatres” (53.72%, Table 1). The next popular indicator is “parks” (43.09%) followed by “coffee shops/restaurants” (35.64%). The “Hypermarkets” indicator, which is not directly related to entertainment but is still listed among infrastructure, cannot be left out. Hypermarkets are a must for 51.06% of the respondents who are likely to consider work in the Arctic. Entertainment parks are least important with only 6.38% of respondents finding them necessary (Table 1).

The second important infrastructure facilities after airports and a railway station are sports and wellness facilities needed by 74.47% of all respondents which is a mere 0.53% less than the need in airports and a railway station. It can be confidently stated that these facilities are to be among priority when developing the infrastructure of the Arctic region.

The high importance of sports and wellness facilities organically correlates with an almost the same value for “deficient medical services” (72.34%) when discussing climate and unfavourable factors of concern (Table 3). Furthermore, the “harms and hazards in the workplace” item has a great value (50.53%), which can also be interpreted as a health concern and therefore can be related to the health area. We must also mention answers to other questions of the questionnaire covering medical aspects and overlapping with some of the above questions. Most respondents chose the “Priority” option, when assessing the statement, “You would classify access to local high-tech medical services as ... condition of living in the Arctic region.” However, the trend identified in the answers to previous questions persisted: generally, access to high-tech medical services is less important for the respondents who consider the possibility of working in the Arctic than for those who do not want to work there or doubt that this work is suitable for them. (“Yes”: 66.49%, “Yes/No”: 70.15%, “No/Yes”: 74.56%, “No”: 84.38%, “?”: 85.71%, $\chi^2= 14.80$, $p = .06$). There is good reason why willingness to work in the Arctic is inversely

related to agreement with the statement “Can you say that frequent exacerbations of your chronic medical conditions will make you reconsider the time you will stay in the Arctic” based on the respondents’ answers. In other words, people who consider work in the Arctic as possible are not held back by potential exacerbations of their chronic diseases, while it is a more important factor for those who are less likely to consider this work (Table 3).

TABLE III. DISTRIBUTION OF ANSWERS TO THE QUESTION “CAN YOU SAY THAT FREQUENT EXACERBATIONS OF YOUR CHRONIC MEDICAL CONDITIONS WILL MAKE YOU RECONSIDER THE TIME YOU WILL STAY IN THE ARCTIC” IN THE RESPONDENT GROUPS WHO ARE WILLING TO WORK IN THE ARCTIC TO DIFFERENT EXTENTS

Answers	Groups and statistical differences ^c				
	Yes, %	Y/N, %	N/Y, %	No, %	?, %
Yes	10.11	22.39	32.54	68.75	35.71
Very likely	30.32	38.81	30.77	3.13	39.29
Very unlikely	20.21	21.89	21.89	9.38	10.71
No	30.85	14.93	12.43	12.50	14.29
Hard to answer	8.51	1.99	2.37	6.25	0.00

^c $\chi^2 = 14.80, p \leq .001$

Most common chronic diseases mentioned in the questionnaire were ear, nose, throat conditions reported by 25.89 % of the respondents. It should be noted that these diseases are typical for 16.49% of the respondents willing to work in the Arctic and are slightly more common in people who doubt (“Yes/No”: 29.35%, “No/Yes”: 33.14 and “?”: 21.43%) or do not want to work in the Arctic region (25%). No statistically important differences were found as regards other chronic diseases (hypertension, lung or endocrine diseases) that have an effect on the ability to work in the Arctic. These conditions were overall much less common in the participants. It is interesting that “health problems” are a leading answer to the open-ended question “What would most probably make you reject a job in the Arctic zone?” There were statistical differences among groups of people who are willing to work in the Arctic to different extents. A total of 19.89% of the respondents who are willing to work in the Arctic mentioned health problems as the main demotivating factor, while others answered that way much more often.

All in all, 10 answer categories were identified to characterize potential reasons for rejecting a job in the Arctic. The distribution of answers in study groups is provided in Table 4.

TABLE IV. REASONS TO REJECT A JOB IN THE ARCTIC IN THE RESPONDENT GROUPS WHO ARE WILLING TO WORK THERE TO DIFFERENT EXTENTS

Reasons	Groups and statistical differences					
	Yes, %	Y/N, %	N/Y, %	No, %	?, %	χ^2
Evaded an answer	24.31	23.74	18.79	44.44	25.00	8.72
Low salary	30.94	25.25	40.00	22.22	17.86	12.58*
Hard working conditions	3.31	3.54	3.03	0.00	3.57	1.00

Reasons	Groups and statistical differences					
	Yes, %	Y/N, %	N/Y, %	No, %	?, %	χ^2
Health problems	19.89	28.28	38.79	25.93	17.86	16.9 ^e
Difficulties in the team	4.42	1.52	0.00	0.00	0.00	10.93 ^f
Unfavourable climate	4.97	10.61	15.76	14.81	14.29	11.5 ^f
Family factors	12.15	9.09	5.45	7.41	14.29	5.64
Underdeveloped infrastructure	8.29	11.62	13.94	7.41	10.71	3.24
Another job	4.42	2.53	3.03	0.00	7.14	3.29
Remoteness and isolation	3.87	5.05	4.24	3.70	3.57	0.40

^f $p \leq .05$

^e $p \leq .01$

Table 4 shows that, apart from health problems, low salary, unfavourable climate, and underdeveloped infrastructure have an adverse effect on the willingness to work in the Arctic.

It is interesting to note that there are statistically significant differences in an expected salary level depending on willingness to work in the Arctic. Thus, people who would like to work in the Arctic to a greater degree expect a lower income in three years as compared to those who are not inclined to choose work in the Arctic region (Table 5).

TABLE V. EXPECTED INCOME LEVEL AFTER THREE YEARS OF WORK IN THE ARCTIC IN THE RESPONDENT GROUPS WHO ARE WILLING TO WORK THERE TO DIFFERENT EXTENTS

Groups and statistical differences	Average salary
Yes, RUB	189945.05
Yes/No, RUB	151722.22
No/Yes, RUB	202544.91
No, RUB	270833.33
?, RUB	150714.29
F	6.16 ^h

^h $p \leq .001$

Thus, an income below an expected level can be a demotivating factor for those who are willing to work in the Arctic, while a low income is not the main reason to reject an Arctic job for those who are not considering this work altogether.

It should also be noted that only people inclined to work in the Arctic mentioned difficulties in the team (Table 4).

The review of gender differences showed that women were more concerned about various infrastructure, climate, and unfavourable factors and that confirmed the fourth hypothesis of the research.

Table 6 shows that women mention hypermarkets, parks, museums, and exhibitions as a must more often than men do.

Women are concerned about almost all unfavourable factors and climatic aspects of the Arctic region. The greatest differences included the rate of concerns about strong winds, snowstorms, atmospheric pressure fluctuations and low availability of transport (Table 7).

TABLE VI. GENDER DIFFERENCES IN THE EVALUATION OF THE IMPORTANCE OF INFRASTRUCTURE

Facilities	Groups and statistical differences		
	Men, %	Women, %	χ^2
Sports and wellness facilities	82.39	81.27	.12
Hypermarkets	58.21	78.09	27.56 ^j
Coffee shops/restaurants	41.79	55.83	12.11 ^j
Parks	50.75	74.20	35.65 ^j
Entertainment parks	6.57	14.84	11.31 ^j
Cinemas/theatres	60.60	71.38	7.89 ⁱ
Museums/exhibitions	28.36	48.06	25.43 ^j
Airport/railway station	80.90	90.81	12.12 ^j

ⁱ $p \leq .01$

^j $p \leq .001$

TABLE VII. GENDER DIFFERENCES IN CONCERNS ABOUT UNFAVOURABLE FACTORS AND CLIMATE

Factors	Groups and statistical differences		
	Men, %	Women, %	χ^2
Lack of sun and warmth	26.27	48.76	33.46 ^l
High humidity	15.22	31.80	23.94 ^l
Strong winds	36.72	63.60	44.37 ^l
Low temperatures	25.07	46.64	31.38 ^l
Snowstorms	37.01	65.37	49.33 ^l
Polar night	14.33	19.08	2.51
Atmospheric pressure fluctuations	20.90	51.59	63.57 ^l
Increased electromagnetic activity	21.19	47.00	46.18 ^l
Low-quality drinking water	85.67	89.75	2.34
Unbalanced diet	69.85	71.38	.172
Poor infrastructure at places of living	47.76	66.08	20.90 ^l
Harms and hazards in the workplace	57.31	72.79	16.031
Heavy clothes and shoes	11.64	31.80	37.741
Stressing working timetable (rotation shifts)	24.48	46.64	33.29 ^l
Limited mobility and communication	40.90	47.35	2.59
Monotonous environment	35.82	49.12	11.13 ^l
Deficient medical services	73.73	89.40	24.37 ^l

Factors	Groups and statistical differences		
	Men, %	Women, %	χ^2
Low availability of transport	47.76	73.14	40.98 ^l
Increased social tension	34.93	54.42	23.67 ^l
Issues with recreation opportunities	54.93	65.02	6.48 ^k
Lack of sun and warmth	26.27	48.76	33.46 ^l

^k $p \leq .05$

^l $p \leq .001$

The review of answers to the open-ended question in the questionnaire pertaining to potential reasons to reject a job in the Arctic region shows a greater concern of women about their health compared to men. Women consider existing/potential health issues as a serious reason to reject a job in harsh climatic environment of the Arctic zone (24.38 of men and 32.36 of women, $\chi^2 = 4.69$, $p \leq .05$).

In any case, the above items show that a medical factor is important when choosing the Arctic as a job location. Therefore, the government authorities that are directly involved in Arctic development should focus on medical infrastructure apart from transport facilities.

IV. CONCLUSION

The results obtained during the research confirmed the hypotheses. The processed statistical data show that infrastructure (in particular, transport) is a priority factor for employees in the Arctic region with medical services, including their availability (Hypothesis 1).

Despite the importance of climate and unfavourable factors, when living and working in the Arctic, for all respondent groups, the research revealed that those factors were less important for people more motivated to work in the Arctic (Hypothesis 2). The same trend was observed for transport, too. That factor was also less important for more motivated respondents (Hypothesis 3).

The gender analysis identified that work in the Arctic region had a “male face” with men being more willing to work in harsh climate. In particular, this is demonstrated by fewer social requirements for a job location as compared to women (Hypothesis 4).

It is reasonable to further study a gender aspect for decision-making with regard to work in the Arctic since it will certainly cast some light on why the Arctic zone is attractive to different social and demographic groups.

Acknowledgements

The paper is based on the research carried out with the financial support of the grant of the Russian Science Foundation (Project No. 17-78-20145, Social and economic mechanism for mobilising human resources in Arctic region of Russian Federation) in Saint-Petersburg Mining University.

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