Abstract
The precariat and its institutional forms are ubiquitous at the youth labour market. This paper focuses on the youth labour market precarization in regional and urban centres. Cluster analysis of scientific publications selected from the scientometric Scopus database, as well as the interpretation of research articles made it possible for us to identify and establish five main thematic aspects (clusters) discussed in scientific literature: "mobility issues", "education", "socio-demographic problems", "gender issues", and "sustainability". In the context of the analysed scientific works in the modern scientific discourse, we found that the formation of the precariat in modern regional and urban centres is associated with three key aspects: employment insecurity, insufficient income, and insufficient legal protection. Using a logit regression model, we identified factors that allows us to predict the likelihood of being included in the precariat group at the youth labour market. Overall, it appears that being a male and having a residence in the regional centre have a positive effect on the likelihood of getting into the precariat among young people, while work experience (work experience) and all types of education, especially higher education, reduce the likelihood of getting into the precariat. Our results might be important for urban planners and stakeholders as well as for the labour market strategists.

Keywords: precariat, informal employment, urban development, higher education, youth labour market, institutional changes, regional centres

1. INTRODUCTION

The problem of the precariat, a growing class of people marked by the job insecurity and intermittency, is increasingly becoming the subject of research in the social sciences (Volchik et al. 2018; Kim 2019; Russo & Terraneo 2020; Guidetti et al. 2021). It is becoming especially important with the growth of the large
cities – regional and urban centres – which are distinguished by the growing share of sharing economy and freelancing (Durante & Turvani 2018; Avdikos & Merkel 2020). For instance, Standing (2011) introduced the concept of precariat by analogy with a new class which is being formed under the influence of profound institutional and technological changes. In Standing’s work (which has now become classic and somewhat iconic), the precariat is contrasted with “salariat”, that is, the stable employment that provides social guarantees and long-term planning of the career as well as the life strategies of workers (Standing 2011). The concept of the salariat was formed in the post-war period in the context of the development of the welfare state. The dominance of neoliberal politics since the 1980s launched the process of forming new institutions and mechanisms for regulating the labour market. These new institutions no longer provided lifelong or stable employment, but were focused on promoting competition which meant increasing the vulnerability of workers (Strielkowski et al. 2016; Kentikelenis & Babb 2019; Nureev et al. 2020).

Various categories of workers are included in the precarization processes. The most vulnerable are young people, the elderly employees of the pre-retirement age, and persons with a vulnerable social status (e.g. migrants, workers in the shadow sectors of the (grey) economy, national minorities, etc.) (Bobkov et al. 2018; Lee 2019; Hürtgen 2021).

In the studies of many economists and sociologists, the formation of the precariat in modern economies is associated with three key aspects: precarious employment, insufficient income, and insufficient legal protection (employment insecurity, income inadequacy, and lack of rights and protection) (Kreshpaj et al. 2020). In the context of the present study, we aim to identify additional factors that affect the precarisation of young people, as one of the most vulnerable groups of the population.

The functioning of the youth labour market is associated with important economic and institutional constraints and characteristics (Filandri & Struffolino 2019; Simoni & Vlandas 2021). Therefore, young people often combine study and work, which translates into part-time or shady employment (Volchik et al. 2020). Such forms of employment by characteristics are largely associated with the formation of a stable precariat among young people, at least until the end of the time when education and employment are combined.

In the modern economy, the spread of precarious employment is also associated with the relative weakness of various worker associations, such as trade unions (Lazar & Sanchez 2019). Young people in many countries like Russia who are at the beginning of their careers and are just entering the labour market (many of them are moving from rural locations to large urban centres and megapolises) are also little involved in the activities of professional associations which negatively affects the stability of employment in the medium term.
The most important feature of the youth labour market is its institutional relationship with the development of the vocational education system. In Russian conditions, the quality and regional distribution of tertiary education is characterized by unevenness, which creates certain difficulties in certain regions for young people when entering the labour market (Fedorov & Mikhaylov 2019). Therefore, the study of the likelihood of precarisation of young people in the labour market is of particular importance in terms of obtaining a more complete and relevant understanding of the ongoing economic and social processes.

2. MATERIALS AND METHODS

In order to highlight the points raised above, we employed the bibliometric cluster analysis for this study using a sample of scientific publications obtained from the Elsevier’s Scopus database. The analysis was carried out in three stages. First, the evolution and geography of publications were considered. Second, clustering and network analysis was applied to study keyword matching. Third, a qualitative analysis for a deeper understanding of the processes of precarization in the youth labour market was employed, systematization of the main aspects was discussed, and the analysis of the most used methods and identification of factors affecting the likelihood of getting into the precarious group was carried out.

![Figure 1: Dynamics of publications on the query “youth” and “precarity” in the Scopus database](image)

For bibliometric analysis, we formed a sample using the data obtained from the Scopus database. Then, using the VOSviewer program, we carried out clustering and network analysis of bibliometric information reflecting interest in the problem of precarization of employment in the youth labour market. VOSviewer is a software tool for constructing and visualizing bibliometric networks that is often used for similar type of analysis (Andrade et al. 2020; Song et al. 2021).
At the first stage, we analysed the research interest in the problem using a key query (youth AND precarity AND "labour market") in Scopus database. Since we found 22 articles for this query, we expanded the key query to (youth AND precarity). In total, on the second request, we found 136 articles, with most of the work concentrated in the period from 2013 to 2021 (see Figure 1).

The largest number of articles on the topic under study was published in the United Kingdom, United States, as well as Australia (see Figure 2 above).

In the second step, we used the “co-occurrence” method as the main data analysis method, which clusters keywords according to the degree of how often they occur together in the same work (Buzydlowski 2015). Thus, keywords form thematic clusters. On the network maps shown in Fig. 2-3, the clusters are highlighted in different colours. The size of each keyword is determined by the “total link strength” metric, i.e. the strengths of the connection of a given keyword with all others, and the lines reflect the connections between two separate keywords (Van Eck et al. 2010, Van Eck & Waltman 2010).

Using the VOSviewer toolkit, we analysed keywords in terms of the intensity of term sharing. In order to combine similar terms, we have compiled a special thesaurus. To construct a scientometric map, we took only those keywords that occur in the sample at least three times. Thus, out of 806 concepts, we included 50 terms in the final selection of keywords. The visualization of the results is shown in Figure 3, where the size of the object reflects its overall strength of connections (“total link strength”), and the width of the lines is the "link strength" between the two terms.
FIGURE 3- KEYWORD CLUSTERING
SOURCE: Own results

FIGURE 4- OCCURRENCE OF KEYWORDS BY YEAR
SOURCE: Own results
The conducted cluster analysis, as well as reading and interpreting the articles made it possible to identify and establish five main aspects (clusters), which can be conventionally designated as the “Problem of mobility” (red), “The problem of education” (green), “Socio-demographic problems” (blue), Gender Issues (yellow) and Sustainability (purple). The interpretation of clusters is based on the keywords found in them, however, it should be noted that this division is rather arbitrary, since both clusters and terms are interrelated. It should be noted that many articles relate to specific issues related, in particular, to education, legislation, government support, class identification, medical aspects of growing up.

Figure 4 shows a scientometric map overlaid by year of publication, i.e. shows which words were used most often in publications of a particular year. The terms “Male”, “Female”, “Uncertainty”, “Longitudinal study”, etc., highlighted in yellow, indicate an increase in their popularity in recent publications.

3. DISCUSSION OF THE BIBLIOGRAPHIC ANALYSIS AND RESULTS

Our comprehensive analysis of publications has shown that labour markets in developed countries acquire some of the main characteristics associated with less developed labour markets, such as employment insecurity, informality and instability (Furlong & Kelly 2005). For example, the lack of job security is of great importance for the labour market in many European countries, while young people are the most vulnerable part of the population, which is faced with aspects characteristic of the modern labour market (such as the ‘low-pay, no-pay’ cycle, self-employment, ‘zero-hours contracts’) (Úbeda et al. 2020; MacDonald & Giazitzoglou 2019). Rural youth are potentially more at risk than their urban peers (McKee et al. 2017).

The growth in the size of the precariat is due to a misunderstanding of the role of the institutional environment in the formation of conditions (including incentives) for the development of competition and, moreover, a misunderstanding of the role of competition in modern social orders (Volchik & Posukhova 2016). The reasons for the inclusion of young people in the precariat are the desire of young people for freedom and individual ambitions, the attractiveness of new flexible forms of employment, the desire to combine work with travel / study, and, finally, the perception of precarious employment as a transitional stage in their quest for future stability (Wong & Au-Yeung 2019).

The neoliberal approach to labour market regulation, especially during the COVID-10 crisis, has led to serious disruptions to supply and demand in the labour market, which has contributed to increased instability and tensions (van Barneveld et al 2020). Many studies have identified youth as one of the groups most affected by these changes. In the discussion of youth employment issues, particular emphasis is placed on the role of social capital and contacts in the context of work trajectories in the youth...
labour market (Vacchiano 2021). The subjective aspect of precarious employment must also be taken into account, which manifests itself in an increase in mental health problems among young people entering the labour market. Precarious work can be associated with violations of safety requirements at work, feelings of betrayal and injustice as a result of violations of contractual relations with an employer, feelings of powerlessness and lack of control, lack of future opportunities, or denial of professional identity. Education quality problems, unrealistic expectations, poor working conditions and a widespread sense of unnecessary (pervasive sense of disposability) - major problems for their mental health (Einboden et al. 2021). Uncertainty in the youth labour market has changed the perception and understanding of young people's leisure time in the sense that young people have become afraid of “wasted” or unproductive time. The pressures associated with reconciling work and study or looking for work are fueling new forms of individualization and uncertainty (Batchelo et al. 2020).

Traditionally, one of the central places in labour market research is the gender issue. However, it should be noted that modern youth, in contrast to older generations, are characterized by the desire to resist racial and gender inequality, discrimination against sexual minorities - they all understand this within the framework of "intersectionality" (Milkman 2017). However, trends of discrimination in the youth labour market still persist: for example, women, racial and ethnic minorities and labour market participants from the lower social class are significantly more likely to have the most precarious early careers. Moreover, leaving the educational system with a completed associate, bachelor, or postgraduate degree protects against the most volatile career types (Witteveen 2017).

Understanding the relationship between precarious employment and other related conditions of employment, on the one hand, and living standards and health of the population, on the other, will help answer key questions regarding the benefits of precarious employment versus unemployment, and whether precarious employment is employment is a better option for workers' welfare than unemployment, and if so, under what circumstances. This issue is especially important, for example, for young people, who tend to use certain flexibility strategies to avoid unemployment. In this context, precarious employment can also be seen as a step forward towards improving the quality of employment.

4. EMPIRICAL MODEL

In order to assess the influence of factors on the likelihood of precarious employment, we used data from the Russian Monitoring of the Economic Situation and Health of the Population of the Higher School of Economics for 2020 (28th wave). Russia Longitudinal Monitoring survey, RLMS-HSE», conducted by National Research University "Higher School of Economics" and OOO "Demoscope" together with Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology of
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the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences. (RLMS-HSE 2021). According to the Federal Law of December 30, 2020 N 489-FZ "On youth policy in the Russian Federation", youth, young citizens are a socio-demographic group of persons aged 14 to 35 years, inclusive, therefore, for the purposes of this study, we will consider this age group. In this age cohort, many young people complete their studies and enter a conscious work activity. At the same time, there is a high proportion of people in this group who continue to combine study with work, which shifts their employment towards underemployment and less skilled types of work (Lyashok & Roshchin 2017). In this work, we do not take into account the unemployed, but consider persons who have income for the period under consideration.

The lowest employment rate among young people is observed at the age of 15-19 and 20-24, which can be explained by the desire to get higher education. At the age of 25-34, the employment rate exceeds 80% (Fig. 5). At the same time, in 2020, the employment rate of university graduates who graduated from educational institutions in 2017-2019 amounted to 80.6%.

Research shows that for both youth and adult workers, higher education brings significant economic returns (Rudakov 2015). The educational structure of youth in 2020 is shown in Fig. 6. The largest share of young people with higher education is at the age of 30-34. At the same time, among young people who received higher education in 2017-2019, the share of those whose main work is related to the received profession (specialty) is significantly higher: only 30% of young people have their main job not related to the received profession (specialty) (see Table 1).
The main criteria for the allocation of precariat units in the youth labour market are:

- work without formalization of labour relations;
- unofficial and partly unofficial wages;
- the presence of the enterprise’s debt to the employee, which for various reasons was not paid on time;
- reduction of wages or reduction of hours of work not at the request of the employee during the last 12 months;
- forced unpaid leave within the last 12 months;
- no annual paid leave in the last 12 months (Maslyukova & Volchik 2019).

To assess the influence of factors on the probability of precarious employment, we use binary logit regression:
where \( Y=1 \), if the respondent has the status of "precarious", and \( Y=0 \), if the respondent is a formal employee, \( x \) – regressors (control variables).

For logit regression, the logistic distribution function (S-shaped curve) is chosen as the function \( F \):

\[
p = F(Z) = \frac{e^Z}{1 + e^Z}
\]

(2)

\[
Z = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k
\]

(3)

The explanatory characteristics include:

- **Status** – dummy variable characterizing the type of settlement:
  - 1 – regional centre, 0 – rest.
- **Sex** – dummy variable for gender (1 - male, 0 - female)
- **Age** – the age of the respondent;
- **Exp** – the officially formalized general work experience, not counting the time of study at the full-time department of a university or technical school, years;
- **Marst** – dummy variable characterizing marital status (1 - never married + officially registered, but do not live together, 0 - are in a registered marriage + live together, but not registered).

A set of dummy variables that characterize the level of education:

- **high_ed** – completed higher;
- **sec_special_ed** - completed secondary specialized education;
- **sec_ed** - completed secondary education.

The main characteristics of the sample are presented in Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average</th>
<th>Median</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precar</td>
<td>0.391</td>
<td>0.000</td>
<td>0.488</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Status</td>
<td>0.465</td>
<td>0.000</td>
<td>0.499</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Sex</td>
<td>0.519</td>
<td>1.00</td>
<td>0.500</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Age</td>
<td>29.1</td>
<td>30.0</td>
<td>4.23</td>
<td>18.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Exp</td>
<td>7.27</td>
<td>7.17</td>
<td>4.00</td>
<td>0.0833</td>
<td>15.6</td>
</tr>
<tr>
<td>Marst</td>
<td>0.582</td>
<td>1.00</td>
<td>0.493</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>high_ed</td>
<td>0.402</td>
<td>0.000</td>
<td>0.491</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>sec_special_ed</td>
<td>0.285</td>
<td>0.000</td>
<td>0.452</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>sec_ed</td>
<td>0.252</td>
<td>0.000</td>
<td>0.434</td>
<td>0.000</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**SOURCE**: Own results

The calculations carried out on the sample indicate the following features associated with the socio-demographic characteristics of the respondents: 40% of the respondents have completed higher
education, the average age is 29 years, the average work experience of the respondents is 7 years, 58% of the respondents are not married. In order to interpret the influence of the listed factors on the probability of precarious employment, the marginal effects were calculated (Table 3).

### TABLE 3 - RESULTS OF EVALUATING THE COEFFICIENTS OF LOGIT REGRESSION

(DEPENDENT VARIABLE: PRECAR, STANDARD ERRORS - QML)

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Art. error</th>
<th>z</th>
<th>P-value</th>
<th>Marginal effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>const</td>
<td>0.603961</td>
<td>0.610124</td>
<td>0.9899</td>
<td>0.3222</td>
<td></td>
</tr>
<tr>
<td>status</td>
<td>0.326823</td>
<td>0.130395</td>
<td>2.506</td>
<td>0.0122**</td>
<td>0.0770070</td>
</tr>
<tr>
<td>sex</td>
<td>0.518153</td>
<td>0.130329</td>
<td>3.978</td>
<td>&lt;0.0001***</td>
<td>0.121139</td>
</tr>
<tr>
<td>age</td>
<td>0.00113940</td>
<td>0.0238935</td>
<td>0.04769</td>
<td>0.9620</td>
<td>0.000268226</td>
</tr>
<tr>
<td>exp</td>
<td>-0.119283</td>
<td>0.0257454</td>
<td>-4.633</td>
<td>&lt;0.0001***</td>
<td>-0.0280804</td>
</tr>
<tr>
<td>marst</td>
<td>-0.0494789</td>
<td>0.142352</td>
<td>-0.3476</td>
<td>0.7282</td>
<td>-0.0116587</td>
</tr>
<tr>
<td>high_ed</td>
<td>-1.00280</td>
<td>0.270511</td>
<td>-3.707</td>
<td>0.0002***</td>
<td>-0.226446</td>
</tr>
<tr>
<td>sec_special_ed</td>
<td>-0.747247</td>
<td>0.273053</td>
<td>-2.737</td>
<td>0.0062***</td>
<td>-0.166833</td>
</tr>
<tr>
<td>sec_ed</td>
<td>-0.152104</td>
<td>0.272920</td>
<td>-0.5573</td>
<td>0.5773</td>
<td>-0.0354569</td>
</tr>
<tr>
<td>Observations</td>
<td>1134</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: significance level ***p<0.01, ** p<0.05, * p<0.1; SOURCE: Own results based on RLMS-HSE (2021)

According to the results of the regression analysis, young workers living in the regional centre are 7% more likely to fall into the precariat category. Young men are 12% more likely to enter the precariat than women. Moreover, each additional year of official work experience reduces the likelihood of getting into the precariat by 2.8%. Getting a higher or specialized secondary education reduces the likelihood of being admitted to the precariat by 22.6% and 16.7%, respectively, compared to young people with less than secondary education.

The characteristics of the age and marital status of an individual do not significantly affect the likelihood of falling into the precariat group, however, the signs of the coefficients correspond to expectations. Also, a statistically insignificant predictor with a negative sign turned out to be sec_ed (completed secondary education) in comparison with the base category - do not have completed secondary education.

Thus, the modelling has shown that the factors (variables) associated with education are the most significant for youth stable employment. Indeed, access to education and the quality of education for young people are key in terms of the risks of entering the precariat. Therefore, the development of the vocational education system must be adapted to the requirements of the labour market, which requires flexibility of state policy in the field of education and regulation of labour relations.

### 5. CONCLUSIONS AND IMPLICATIONS

Overall, we can state that the young people are one of the most active social groups in the socius of the large urban centres of the modern economy. Therefore, a high level of precarization among young people...
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and a deterioration in the position of young people in labour markets can serve as an impetus for the marginalization of young people, non-integration of young people in normal social life and inclusion in criminal structures, which also increases social risks and costs for the state (Ryan 2001; Roshchin 2006). Thence, the study of the precarization of youth employment is an important aspect of the analysis of the functioning of the labour market due to the significance of this phenomenon in terms of understanding the processes of distribution of labour resources. The question of identifying the factors that determine the process of precarization in the youth labour market seems to be especially relevant.

The analysis of the determinants of precarious employment revealed that being a male and having a residence in the regional centre have a positive effect on the likelihood of getting into the precariat among young people, while work experience (seniority) and all types of education, especially higher education, reduces the likelihood of getting into the precariat. The influence of marital status and age turned out to be insignificant. The analysis of precarization in the youth labour market can be used to study the state of the youth labour market, on its basis, conclusions can be drawn about how the career of young workers after graduation from educational institutions the initial stages of the career development of young specialists, and, as a consequence, how the first employment experience affects the subsequent level of income and career.

Speaking about the pathways of future and further research, we recommend that the quantitative studies of the youth precariat can be supplemented by qualitative studies of specific institutions influencing the stability of employment, depending on national, cultural and regional factors. The likelihood of admission to the precariat for young people differs depending on the place of residence, education, and work experience. All of these factors are closely related to the quality of the institutional structure of the economy and the labour market in particular. Therefore, the integration of quantitative and qualitative research on the precariatisation of youth in the future can provide a deeper understanding of the ongoing processes.

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