Formation of the assessment method of the living environment comfortability in cities

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Abstract. A brief characteristic of the problem of urgent researches of living environment comfortability in Russian cities is presented in this article. The authors’ method of urban environment comfortability diagnostics on the basis of integrated approach is given. It is proved that living environment comfortability assessment should be based not only on the analysis of the official statistics, the data of Russian government and technical observations, but also on the city residents’ interview results. The sequence of method development of urban environment comfortability assessment is stated. This sequence includes such components as: the formation of the complex of factors defining urban comfortability state; the development of the set of criteria (aggregated into five groups), which render the content of factors and reflect a wide range of residents’ requirements; the defining of assessment intervals for each criterion. The formed method reflects the following groups of residents’ requirements to the urban environment comfortability: a) to the general living conditions in the city; b) to the conditions for labor / education / other productive work; c) to the conditions for leisure and creative activities; d) to social conditions; e) to psychological conditions. The results of approbation of the developed method are presented. The pilot study was held in Irkutsk, a Siberian city, and resulted in urban comfortability assessment. The results of this approbation allow to say about this method usefulness for getting quantitative assessment of the urban comfortability state in general and also in its isolated aspects.

1. Introduction

In 2017 in Russia a federal project “Formation of comfortable City Environment” was launched. One of the main objectives of this project is improvement of neardweling territories and social spaces. This project supposes to use the principle of feedback through the system of public voting, public consultations and further selection of perspective projects on improving of urban environment for its realization on the basis of budgetary financing.

During the last few years a number of researches and testing assessments of the comfortability and quality of the city environment were performed [1-3]. Their review and brief characteristic are presented in the article “Approaches to the diagnosis of the comfort of the living environment in cities” [4]. The investigations of some aspects of the living comfort in cities were also made [5-10].

Alongside the implicit practical significance of the mentioned investigations, it is necessary to underline their methodological drawbacks. First of all, in the majority of cases comfortability is a particular criterion of the quality of the urban environment. Further there is incompleteness and insufficient validity of criteria system, which are the bases for the research. More frequently, these are
limited enumeration of more enormous indicators, which can used only as bases for general conclusions on the state of the urban environment. It is difficult or completely impossible to reveal the true causes of such condition [1]. Sometimes assessments are formed with the help of the specific criteria system, which characterizes particular aspects of comfortability [5]. Some researches declare pursued the goal to point at the problems, connected with the living conditions in cities, but not to find out the causes of their appearance [11]. Some researchers declare just general set of tasks beginning with the assessment of the current condition of the urban environment, defining of the perspective directions of their development and ending with the efforts which stimulate citizens and business for improvement of cities [12]. In fact, the results of their researches and assessments are concentrated only on the formation of ratings of the territories by degree of the comfortability and quality of the urban environment. There is a doubt if such assessments will stimulate the activities for improving the comfort of the living environment in the “bottom-cities” in ratings, mentioned above. Moreover, in case of open publication, these ratings can provoke the population outflow from “bottom-cities” and reduce their conditions.

The next drawback is the data source characteristics. The official statistics, the data of Russian government, the technical observations are used generally [3]. The authors’ opinion is that for getting the valid assessment of the urban environment comfortability the using of the principle of feedback is necessary. In this case the results of survey of residents ought to be the data source and official data mentioned above should give only the initial information. We face the principle of feedback just in several researches of our observation [1, 2 and 13]. It is supposed that the statistic data plays the role of beacons indicating oases of prosperity and existing of some problems. But the real state of urban comfortability can be got only thanks to measuring results of comfortability sensations of residents. Such approach helps to find out a habitants’ attitude to urban authorities policy. It has an additional value in City-management improving.

2 Materials and Methods

As it was mentioned in our previous paper [4], the logic of our approach to the urban environment comfortability assessment is based on City-marketing product concept. According to this concept the city is considered to be a product with its own values. And habitants are considered to be consumers of city values [14]. The assessment method was carried out in the following sequence:

1. Based on regarding of Russian researchers’ achievements [1-3, 5, 6, 11, 12, 15-17], the set of factors, relatively fully determining the state of comfort of the urban living environment was formulated, as following:
   A. The state of the city economy (socio-economic position);
   B. Availability of work / education (jobs / places in educational institutions);
   C. Accessibility of housing;
   D. Quality and accessibility of goods and social and commercial services to the residents;
   E. Degree of infrastructure development in a broad sense (business, social, transport, communications);
   F. Security (including the social climate in the city);
   G. The state of the ecological environment;
   H. Conditions for cultural activities / leisure-time activities / creative activities of the residents.

2. A system of criteria clarifying the content of the points from A to H was determined. The system reflects the range of requirements brought by residents to the urban environment comfortability, such as:
   - Functional — these are direct requirements to the qualities and characteristics of the city and ways of their consumption (using):

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– Social — these are the requirements mediated by the influence of the society, in which a resident is deepened. These are different social strata to which the resident belongs (or aspire to belong). These are also relations between them;
– Psychological — these are requirements mediated by the mood, emotions, esthetic experiences which the urban environment should reflect to provide inhabitants with quite comfortable state of mind.

3. Intervals for assessment of each of the criteria were defined.

3 Results

The developed method for assessment of the urban environment comfortability resulted in five groups of criteria (requirements).

The first three groups perform the functional requirements to the city environment comfortability [4], such as:

Group 1 reflects general conditions of living in the city. This group consists of 38 criteria (e.g. the prices for real estate, the prices for rental housing; the quality of goods and services; air quality etc.);

Group 2 reflects conditions for labor / education / other productive work. This group consists of 27 criteria (e.g. the level of salaries; availability of job positions; education fee; conditions for business in the city etc.);

Group 3 reflects conditions for leisure and creative activities. This group consists of 20 criteria (e.g. availability of services of sport clubs and fitness clubs etc.; organization of the city clubs’ activities; the average price for a ticket to the theatre, cinema, concert hall etc.).

Groups 4 and 5 reflect social and psychological requirements of the residents which are quite new in Russian researching practice.

The study of social and psychological criteria of the urban environment comfortability begins with foreign authors’ works. These authors regard different aspects of relationships between a human being and the space he is surrounded with. Emotions and experiences of a man are connected with the exact place in conformity with the “Place Identity” concept [18]. This is the basis of people’s attachment to the place, and the sense of “being at home” appears. All these facts give the feeling of comfort and increase people’s self-feeling.

Such approach to the role of place in the formation of a man’s life comfortability sensation (as a social agent and as a personality) gives the possibility to assess not only emotional but also cognitive and behavioral aspects of a person’s and environment interaction. According to the theory of social situation, developed by R. G. Barker, the urban environment impacts a man’s behavior as it dictates him “proper behavior”. It is somehow coded in a man’s environment [19].

The 4th group in our method reflects social requirements and includes the following eleven criteria [20, 21]:

1. Equal possibilities for city residents. Assessment intervals:
   – the city gives equal possibilities;
   – the city does not give equal possibilities.
2. Economic stratification degree. Assessment intervals:
   – high;
   – low.
3. The level of social status stratification. Assessment intervals:
   – high;
   – low.
4. The degree of dwelling stratification (from elite housing to social housing). Assessment intervals:
   – high;
   – low.
5. The share of residents having personal transport. Assessment intervals:
   - high;
   - low.
6. Relations between drivers and pedestrians. Assessment intervals:
   - friendly;
   - hostile.
7. Relations among city residents. Assessment intervals:
   - friendly;
   - hostile.
8. City residents’ attitude to new comers. Assessment intervals:
   - friendly;
   - hostile.
9. City residents’ attitude to social minority. Assessment intervals:
   - friendly;
   - hostile.
10. City residents’ readiness to help anybody in the street. Assessment intervals:
    - high;
    - low.
11. Showing concern for children, disabled people and elder people. Assessment intervals:
    - general phenomenon;
    - rare phenomenon.

The last, 5th group reflects psychological requirements and includes the following eleven criteria [22, 23]:

1. Space freedom degree. Assessment intervals:
   - high;
   - low.
2. Personal freedom sensation degree. Assessment intervals:
   - high;
   - low.
3. The degree of containment (Security degree). Assessment intervals:
   - high;
   - low.
4. The sensation of the city romantic side. Assessment intervals:
   - exists;
   - does not exist.
5. City attractiveness level. Assessment intervals:
   - high;
   - low.
6. Psychological comfort level. Assessment intervals:
   - high;
   - low.
7. Mental intimacy sensation. Assessment intervals:
   - exists;
   - does not exist.
8. The beauty of the urban architecture. Assessment intervals:
   - exists;
   - does not exist.
9. The originality (uniqueness) of city image. Assessment intervals:
   - exists;
- does not exist.

10. The degree of pace of life imposing. Assessment intervals:
- high;
- low.

11. The possibility of intimity. Assessment intervals:
- exists;
- does not exist.

4 Discussion

The developed method was tested during pilot study of Irkutsk environment comfortability assessment. Irkutsk is a big Siberian city (the number of registered residents is 623.8 thousand people) [24].

The research was held in March, 2019. The object of the research is students, precisely, young people at age from 19 to 29, studying in Irkutsk higher educational institutions. The choice of this exact group is determined by two reasons:
1. The necessity of getting assessment from the most “perspective” age group, taking into consideration its coming job activities and life itself.
2. The indicators of Irkutsk young people migration are much higher than in other age strata of Irkutsk residents [24].

Two categories were selected in the youth group under research: the permanent residents who in Irkutsk not less than 15 years and newcomers who live in Irkutsk not more than four years. This selection of categories was caused by the difference of native city residents’ and newcomers’ estimations.

The research was performed by the method of questionnaire-based survey. The total number of respondents was 214 people, including 91 permanent residents and 123 newcomers.

The estimation of each criterion was made according to three-staged scale: “the worst” variant equaled to 0 points, “the medium” variant equaled 1 point and “the best” variant equaled 2 points. The usage of more wide-rank scales is possible in our further investigations.

The average assessments of city environment comfortability were calculated isolatedly in each group of criteria in points. Firstly, in the total group and secondly, per one criterion.

The results of the pilot study of Irkutsk students are presented in Table 1.

| Groups of criteria, reflecting… | Average assessment in the group | Average assessment per one criterion |
|---------------------------------|---------------------------------|-------------------------------------|
| functional requirements to environment comfortability – general living conditions | 29,2 | 0,77 |
| functional requirements to environment comfortability – conditions for labor / education / other productive work | 13,4 | 0,50 |
| functional requirements to environment comfortability – conditions for leisure and creative activities | 20,7 | 1,04 |
| social requirements to environment comfortability | 11,9 | 1,08 |
| psychological requirements to environment comfortability | 12,3 | 1,12 |
| Totally (the sum of 107 criteria) | 87,5 | 0,82 |
The results show that the average assessment of Irkutsk city environment comfortability, made by students, is rather low and equals 0.82 points out of 2 possible ones. It is lower than the middle level.

Different groups’ criteria analysis displays significant differences. Conditions for labor / education / other productive work get the lowest assessment (0.50 points). Conditions for leisure and creative activities are estimated at the middle level (1.04 points). Social and psychological conditions of environment comfortability got a bit higher estimations (1.08 points and 1.12 points accordingly).

Preliminary analysis of the comfortability criteria assessment among distinguished groups of students indicates some differences. The newcomers require less strict functional requirements to living conditions (in all three criteria groups). At the same time their estimation is lower in sphere of social and psychological components of the urban comfortability. The quantitative determination of these differences reliability was not executed because of insufficient scale of selections.

5 Conclusion

The developed method of urban living environment comfortability assessment is characterized by the following:

1) the method was developed on the bases of Russian and foreign researches;
2) urban environment comfortability can be assessed with the help of certain criteria system. This system reflects basic living conditions of people: functional (general living conditions, conditions for labor, education, leisure and creativity), social and psychological ones;
3) assessment is based on data got by the method of residents’ questionnaire-based survey;
4) the results of pilot study proved usefulness of this method for assessing urban environment comfortability.

In the future all Irkutsk residents are planned to be investigated according to a statistically reliable selection.

Systemic urban living environment comfortability researches can give the information about urban environment state in dynamics. This will permit to develop current and perspective plans of city comfortability improvement on more reliable bases, for its further development and ensuring of its competitiveness.

References

[1] T. A. Pershina, M. P. Gogoleva, Regional Economy and Management: electronic scientific journal, 2(46) (2016)
[2] A. P. Bagirova, O. V. Notman, J. Veress, Economy of Region, 13, 4 (2017)
[3] Urban environment quality index (URL: http://индекс.дом.рф 09.04.2019)
[4] Nina Polyakova, Vitaliy Zaleshin, Approaches to the diagnosis of the comfort of the living environment in cities, MATEC Web of Conferences, 212, 04001 (2018)
[5] V. G. Loginov, M. N. Ignatyeva, V. V. Balashenko, Economy of Region, 14, 4 (2018)
[6] A. P. Sukhodolov, E. V. Potapova, A. A. Izmestiev, I. K. Guseva, Bulletin of Baikal State University, 28, 2 (2018)
[7] G. Y. Morozova, I. D. Debelaya, Economy of Region, 14, 2 (2018)
[8] E. V. Varavin, M. V. Kozlova, Economy of Region, 14, 4 (2018)
[9] V. N. Bobkov, P. Herrmann, I. B. Kolmakov, E. V. Odintsova, Economy of Region, 14, 4 (2018)
[10] G. E. Zborovsky, P. A. Ambarova, Economy of Region, 14, 3 (2018)
[11] Russians named the main problems of places where they live (URL: https://www.rbc.ru/economics/04/04/2019/5ca4afbb9a794701e84f2a0f 04.04.2019)
[12] Government of Russia, *Order of the Government of the Russian Federation of 23.03.2019 N 510-r on approval of Formation method of urban environment quality index* (URL: http://government.ru/docs/36153/08.04.2019)

[13] G. A. Tsykunov, Bulletin of Baikal State University, 27, 2 (2017)

[14] N. V. Polyakova, V. E. Zaleshin, *Marketing of Territories*. (BSU Publishing, Irkutsk, Russia, 2017, 105 pp.)

[15] E. A. Kolodina, Bulletin of Baikal State University, 27, 2 (2017)

[16] E. A. Kolodina, Regional Economy and Management: electronic scientific journal, 3(55) (2018)

[17] T. D. Makarenko, L. B. Kovalchuk, Bulletin of Baikal State University, 26, 6 (2016)

[18] L. Hollis, *Cities are Good for You. The Genius of the Metropolis* (Authorized translation from English language edition, Strelka Press, Moscow, Russia, 2015, 432 pp.)

[19] R. G. Barker, *Ecological Psychology. Concepts and Methods for Studying the Environment of Human Behavior* (Stanford University Press, Stanford, Calif., 1968, 246 pp.)

[20] R. G. Barker and associates, *Habitats, Environments and Human Behavior* (Jossey-Bass, San Francisco, 1978, 327 pp.)

[21] R. G. Barker and Ph. Schoggen, *Qualities of Community Life* (Jossey-Bass, San Francisco, 1973, 562 pp.)

[22] C. Ellard, *Places of the Heart. The Psychogeography of Everyday Life* (Authorized translation from English language edition, Alpina Publisher, Moscow, Russia, 2019, 288 pp.)

[23] L. V. Smolova, *Vvedenie v psikhologiyu vzaimodeistviya s okruzhayushey sredoy* (Rech Publishing, St. Petersburg, Russia, 2008, 384 pp.)

[24] *The Internet portal of the Federal state statistics service – Irkutsk office* (URL: http://irkutskstat.gks.ru/wps/wcm/connect/rosstat_ts/irkutskstat/ru/statistics/03.04.2019)