



# The impact of long-distance travel to work on the health of commuting labour migrants: a literature review

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## Abstract

This literature review analyzes the impact of commuting labour migration (CLM) on human health. Travel time is one of the major CLM factors affecting migrant health in both active and passive way. Fatigue and stress associated with commuting result in the increased blood pressure and risk of obesity. The paper also dwells upon the impact of CLM on worker stress by gender. The article also explores the relationship between CLM and mortality. Work-life balance plays a crucial role in migrant health, while satisfaction with life can be compromised due to insecure life style associated with CLM. There is an effect of adaptation that can influence migrant health in a positive way.

In addition to negative aspects the article reviews benefits of CLM, including improved professional skills and higher income, and effective use of travel time. A special attention is payed to health of the Russian commuting migrants and their specific challenges and problems.

The article is a comprehensive review of scientific literature on CLM impact of human health. the results obtained can be used to develop programs and policies aimed at improving health of labour migrants and mitigating negative effects of commuting labour migration.

## Keywords

commuting labour migration, worker health, travel time, gender-specific differences, life satisfaction, productivity

**JEL codes:** I12, R41

## Background

Commuting labour migration (CLM, hereinafter this abbreviation will be used to refer to both the process itself and its participants, which is clear from the context) is a type of migration when individuals regularly travel (usually daily) between place of permanent residence and place of employment for long distances or a significant period of time (more than an hour). In the classical understanding of CLM, places of work and residence are usually located in different administrative entities (region and center, different cities, etc.). CLM in large agglomerations has long turned into a macroscopic phenomenon that must be considered and taken into account at the regional level. For example, in Russia's largest Moscow agglomeration, from 0.8 to 1.2 million people daily commute from outer suburbs to center.

The issues related to CLM are complex. First of all, these are issues of transport, transport infrastructure, which must cope with the daily massive flows of people. These are socio-political issues, since migrants live in one region and work in another, which causes problems in the social sphere, taxation, etc.

We are talking about the differentiation of income of the population depending on the place of residence: the rich center and the poor suburbs. This results in the priority growth and development of the center and the nearest suburbs to the detriment of the distant stagnant and depressed periphery.

It should be noted that the modern settlement system associated with the formation of agglomeration has proved to be highly sustainable and has hardly changed in recent years. Development of a new knowledge-based economy takes place mainly in large centers, where transaction costs and costs of access to knowledge are lower (Maskel & Malmberg 2007). At the same time, the distance of jobs from places of residence remains, and therefore CLM has been steadily maintained (without any decrease) for decades, as shown, among other things, by our research (Shitova & Shitov 2016). Summarizing the above, it should be noted that the modern organization of settlement (large agglomerations) currently remains the most effective economic form of existence of society; therefore, the process of commuting labour migration will remain an inevitable phenomenon in the long term.

But one question that is rarely touched upon is how long-distance daily commuting affects performance and health of migrants?

This paper presents an overview of world scientific publications on this topic, which, in our opinion, is of interest in terms of gaining new knowledge about CLM as a complex phenomenon. It also allows to identify the prospects for further relevant empirical research in this area.

The research **object** is the health of commuting labour migrants in various countries and regions.

The **method** of the study includes collection, analysis and discussion of international scientific publications on CLM health as follows:

- Structuring and combining fragmented knowledge into a coherent picture;
- Compiling data on the current state of the problem, considering various literature sources and comparing their information;
- Analyzing data and identifying main directions and trends in the development of the studied area;
- Identifying new potential areas for further research; and
- Considering and analyzing promising ideas and concepts that may have an impact on the future development of the topic.

Modern globalization processes and urbanization lead to the fact that more and more people around the world are challenged to daily commuting. This trend is especially noticeable in large metropolitan areas and industrial regions, where the place of residence and work can be located at a considerable distance from each other.

The research **relevance** is determined by several key factors:

1. **Impact on Physical Health:** Long-distance travel can result in chronic fatigue, nutritional problems and physical inactivity. This can affect the state of health and lead to the development of various diseases.
2. **Psychological Factors:** Daily long-distance travel can cause stress and anxiety, which in the long run can result in serious mental disorders.
3. **Social Impact:** Lack of time for family and personal life due to long-distance travel can affect social connections and quality of life in general.
4. **Economic Consequences:** Health problems of employees can lead to reduced productivity and work efficiency, negatively affecting the economic situation in the country.
5. **Environmental impact:** A higher number of long transport trips can have a negative impact on the environment.

Thus, the study of this problem has many aspects affecting physical and mental health of an individual, social relations, economic efficiency and environmental sustainability. Analysis and understanding of this phenomenon are necessary to develop effective strategies and policies aimed at promoting worker health and public well-being.

The **structure** of this article is a systematization of various aspects of the impact of long-distance travel on health of commuting labour migrants. The article discusses travel time– the most important factor affecting health, if we are to follow an intuitive hypothesis. **Active and passive commuting**, leading to various consequences, are considered as well. The article also addresses **direct impact** of working hours on health of commuting labour migrants, as well as on social relations in the family and society. In addition, most of the review is devoted to **psychological surveys** of CLM satisfaction with their lives. The effect of long-distance travel on **productivity** is separately analyzed. There are studies on **advantages of the CLM working hours**. Finally, particular attention is given to **health of the Russian commuting labour migrants**.

Before proceeding to further presentation of the material, we'd like to note that many factors affecting CLM health are interrelated, the relevant research is multifaceted and aimed at simultaneous solving several issues, therefore some of the material in different sections overlap when systematized. However, this cannot be avoided when analyzing such a complex phenomenon as commuting labour migration.

## Travel time

This is one of the main parameters that determines eligibility of workers to the group of commuting labour migrants. In million-plus cities, it takes long to get from one part of the city to another. It is obvious that commuting from suburbs of large cities to work in the center is much time consuming. As the analysis of publications shows, over the past decades, the time spent by CLM on commuting, despite the improved transport infrastructure, has hardly decreased, and even increased in many places. In Europe, over the last decade, the average has been consistently over half an hour, in 2015 it was 38 minutes (Rodrigue 2020). And although in the U.S. this time is significantly less – 25 minutes, there is also a slight in-

crease in the average, which was less than 22 minutes in the 1980s. The highest average travel time was recorded in China - 56 minutes (statistics from Russia are not given) (Rodrigue 2020). European data show that travel time from home to work has increased in almost all European countries over the past 20-30 years – in Germany, Spain, and the United Kingdom (Goerke & Lorenz 2017).

Most researchers proceed from the hypothesis that much time spent on commuting can negatively affect the commuter health in various aspects. Therefore, scientific papers and research are devoted to finding a correlation between various indicators of CLM health and duration of work travel. The correlation between the variable «travel time» and the analyzed health factors of commuting labour migrants is found in most studies, and this paper will further provide for systematization and description of such correlations. Therefore, without going into detail here are some examples. Commuting labour migrants travelling long distance to work are characterized by reduced level of physical activity (Christian 2012), severe sleep problems (Hansson et al. 2011; Christian 2012; Petrov et al. 2018) and mental conditions (Martin et al. 2014; Milner et al. 2017), they are less satisfied with their health (Künn-Nelen 2016; Urhonen et al. 2016), and have greater problems with excess weight (Zhang et al. 2014; Wild & Woodward 2019). Many other publications where the factor of time or home-work travel distance correlates with CLM health will be mentioned in further sections.

## Active and passive commuting

In many studies, the authors specifically emphasize that it is necessary to clearly distinguish active and passive commuting. In the first case, a CLM is either riding a public transport or driving a personal car, that is, his or her travel to work doesn't involve active physical activity. In the second case, commuting involves active physical activity. First of all, we are talking about cycling and walking. In terms of health effects, active and passive commuting fundamentally differ (Gatersleben & Uzzell 2007; Lindström 2008; Hansson et al. 2011). Active commuting is associated with the increased physical activity and a lower likelihood of obesity (Lindström 2008), it is more relaxing and exciting compared to a more stressful and monotonous travel by car or public transport (Gatersleben & Uzzell 2007; Gottholmseder et al. 2009; Scheepers et al. 2014). Cyclists consider themselves the happiest among all CLM groups (Wild & Woodward 2019) and have a lower risk of cardiovascular disease (Hamer & Chida 2008) and overweight (Lindström 2008; Flint et al. 2014; Tajalli & Hajbabaie 2017; Echeverría et al. 2022).

Jacob et al. (2021) identified better physical health in women and improved mental health in both sexes when shifting from car to active transport (British BHPS panel data).

Ma and Ye (2019) found a positive association between active commuting (i.e. walking or cycling to work) and productivity in middle-aged workers in Australia. Active travelling is associated with fewer negative health effects (Hansson et al. 2011) and greater satisfaction with commuting (Olsson et al. 2013) compared to traveling by car, train or bus. It should be noted that the latter research had 484 citations (as of 02.07.2023), suggesting a very high interest in this topic.

Individuals who shift from active travel to car experience a significant deterioration of physical health and lower health satisfaction, as well as deterioration of mental health when shifting from active travel to public transport. Since different types of commuting may have opposite effects on health, their combination can lead to the effect neutralizing.

In conclusion, we'd like to note an initiative of the British government, in 2017, it announced an investment of 1.2 billion pounds in the system to encourage people to ride a bicycle to work (Jacob et al. 2021). The goal is twofold – to stimulate physical activity and improve health, as well as reduce harmful emissions to the atmosphere.

Comparing active and passive commuting gives rise to a debatable question: is it correct to classify people who walk to work or get to work by bicycle as commuting labour migrants? On the one hand, in the old classical definition, CLM are people who travel long distances to work and back home. On the other hand, many researchers believe that it is travel time rather than the distance traveled, that is of prime importance for commuting labour migrants. From this point of view, three people who spend an hour to get to work: one travels 60 km by train, the second one - 20 km by bicycle, and the third one walks 5 kilometers, can be considered as CLM. That is why the variable “travel time” is considered the main parameter, and studies compare behaviour of people (who are considered to be CLM) who spend comparable time on commuting, but use different travel methods, including active ones.

## The impact of CLM on health indicators

It is obvious that the impact of CLM on health is not clearly pronounced – changes are taking place very slowly over a long period of time. However, the nature of changes may be different. Therefore, studies on this phenomenon are complex and complicated. Nevertheless, their number is quite large. One of the main parameters studied is stress experienced by commuting labour migrants.

Passive commuting can affect various types of health indicators. Both fatigue and symptoms of chronic stress (objective and subjective) can cause cardiovascular abnormalities and dysfunction, provoking the onset of heart disease. The review by Lyons and Chatterjee (2008) analyzes possible mechanisms. For example, the authors mention several studies showing that longer travel time is associated with fatigue symptoms (Kageyama et al. 1998), and reduced sleep time (Walsleben et al. 1999; Costal et al. 1988). Moreover, several studies show that commuting is associated with self-perception of stress (Schaeffer et al. 1988; Hennessy & Wiesenthal 1999; Wener et al. 2003; Gottholmseder et al. 2009), the level of which increases with age (Gottholmseder et al. 2009; Rürger & Ruppenthal 2010). There are also publications showing a clear link between commuting and objective indicators of (cardiovascular) stress; for example, White and Rotton (1998) showed that commuting is associated with the increased heart rate and increased systolic blood pressure. And overstrain on the way is associated not only with high blood pressure, but also with disorders of the musculoskeletal system and increased anxiety (Koslowsky et al. 1995). Longer travel time is associated with a higher body mass index (BMI), and every additional hour spent in the car per day is associated with a 6% increase in the likelihood of obesity (Frank et al. 2004; Lindström 2008). Longer distances are associated with higher blood pressure, obesity, poor sleep quality, fatigue, and low self-reported health (Hansson et al. 2011; Hoehner et al. 2012).

These indirect health effects of commuting are predictive factors of cardiovascular disease, diabetes and some forms of cancer (Hoehner et al. 2012), and, consequently, the risk of mortality.

It has been found that the perceived stress associated with commuting varies depending on the related factors such traffic and available system of public transport. Lack of control over commuting and its unpredictability, for example, traffic jams, behaviour of other driv-

ers, or unreliable public transport, increase the perceived stress associated with commuting (Koslowsky et al. 1996; Kluger 1998; Evans et al. 2002; Gottholmseder et al. 2009).

The impact of commuting depends on whether a commuting labour migrant is an active or passive participant. It turned out that the stress level of CLM drivers is higher than that of bus passengers CLM (Wener & Evans 2011). In addition, commuting by driving a car has been found to increase physiological stress markers such as blood pressure and neuroendocrine hormone levels (Robinson 1991). Moreover, traffic jams also increase blood pressure in car drivers (White & Rotton 1998).

**Gender-specific differences.** A number of studies showed that stress associated with commuting also varies depending on gender (Novaco et al. 1991). Women report higher levels of stress associated with commuting compared to men. This, in turn, can lead to more severe negative consequences for female health. Roberts et al. (2011) presented evidence that a negative relationship between time on commuting and well-being is registered in females only, this is due to a higher responsibility for housework and childcare compared to males rather than a shorter business week or occupational segregation (Collet & Dauber 2010). Roberts et al. (2011) provides an even more detailed review of earlier research on various aspects of gender-specific effects on health of commuting labour migrants. For more information, please, refer to Roberts et al. (2011) since we are not privileged to fully cover this problem within the framework of the article. However, Australian studies failed to identify any significant gender-specific differences in effects of commuting (Gottholmseder et al. 2009).

**CLM and mortality.** Swedish scientists analyzed the relationship between long-distance travel and mortality based on Swedish ASTID data (1985-2008) - this is a unique and one-of-a-kind survey based on data on the entire population (Sandow et al. 2014). The results show that women commuting long distances face a significantly higher risk of mortality compared to women commuting short distances. This may be due to differences in income and education: for example, significantly higher mortality rates among women with the experience of long-distance commuting are registered among those with low education and low income.

The situation is completely different among males: their risks of mortality do not seem to be associated with commuting long distances. Thus, the results show that there are different mechanisms of the relationship between commuting and mortality among males and females.

## Home-work balance

It is not always easy for passengers to combine work and life in case of commuting long distances on a daily basis. Long commutes reduce the amount of time available for other daily activities and may suggest a lack of energy and/or time to balance work and family life well.

It was found that a long travel time (more than 60 minutes in one direction) increases conflicts in family and negatively affects the commuter physical and mental health (Jansen et al. 2003; Hämmig et al. 2009).

Swiss researchers have found a significant correlation between CLM and work-home imbalance, and the associated negative health consequences for both women and men (Hämmig et al. 2009). However, a Dutch study showed that this correlation is significant only among females (Jansen et al. 2003).

## Satisfaction

Another aspect that interests researchers (interdisciplinary economics and psychology studies) is the level of satisfaction with life in general and its various aspects in particular. Do commuting labour migrants and those who work near home differ in this regard? On the one hand, it is obvious that longer travel is compensated by a better career or financial status (higher salary or lower cost of housing). However, there is a hypothesis that this compensation is not full, and commuting labour migrants have lower life satisfaction (Fults 2010). This hypothesis is most often confirmed, as it was in Sweden (Olsson et al. 2013), the U.S. (Choi et al. 2013), the United Kingdom (ONS 2014), China (Nie & Sousa-Poza 2018) and Russia (Shitova & Shitov 2016).

One of the problems of these studies is the quantitative assessment of “life satisfaction”, which is a subjective concept. For example, a solution to the problem was proposed – to introduce a concept of **Subjective Well-Being** (SWB) as a set of concepts (Clark et al. 2019). Another term is **empirical well-being**, which is understood as mood, feeling of joy and happiness (Clark et al. 2019). Finally, **mental health**, as measured by the **GHQ-12** General Health Questionnaire (which includes 12 questions designed to identify symptoms of psychological stress) (Goldberg & Williams 1988). The GHQ-12 methodology should be considered as the most adequate quantitative assessment method that has been verified by fairly rigorous and extensive checks.

German panel data showed that travel time is negatively associated with life satisfaction (Stutzer & Frey 2008). It turned out that German passengers commuting long distances (one hour or more) should be paid 40% more in order to be as satisfied as those who commute shorter distances. British Household Panel Data (BHPS) show that longer travel time reduces mental well-being only among females rather than males (Roberts et al. 2011). Similar data were obtained by Dickerson et al. (2014), however, they failed to find any significant relationship between travel time and overall life satisfaction, unlike Stutzer and Frey (2008).

A comprehensive British study on the impact of commuting on attitudes to life showed contradictory results (Clark et al. 2019). It has been found that longer work travel is associated with lower satisfaction with work and leisure, increased stress and deteriorated mental health. The strongest association is found with leisure satisfaction. Despite the negative associations, longer travel time was not related to lower overall life satisfaction. Workers in England seem to be able to balance the negative aspects of commuting with broader benefits, such as better access to employment, income and housing. Job satisfaction among young people and low-income groups is not negatively associated with longer travel time. Finally, longer travel time has a stronger negative association with female job satisfaction compared to males.

On average, stress reduces satisfaction with commuting (Abou-Zeid & Ben-Akiva 2011), and morning travel is perceived as particularly unpleasant and has a negative effect on subjective well-being [Kahneman & Krueger 2006]. Long traffic jams on highways cause depression [Wang et al. 2019].

**Effect of adaptation.** The experience of commuting makes it more predictable and, as it has been found, makes the commute less stressful reducing a negative attitude towards life experienced by a person due to lack of time [Kluger 1998]. This implies adaptation to commuting and alleviation of negative consequences for daily life and health of commuting labour migrants [Rüger & Ruppenthal 2010].

## Productivity

The impact of commuting on productivity in various aspects is quite an interesting question from the employer's point of view. However, there is relatively little scientific research on this topic (compared to other topics), apparently due to the complexity of collecting and low availability of relevant data. Studies show that long travel time is associated with a higher rate of absenteeism [Costal et al. 1988; Kluger 1998; van Ommeren & Gutiérrez-i-Puigarnau 2011; Ma & Ye 2019; Giménez-Nadal et al. 2022]. However, German SOEP data failed to demonstrate that distance to work is generally associated with higher absence from work due to illness [Goerke & Lorenz 2017]. Employees who commute long distances are absent from work about 20% more often than those who don't.

Another hypothesis (model) suggests that people whose commute takes long show a lower labour productivity [Ross & Zenou 2008]. In general, this hypothesis is confirmed, but not convincingly and with a number of exceptions [Ma & Ye 2019].

## Advantages of commuting labour migration

In contrast to the generally accepted opinion that the time of commuting is a source of futility that needs to be minimized, some studies claim that activities that can be performed while traveling can be beneficial (Mokhtarian & Salomon 2001; Lyons & Urry 2005). Examples include reading, listening to music or relaxing, mentally switching between work and home, or using time to work with modern information technology. It is noted that a work travel per se may be desirable due to the following factors – enjoying the environment or speed. Or a work travel provides a driving pleasure, indicating a high social status (awareness and demonstration of this fact) (Mokhtarian & Salomon 2001).

Passengers who actively use their travel time also report feeling healthier and less stressed, as well as experiencing less travel futility compared to those who fail to actively use travel time (Lyons & Urry 2005; Ory & Mokhtarian 2005; Gottholmseder et al. 2009). However, not all long-distance passengers have the opportunity to actively use their travel time. For example, driving does not allow you to read, work on a laptop or sleep while commuting, unlike riding public transport. There are studies that consider boredom of commuters as a strong negative factor (Gatersleben & Uzzell 2007), and long commutes - as the main cause of social isolation (Putnam 2000).

## Health of the Russian commuting labour migrants

There are hardly any Russian studies on CLM health. One of few research (Antonova 2018) compared the lifestyle of Muscovites (173 people) and commuting labour migrants from the Moscow region (111 people) on the basis of a survey. Quantitative analysis failed to identify any statistically significant differences in lifestyle of the two groups in terms of health and family relations. However, the author recognizes the limitations of data and research methods and speaks of “major trends”: Muscovites take better care of their health, while CLM more often enter into family relations fraught with problems related to insufficient time for communication. In another similar study, Pay (2019) undertakes an assessment of social aspects of CLM life, but the analysis is based on the results of the in-depth interviews with

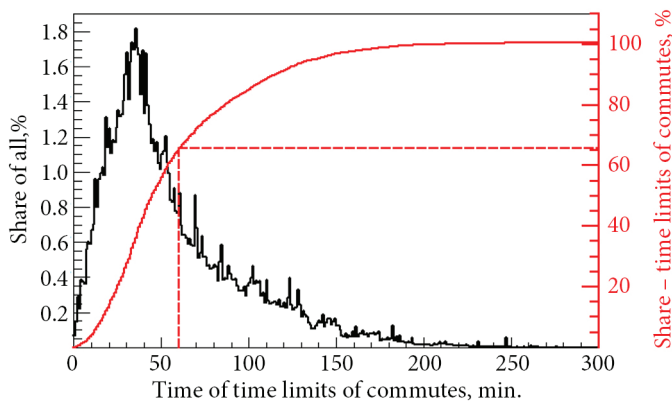


only 20 respondents, making it impossible to consider the obtained results significant. The main result is the conclusion that CLM are doing well socially (in terms of time, work, family relations), but would like to move closer to the place of work.

A noticeably larger body of literature is devoted to the health of migrants involved in non-return, temporary (seasonal) migration, however, the style and living conditions of this group of migrants are radically different from the conditions in which commuting labour migrants live. Therefore, the results and conclusions of these papers are the subject of a separate research.

According to a number of signs, it can be argued that the health impact experienced by the Russian commuting labour migrants is no less than that of CLM of the busiest centers in other countries. This is due to the fact that it takes about the same time to the Russian CLM to commute alike CLM in other countries. For example, the average one-way travel in the Moscow agglomeration takes about 35-40 minutes, and the share of CLM traveling for more than one hour is 35% (the 2001 data, Fig. 1). A more recent study (Yandex 2016) showed that in 2016 the average travel time did not change (exactly the same 35-40 minutes), while the share of those traveling for more than an hour equaled to 10%. However, this study analyzed data only for the zone inside the Moscow small ring road with a radius of 40-50 km around Moscow. If we are to take into account that CLM travel to Moscow from the entire Moscow region (and neighboring regions), covering distance of 150 km and more, then the share of all “uncounted” CLM traveling more than an hour (the right part of the graph in Fig. 1) will significantly exceed 10%. Therefore, the new 2016 data do not actually contradict the 2001 data. In addition, according to our study (Shitova & Shitov 2016), dynamics of the main factors affecting the level of commuting labour migration has hardly changed over the last decade.

In comparison with the Moscow agglomeration, the average one-way travel time in the New York agglomeration (a permanent U.S. leader in time of commutes and comparable in size to the Moscow agglomeration) equaled to 37 minutes, including 22% traveling for more than an hour (Stacker 2022). Thus, the indicators of the Moscow and New York agglomerations are similar in time of commutes.



**Figure 1.** Distribution of the commute time in the Moscow region (black curve and Y-scale on the left) and the cumulative curve of the share of commuting labour migrants traveling no longer than the time indicated on the X-scale (red curve and Y-scale on the right). For example, a limit of one-hour travel is indicated, fitting 65% of commuting labour migrants. The 2001 data. *Source:* author’s calculations

Another important factor of the Russian commuting labour migration is that time spent on work travel is not reimbursed by wages (Shitova & Shitov 2016), which undoubtedly has a negative effect on subjective and objective health indicators.

Thus, it turns out that every third commuting labour migrant in the Moscow region spends more than an hour in one direction, while time expenditures are not properly covered by the salary. This situation causes stress and depression, conflicts in the family (as shown in (Jansen et al. 2003; Hämmig et al. 2009)) and, obviously, the emergence of real health problems. However, a comprehensive detailed research on this urgent problem is yet to be carried out.

## Conclusion

The conducted review and analysis of scientific research on the impact of commuting labour migration (MTM) on health, have identified both the most frequently confirmed hypotheses and results not supporting them. It is important to note that there is fairly high level of subjectivity in this area of research, substantiating the need for further more objective and extensive research. Therefore, most of the obtained results on the effects of CLM on health should be treated as predominant research conclusions rather than proven statements.

Among main conclusions of the article, we'd like to emphasize that long travel time has a negative impact on the subjective and objective health of migrants. Regular commutes and less time for family and leisure result in physical and emotional fatigue, increasing in turn the risk of various diseases and psychological problems.

In addition, the relationship between travel time and health is identified to be more pronounced in females compared to males. This is probably due to the lifestyle and roles that women often play in the family and society, affecting their stress levels and health.

On a separate note, there is a substantiated need for detailed studies on health of the Russian migrants, which are currently sparse. This will allow for a better understanding of specific risks and challenges faced by migrants in Russia, and will help develop more targeted strategies to promote and protect their health.

In general, this article provides a detailed overview of the impact of commuting labour migration on human health. Despite the identified negative effects of CLM on health, it is also worth noting some positive aspects of this phenomenon, such as development of professional skills and increased income of migrants. However, in order to get a greater effect from commuting labour migration, it is necessary to take into account the worker health and well-being. It is important to develop support measures that will help migrants cope with the physical and emotional stress associated with regular commuting and lack of time for family and leisure. This may include creating more flexible working conditions, providing access to health care and social services, and raising awareness about healthy lifestyles and ways to manage stress.

In conclusion, the study on the impact of commuting labour migration on health makes it possible to better understand challenges and problems that labour migrants face. Based on the results obtained, targeted strategies and policies can be developed to promote and protect health of these workers. This area of work is an important step towards creating a more equitable and sustainable work environment for all, taking into account specific needs of migrants and striving to ensure their well-being.

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