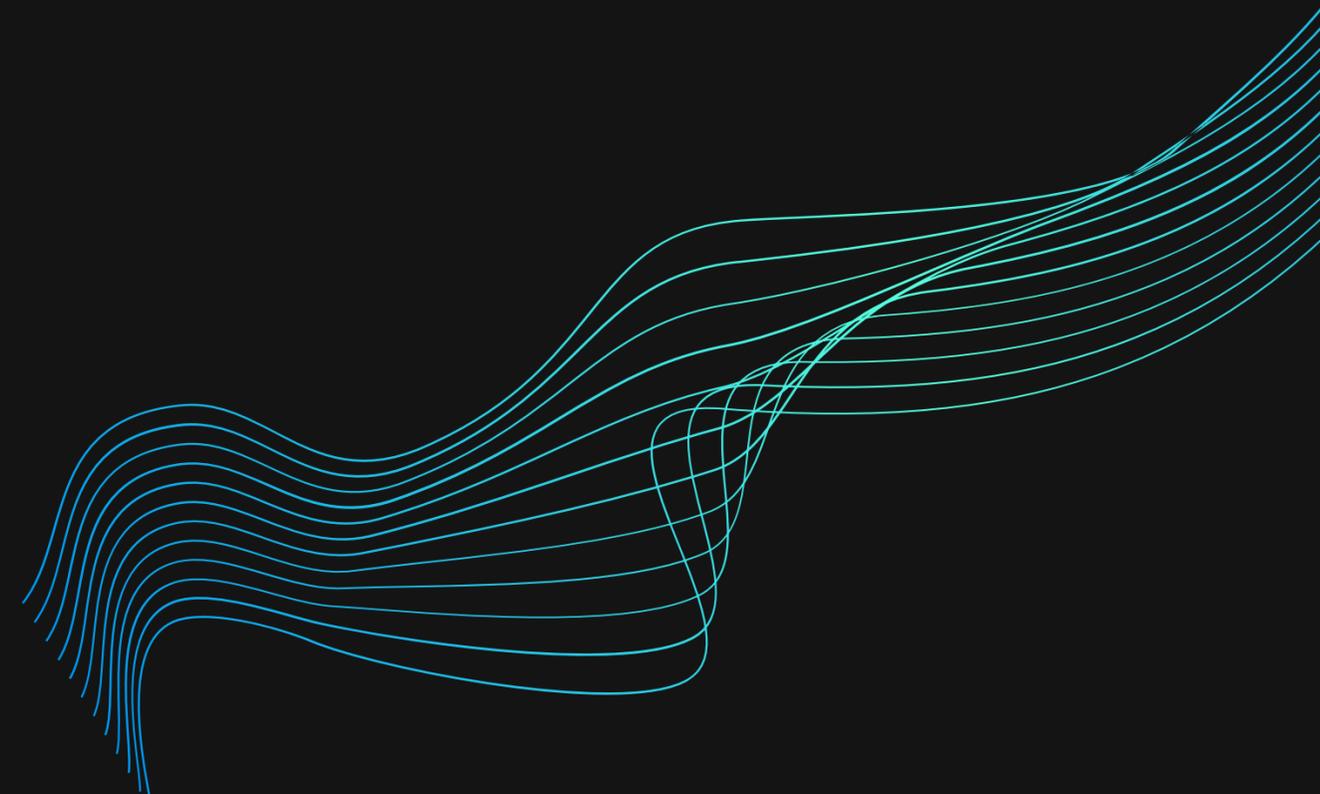


# International Mobility and Productivity of Young Researchers in Russia

Moscow 2021



# Team

Principal Investigator:



**Alena Nefedova**



**Ekaterina  
Dyachenko**



**Maxim  
Kotsemir**



**Galina  
Volkova**



**Marina  
Spirina**

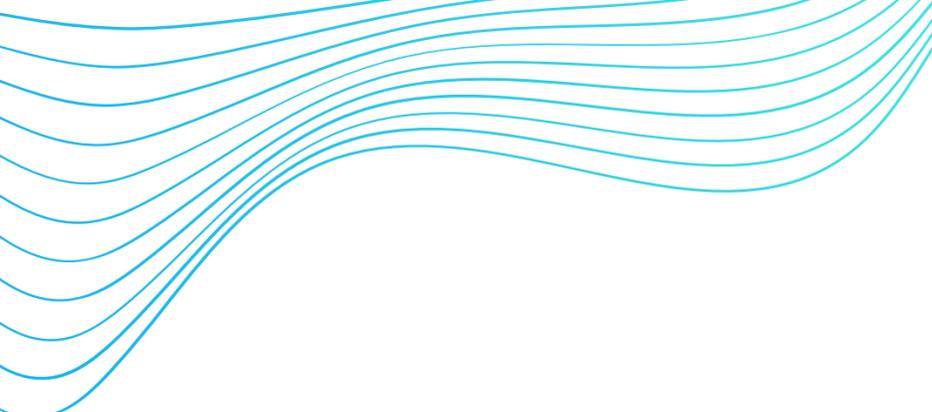
# Actuality



For nations, mobile researchers are a good source for enhancing innovation system (Sonnenwald 2007; Adams & Loach 2015; Siekierski et al. 2018).



The level of international mobility of Russian researchers is very low.  
It creates a high risk for future science and technology development of the country.



# Key policy measures for enhancing academic mobility

## LOW LEVEL OF MOBILITY OF SCIENTISTS AND TEACHERS IS BECOMING A CHALLENGE FOR THE SCIENCE AND TECHNOLOGY POLICY

- **2009 - LAUNCH OF THE FEDERAL PROGRAM "SCIENTIFIC AND PEDAGOGICAL HUMAN RESOURCES FOR INNOVATIVE RUSSIA"**  
enhancing international and interregional mobility
- **2013 - LAUNCH OF THE PROGRAM "5-100"**  
to maximize the competitive position of a group of leading Russian universities in the global research and education market
- **2013 - LAUNCH OF THE PROGRAM "GLOBAL EDUCATION"**  
financial support for higher education abroad
- **2018 - LAUNCH OF THE FEDERAL PROGRAM "HAYKA"**  
creating world-class research centers

# Research gap

Most studies have shown that scientists with international experience **have higher research performance** (Gureyev et al., 2020; Netz, Hampel & Aman, 2020).

Still, there is evidence that mobile researchers **failed to demonstrate higher research productivity** than their local counterparts (Aksnes et al. 2013, Horta et al., 2019; Shin et al. 2014), or **show even fewer outcomes** in some research fields (Halevi et al. 2016).

There is a possible explanation that this difference comes from national research systems where mobile researchers come back.

There is no empirical evidence about the performance of returnees in Russia (comparing to their local non-mobile colleagues).



# Research questions

1

The first set of questions is about **the performance difference** between Russian mobile and non-mobile researchers:

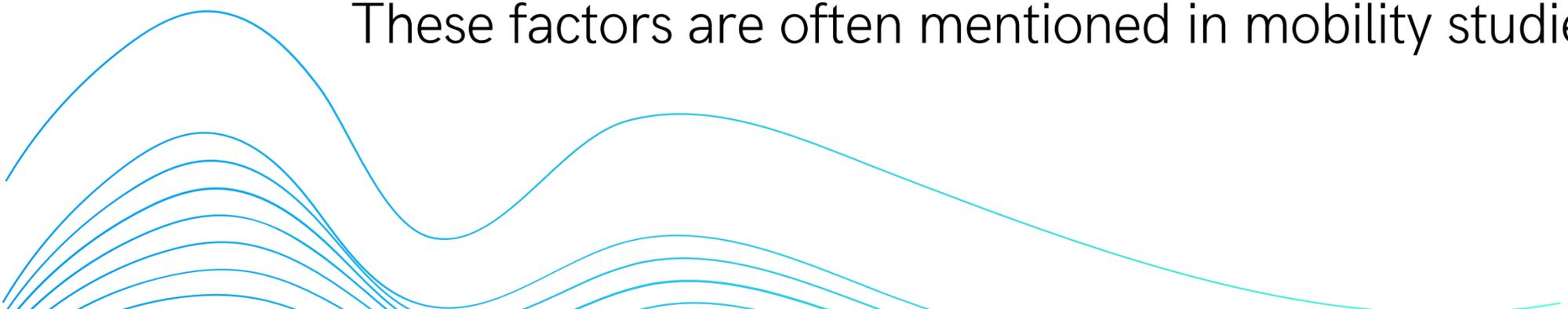
- Do they publish more papers in total and in high-quality international journals in particular?
- Do they gain more citations?
- What is more, we are interested in whether these differences come from academic mobility or not?

2

The second set of questions is about **factors that mediate the effects of mobility**.  
Is any difference for:

- field of science,
- type, length, and destination of mobility?

These factors are often mentioned in mobility studies but not so often investigated empirically



# Collected data

- Bibliometric data (from Scopus) connected with biographical data (gathered from CV).
- Data from 40 interviews with young researchers under 39 years old with experience of international mobility (3 months or more), now working in different R&D organizations (Moscow, Saint Petersburg, Tomsk, Tymen, Irkutsk, Kaliningrad, Puschino)



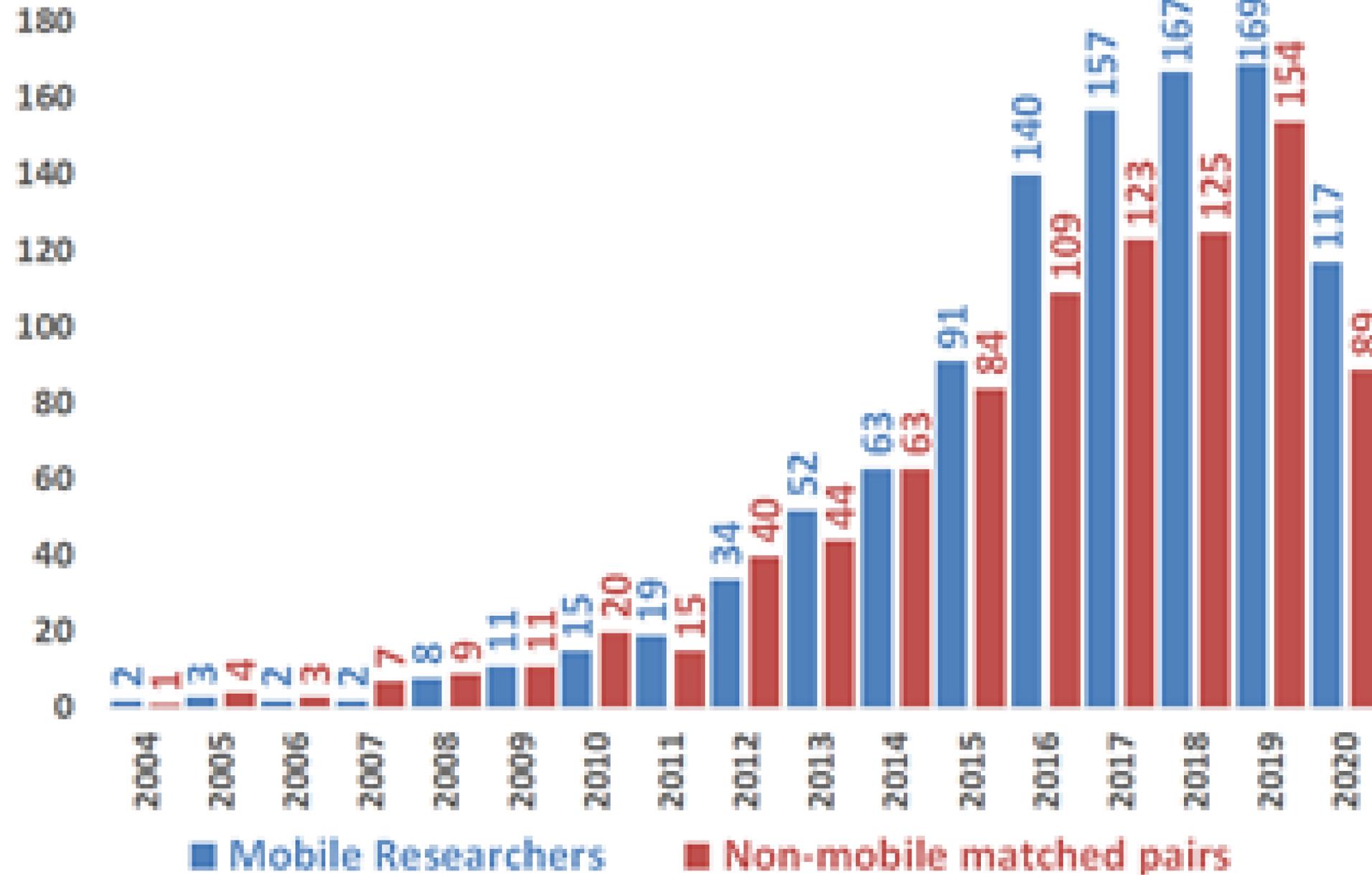
# Methodology: match-pair approach



Finding 'twins' for mobile researchers in terms of:

- age (no more than 2 years of age difference)
- field of science (on the level of department)
- educational background (higher education in Moscow and Saint Petersburg or other cities)

# Results: publication activity (number of papers) for mobile and non-mobile researchers

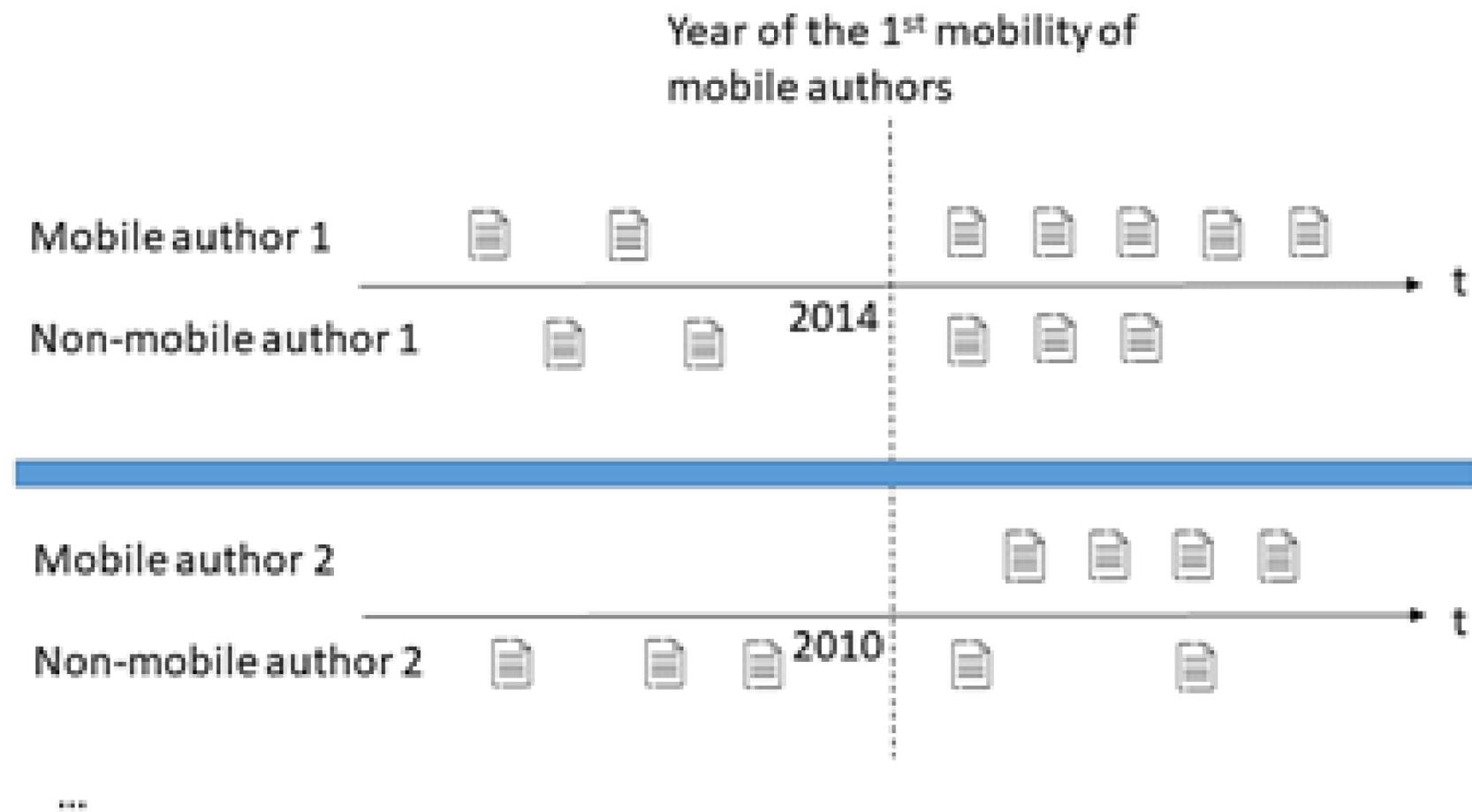


# Results

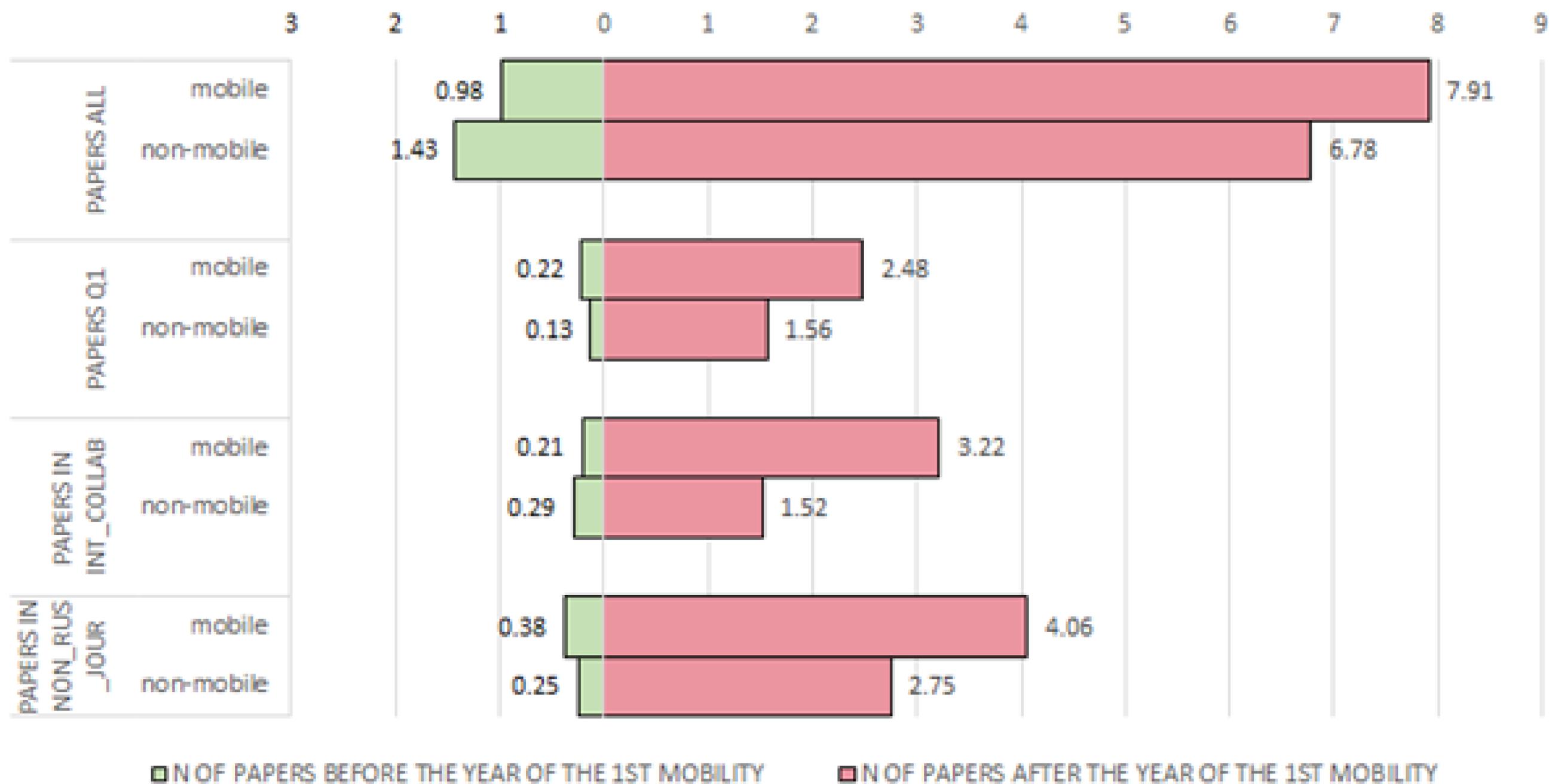
## Key indicators of publication activity for 2015-2019 between mobile and non-mobile researchers

Group of researchers → Indicator name ↓	Mobile researchers	Non-mobile matched pairs
Number of researchers who had at least one publication in Scopus	113 of 119	112 of 119
Average number of publications	6.6	5.5
Average number of citations	31.1	14.2
Average number of citations per one publication	3.22	1.94
Average number of publications in Q1 sources by CiteScore	2.0	1.1
Average share of publications in Q1 sources by CiteScore, %	33.4	17.3
Average number of publications in non-Russian journals	4.8	2.9
Average share of publications in non-Russian journals (to publications in all sources of "journal" type), %	64.2	48.4
Average number of publications in international collaboration	2.7	1.1
Average share of publications in international collaboration, %	28.5	16.4

# 'Before' and 'after' analysis



# Productivity of mobile researchers and their non-mobile matched pairs before and after the year on the 1st mobility



## Key indicators of publication activities in 2015-2019 *by discipline*

Field(-s) of research →	Social	Humanities	Nat. + Eng. + Med.
Type of mobility length → Indicator name ↓	Mob. / Non-mob.	Mob. / Non-mob.	Mob. / Non-mob.
Average number of publications	5.0 / 4.5	3.2 / 3.8	13.6 / 8.8
Average number of citations	16.8 / 12.3	3.6 / 6.4	100.5 / 24.3 (**)
Average number of citations per one <u>publications</u>			
Average number of publications in Q1 sources by <u>CiteScore</u>	1.3 / 0.9 (**)	0.6 / 0.7	5.0 / 1.9 (**)
Average number of publications in non-Russian journals	2.4 / 1.6 (**)	0.8 / 1.4	6.9 / 2.8 (**)
Average number of publications in international collaboration	1.4 / 0.7 (**)	0.3 / 0.8	8.7 / 2.4 (**)

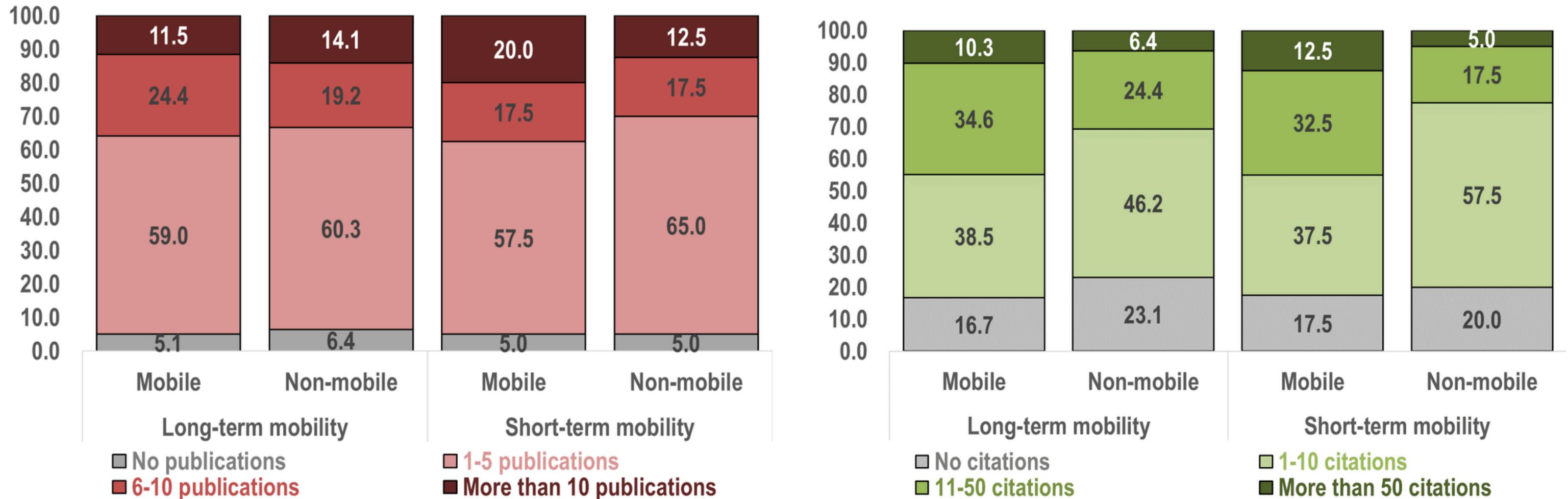
## Key indicators of publication activities in 2015-2019 *by type of mobility*

Type of activity during the episode <u>of mobility</u> →	Work (52)	Internship (43)	PH.D. (42)	Studying (40)
Type of mobility length → Indicator name ↓	Mob. / Non-mob.	Mob. / Non-mob.	Mob. / Non-mob.	Mob. / Non-mob.
Average number of publications	7.0 / 5.6	5.1 / 4.8	5.2 / 4.8	7.9 / 5.7
Average number of citations	34.5 / 16.6	23.5 / 11.4	20.6 / 11.7	42.5 / 16.1
Average number of citations per one publication	3.82 / 2.14	3.08 / 1.93	2.59 / 1.83	2.96 / 1.99
Average number of publications in Q1 sources by <u>CiteScore</u>	2.8 / 1.9	1.7 / 0.9	1.8 / 1.1	2.4 / 1.1
Average share of publications in Q1 sources by <u>CiteScore</u> , %	44.1 / 17.5	31.7 / 17.3	39.1 / 19.1	29.9 / 13.5
Average number of publications in non-Russian journals	6.3 / 3.5	3.6 / 2.3	4.2 / 2.6	5.7 / 3.2
Average share of publications in non-Russian journals (to publications in all sources of “journal” type), %	72.6 / 53.8	57.7 / 44.7	73.0 / 47.8	63.2 / 40.0
Average number of publications in international collaboration	3.1 / 1.5	1.9 / 1.0	2.2 / 0.7	3.6 / 1.1
Average share of publications in international collaboration, %	39.7 / 22.8	27.2 / 13.2	33.2 / 17.5	20.6 / 14.6

# Key indicators of publication activities in 2015-2019 *by mobility destination*

Continent(-s) of mobility destination →	Europe (93)	North America (34)	Asia (18)
Type of mobility length → Indicator name ↓	Mob. / Non-mob.	Mob. / Non-mob.	Mob. / Non-mob.
Average number of publications	7.0 / 5.3	7.3 / 5.0	5.9 / 6.4
Average number of citations	36.0 / 14.4	21.1 / <u>11.1</u>	17.8 / 17.0
Average number of citations per one publication	3.42 / 1.98	1.99 / 2.35	2.93 / 2.08
Average number of publications in Q1 sources by <u>CiteScore</u>	2.2 / 1.1	2.1 / 1.2	1.8 / 0.9
Average share of publications in Q1 sources by <u>CiteScore</u> , %	35.3 / 17.5	28.6 / 21.8	48.1 / 14.5
Average number of publications in non-Russian journals	5.3 / 3.1	4.7 / 2.6	3.9 / 2.8
Average share of publications in non-Russian journals (to publications in all sources of “journal” type), %	66.7 / 48.1	60.8 / 56.1	68.2 / 54.7
Average number of publications in international collaboration	3.0 / 1.0	2.5 / 0.8	1.9 / 2.5
Average share of publications in international collaboration, %	28.6 / 16.4	26.0 / 17.2	39.1 / 23.7

# Difference between publication activity and citations depending on *the length of mobility, %*



# What drives the publication activity after mobility?

*"I had no experience in writing articles in international journals, I didn't really understand what it looked like. He [supervisor] told me that the article should have 4 graphs, the first graph is like this, this one is ... When I drew some graphs, he told me how to fix it. **He also helped me a lot with the text, in the end**, I got a good article, and I learned how to write them. After that, I myself could write articles for good magazines. This is a **hidden ladder to knowledge** because no one teaches it "*  
*(Social sciences, country of mobility: France)*

*'We had writing groups there ... of course, there **I learned to write in a completely different way:** not the way we did at [a Russian university]. I realized that such a structure is built in the Anglo-American traditions of the text, I learned to work with literature in a different way during this time "*  
*(Social sciences, country of mobility: UK)*



# What drives the publication activity after mobility?

*And now, mainly because of the internships, these two, we **got to know each other**; they look at some of my articles, refer to them. This is just a plus of these internships "*

*(Natural sciences, country of mobility: Chinese People's Republic)*

*"In China, I talked with the professor and his group. We deliberately discussed specific issues, so **I am sure that there will be joint articles** and we will continue to communicate already remotely "*

*(Natural sciences, country of mobility: Chinese People's Republic)*



# Key results:

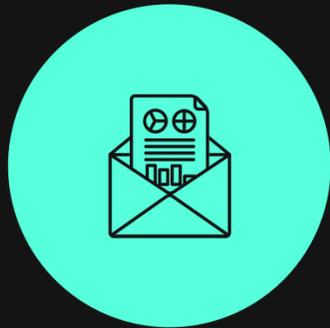
1. We should support international mobility for science and technology development within the country. It works.
2. The effect occurs not "BEFORE" but "AFTER" mobility. In other words, they are not born productive, they become productive.
3. Physical co-presence and face-to-face communication is a necessary condition for the transfer of knowledge. That brings a lot of challenges in the era of COVID-19.

# To read more:

Kotsemir M. N., Dyachenko E., Nefedova A. Publish more or publish differently? New aspects of relationship between scientific mobility and performance of young researchers, in: 18th INTERNATIONAL CONFERENCE ON SCIENTOMETRICS & INFORMETRICS Proceedings., 2021. P. 585-596 (available online)

(In Russian) Nefedova A.I., Volkova G.L., Dyachenko E.L., Kotsemir M.N., Spirina M.O. International mobility and publication activity of young Russian researchers: what do statistics, bibliometrics and scientists themselves say? // Journal of the New Economic Association. 2021.Vol. 52.No. 4. (forthcoming in November 2021)

# Contacts



## EMAIL

[anefedova@hse.ru](mailto:anefedova@hse.ru)



## TELEGRAM

[@aanefedova](https://www.t.me/aanefedova)



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