Our “brain drain” measurement based on millions of Scopus publications shows that Russia has suffered a net loss in almost all disciplines; and more so in neuroscience, decision sciences, dentistry, biochemistry, and mathematics.

Brain Drain and Brain Gain in Russia: How does migration in academia impact fields of scholarship in a country?

Materials
Scopus publications over 1996-2020: Affiliation addresses and research subjects of 2 million publications from 659,000 researchers who have had ties to Russia at some point.

Method
1) Data pre-processing: Resolving data quality issues (missing values, author ambiguity) using machine learning methods.
2) Detecting migration events: Each change of mode affiliation country $i$ to country $j$ is recorded as a directed edge $(i, j)$ in a network.
3) Net Migration Rate: $NMR_t$ is calculated based on the difference between immigrant ($IM_t$) and emigrant ($EM_t$) scholars in year $t$: $NMR_t = (IM_t - EM_t)/Population_t$
4) Field-based Net Brain Drain: $FNBD$ is calculated based on the normalized populations of immigrants, return-migrants (-1), emigrants, and transients (+1) for each of the 26 fields of scholarship.

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