

Assessing academic mobility to the United States between 2010 and 2020

Constance Poitras¹ and Vincent Larivière²

¹ constance.poitras@umontreal.ca

École de bibliothéconomie et des sciences de l'information, Université de Montréal, Montréal, Québec, (Canada)

² vincent.lariviere@umontreal.ca

École de bibliothéconomie et des sciences de l'information, Université de Montréal, Montréal, Québec, (Canada)
Observatoire des sciences et des technologies, Université du Québec à Montréal, Montréal, Québec, (Canada)

Abstract

This paper provides a global picture of the research mobility to the United States between 2010 and 2020 with the aim of determining whether the election of Trump acted as an influential factor on this mobility. The United States has historically been a central destination for researchers. However, many believe that the recent political climate associated with the Trump presidency affected this preeminence. To test this, we extracted a disambiguated dataset of individual researchers from the Web of Science and analyzed, for different cohorts, global mobility and mobility towards the United States. We found that, for the majority of countries we analyzed, mobility to the United States was on the decline, particularly for the younger cohorts, while global mobility tended to increase slightly or remain stable. China, Iran and Russia are the only countries to demonstrate an increase in their mobility towards the United States. More specifically, by analyzing cohort-by-cohort mobility for a small portion of our ample (China, Iran, South Korea and Australia), we detected small drops in mobility around 2017-2018, but there is no indication that it is inclusively attributable to the isolationist policies and rhetoric of Trump.

Introduction

International mobility presented advantages for the countries that promote it because there is a correlation between the openness of a country and its capacity to produce high-impact research (Sugimoto et al., 2017), as well as between the mobility and the effectiveness of research (Scellato et al., 2015). As a result, most countries strive to put in place policies that encourage the inflow of scientists (Wagner et al., 2018). Before we go any further, in this paper, the terms mobility or academic mobility refers to “the academically motivated geographical movements of students, faculty and researchers, generally in higher education, from their home institution to another one, either inside or outside of their home country, to study, teach or take part in research for a period of time” (Leung, 2013, p. 312).

The United States (US) have long been the central destination for researchers (Van Noorden, 2012). However, recent statistics show a decrease in first-time enrollment of international students in the United States (-3% in 2016), which has continued in both 2017 and 2018 (IIE, 2017). This decline coincides with a new administration who is representative of a time when some politicians display nationalist tendencies coupled with populist discourses (Leisyte and Rose, 2017). To explain this potential drop in mobility, some authors directly blame the nationalist rhetoric of Trump (Altbach and de Wit, 2017; Leisyte and Rose, 2017; Weimer and Barlete, 2020), and some others see his election as one factor among many others to explain the decline in attractiveness of the US (Choudaha, 2018; Cooper, 2018; Fisher, 2017; Hacker and Bellmore, 2020). For these latter, this effect must be put into perspective with a growing negative perception of the United States, rising tuition fees coupled with fluctuations of the US dollar, as well as the efforts of other countries to increase the capacity of their own higher education system to become a destination for academic mobility or simply to retain their own students and researchers (Cooper, 2018; Hacker and Bellmore, 2020; Choudaha, 2018; Fisher, 2017). But it could also be a consequence of the nationalist tendencies taken by certain countries such as the United States (but also the United Kingdom and some European countries such as

Poland and Hungary), which might change the current model of the internationalization of higher education (Altbach and de Wit, 2017; Leisyte and Rose, 2017); Weimer and Barlete, 2020).

This topic is for now still under-studied. Qualitative studies have demonstrated that students were emotionally affected by the climate engendered by Trump's rhetoric (Pottie-Sherman, 2018; Todoran and Peterson, 2020; Van de Walker, 2021), and a quantitative study with a small sample has demonstrated that students from Muslim-majority countries were less interested in studying in the United States (Van de Walker and Slate, 2019). Also, the direct links between the decline in US attractiveness and the election of Trump are difficult to prove (Hacker and Bellmore, 2020). Using bibliometric data on affiliation changes of researchers over time (Robinson-Garcia et al., 2019), this paper aims to better understand this phenomenon and identify a change in the early Trump years. It is also possible that the academic age of the researchers influences their sensitivity to this type of political climate. Consequently, this paper aims to answer this question: How has the flow of incoming academic mobility to the United States evolved over recent years, and has Trump's presidency acted as a factor contributing to the loss of attractiveness of the United States?

Methods

We used the Web of Science database and extracted a disambiguated dataset of 27 million researchers and their associated publications (Caron and van Eck, 2004). Of them, we isolated mobile researchers, i.e. those who had at least two different countries in their affiliations during the period studied, for a population of 564 358 mobile researchers. Because the Web of Science only provides full given names of authors and links to institutional affiliations from 2008, we restricted the analysis the cohorts of the years 2008 to 2015. Each year corresponds to a cohort of researchers since the year represents their first publication (Nane et al., 2017). For each cohort, we divided the researchers into two categories: the non-mobile (those who are affiliated to only one country over the period) and the mobile (those who are affiliated to more than one country over the period) (Robinson-Garcia et al., 2019). After consulting several rankings of countries publishing the most scientific literature, we carried out a purposive sampling of twelve countries to analyze, namely Iran, China, the United Kingdom, India, Germany, Italy, Japan, Canada, France, Australia, South Korea and Russia. To answer the research question above, our analysis was done in two stages. We compared overall mobility with mobility to the United States, to determine whether the attraction of the United States as a country of destination has diminished in recent years. When we talk about overall mobility, we are talking about the proportion of mobile researchers, regardless of the destination, out of the number of active researchers, without the researchers heading to the US. When we talk about mobility to the United States, we are talking about the proportion of mobile researchers heading to the United States out of all mobile researchers. For all of them, we measured the mobility two years after the first publication. For example, for the 2008 cohort, we measured global mobility in 2010. Then, for the countries where there were some peculiar movements of mobility, we analyzed mobility for each cohort, year after year starting from 2008, to determine whether a change occurs after 2016.

Results

We started by observing mobility flows for our sample of twelve countries (Fig.1). Thus, for each cohort (2008 to 2015), we measured the proportion of mobile researchers out of the total number of active researchers two years after their first publication. We then did the same for mobility to the United States, measuring the proportion of researchers heading to the United States among all mobile researchers.

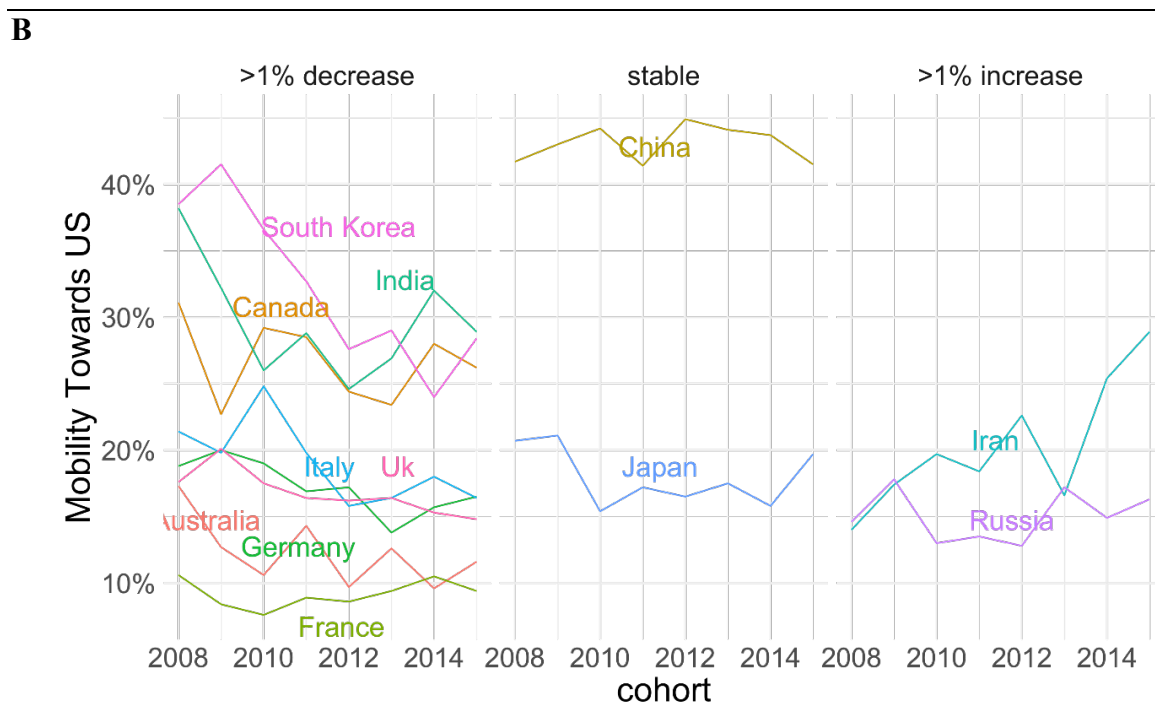
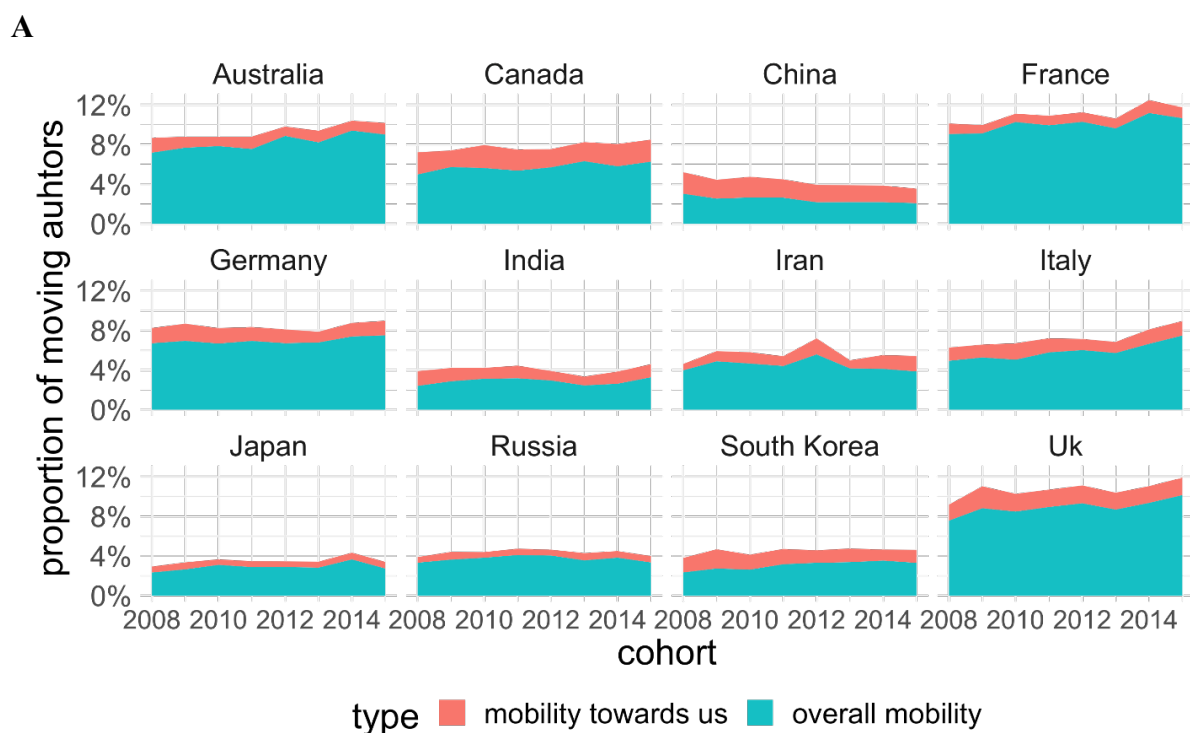


Fig.1 Comparison between overall mobility (A) and mobility towards the United States (B) two years after the first publication, by cohorts

For global mobility, there are three main patterns. First, there are the countries where the proportion of mobile researchers varies little between the cohorts (-1% between the youngest and the oldest cohort): Iran (+0.8%), India (+0.71%), Germany (+0.73) and Russia (+0.11%). For some countries, we can notice a slight increase in mobility among the youngest cohorts, such as in Canada (+1.28% between the cohort of 2008 and that of 2015), the United Kingdom (+2.72), Italy (+ 2.68%), Japan (+1.01%), France (+1.63%), Australia (+1.51%) and South

Korea (+4.91%). Only China sees its younger cohorts being slightly less mobile than the older ones (-1.66% between the 2008 and 2015 cohorts).

In terms of mobility to the United States, we again observed three different types of curves. First, for eight countries in our selection, mobility to the United States tends to decrease the younger the cohorts. The drops are variable, some more pronounced than others. For South Korea, for example, mobile researchers of the 2008 cohort went to the United States in a proportion of 38.5%, two years after their first publication. For the 2015 cohort, the proportion drops to only 28.4%. Second, there are countries for which the United States seemed to have been a relatively equivalent destination for each cohort. Those are Japan, whose variation between the cohort of 2008 and that of 2015 is -1%, and China, whose variation is -0.2%. Finally, two countries in our selection show mobility to the United States that increases over cohorts. These are Iran, whose variation between the cohort of 2008 and that of 2015 is +14.9%, and Russia, whose variation is +1.7%. Thus, by comparing the two figures, we realized that in 91.6% of our sample, mobility tends to increase with the younger cohorts. However, for 66.6% of our sample, the proportion of researchers heading to the United States is decreasing, which allows us to conclude that while mobility is increasing among young researchers, the United States is experiencing a drop in attractiveness.

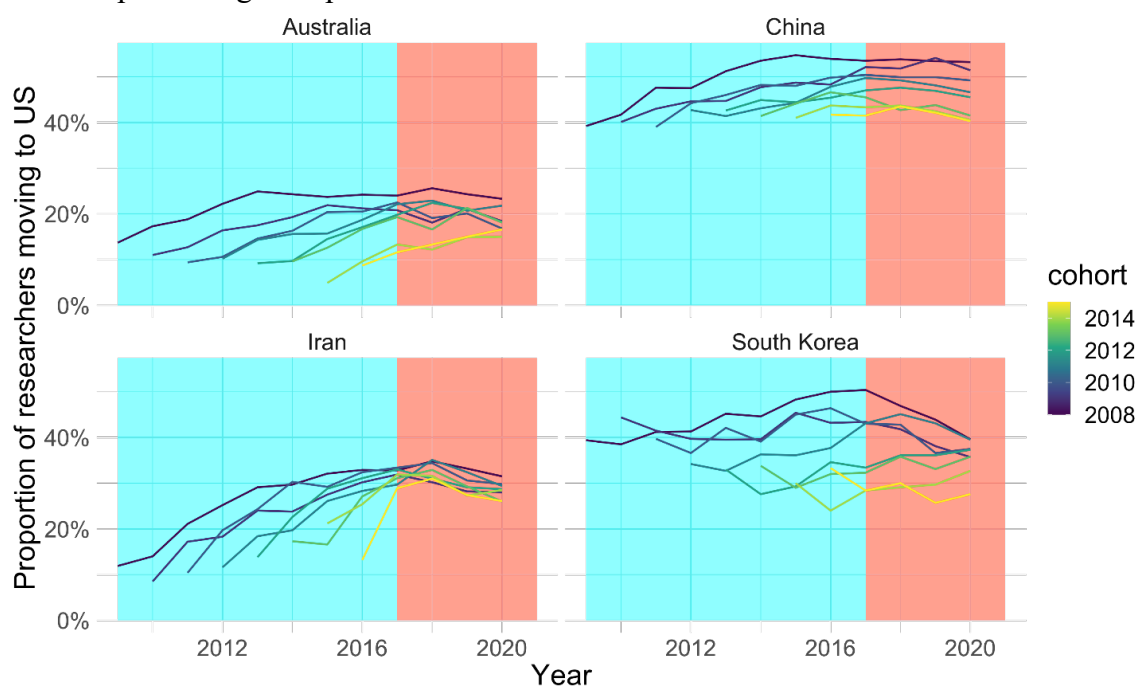


Fig.2 Proportion of mobile researchers heading to the United States by cohort of researchers

We wanted to determine if the election of Trump can be associated with a change in mobility to the United States. In Fig.2, we examine the proportion of researchers heading to the United States among all mobile researchers for each cohort, with particular attention to the years following Trump's inauguration. We specifically focus on a country for which mobility is increasing (Iran), a country for which mobility is stable (China) and two countries with decreasing mobility (South Korea and Australia).

The figure shows differences for China's different cohorts. Comparing the oldest cohort to the most recent, we notice that mobility to the United States was increasing for several years before starting a slight descent in 2015, which is before the election of Trump. For the cohorts of 2009, 2010, 2011 and 2012, the results show the same pattern of mobility, i.e., several years of growth

followed by a moderate decrease. However, from 2013 onwards, the pattern changed. Indeed, for the 2013 and 2014 cohorts, the growing proportion of researchers going to the United States stops rapidly in 2016. For the 2015 cohort, initial growth is almost non-existent, and mobility decreases from 2018 onwards. This decrease was not visible on the curves in Fig.1 since it occurs more than two years after the first publication. It would therefore seem that, for young Chinese researchers are not moving as much to the United States compared to the older cohorts. For Iran, between 2017 and 2018, mobility towards the United States decreased after a period of growth. However, unlike China, it is not possible to identify a clear pattern in mobility. For the 2008 cohort, the proportion of researchers heading to the United States increased every year, while this upward trend only lasts 3 years for the 2015 cohort. The same pattern is repeated for the cohorts between these two: several years of increase which stops around the year 2017-2018. It can therefore be said that the years 2017-2018 disrupt the mobility data for researchers from Iran. Finally, for South Korea and Australia, we had previously noticed that mobility to the United States decreased for the younger cohorts, two years after their first publication. For South Korea, we noticed a decline in mobility to the United States with each cohort, but, above all, for the 2015 cohort, the decrease in the proportion of researchers heading to the United States begins at the start of their career. Then, for Australia, although we see the decrease in the proportion of researchers heading to the United States, as observed earlier, none of the cohorts shows a change in mobility at the turn of 2017.

Discussion

This paper measured the flow of incoming academic mobility to the United States over time and assessed how the Trump presidency acted as a contributing factor to the loss of attractiveness of the country. Such measurements were obtained using bibliometric data, which allows to follow the mobility of researchers by analyzing changes in their affiliations over time (Robinson-Garcia et al., 2019). Results show that global mobility was essentially stable or increasing for all cohorts and for all countries analyzed. However, for the United States, we observed that its attractiveness as a destination country for researchers was decreasing, confirming results obtained previously (IIE, 2017). However, as many have mentioned before, it is more difficult to isolate the specific role of the election of Trump in this pattern (Hacker and Bellmore, 2020). In our sample, we detected small drops in mobility around 2017-2018, but there is no indication that it is inclusively attributable to the isolationist policies and rhetoric of Trump. The impact also seemed limited to the youngest cohorts. Our results suggest that, if genuine, the Trump effect on mobility is one of the many factor that can explain the slow decline of the American dominance over academic mobility (Fisher; 2017; Cooper, 2018; Hacker and Bellmore, 2020; Choudaha, 2018). The difficulty of establishing a direct relationship between the Trump presidency and the decline in the attractiveness of the United States could also be explained by an inherent weakness of a bibliometric approach: using publication's affiliations as a proxy for mobility implies a delay between the work of research as such and the publication of the article, so the observed mobility is delayed from the actual mobility (Robinson-Garcia et al., 2019). The phenomenon of co-affiliations is also a limitation of this study. Authors can gain new affiliations without being mobile, since having several affiliations can have a positive influence on an academic career (Way et al., 2019) or to gain or maintain access to resources and collaborative networks" (Hottenrott et al., 2021). These limitations, combined with our temporal proximity to the events, prevents us from analyzing mobility to the United States after the Trump presidency. The Covid-19 pandemic, that started at the end of 2019, is also a factor that will have to be considered. With more time passing, future research will allow to have more complete data to assess whether Trump's presidency had a lasting effect on mobility.

References

- Altbach, P. G. and De Wit, H. (2017). Trump and the Coming Revolution in Higher Education Internationalization. *International Higher Education*, 89, 3-5.
- E. Caron, N. and van Eck, J. (2014). Large scale author name disambiguation using rule-based scoring and clustering. *Proceedings of the Science and Technology Indicators conference*, E. Noyons, Ed. pp. 79–86.
- Choudaha, R. (2018). A third wave of international student mobility: Global competitiveness and American higher education. *CSHE Research & Occasional Paper Series*.
- Cooper, P. (2018, November 16). The real reason international students are fleeing U.S. colleges (It's not Trump). *Forbes*.
- Fischer, K. (2017). International-student enrollment is slowing—and it isn't all Donald Trump's fault. *Chronicle of Higher Education*, 64(12), 8
- Hacker, N. L., and Bellmore, E. (2020). "The Trump Effect": How Does it Impact International Student Enrollment in US Colleges?. *Journal of Critical Thought and Praxis*, 10(1).
- Institute of International Education (IIE). (2017). Open Doors 2017.
- Leisyte, L., and Rose, A.-L. (2017). Academic Staff Mobility in the Age of Trump and Brexit? *International Higher Education*, 89, 5-6.
- Leung, M. W. (2013). 'Read ten thousand books, walk ten thousand miles': geographical mobility and capital accumulation among Chinese scholars. *Transactions of the Institute of British Geographers*, 38(2), 311-324.
- Pierce, S., and Bolter, J. (2020). Dismantling and reconstructing the U.S. immigration system: A catalog of changes under the Trump presidency. *Migration Policy Institute*.
- Pottie-Sherman, Y. (2018). Retaining international students in northeast Ohio: Opportunities and challenges in the 'age of Trump.' *Geoforum*, 96, 32-40.
- Nane, G.F., Larivière, V. et Costas, R. (2017). Predicting the age of researchers using bibliometric data. *Journal of Informetrics*, 11(3), 713-729.
- Robinson-Garcia, N., Sugimoto, C. R., Murray, D., Yegros-Yegros, A., Larivière, V., and Costas, R. (2019). The many faces of mobility: Using bibliometric data to measure the movement of scientists. *Journal of Informetrics*, 13(1), 50-63.
- Scellato, G., Franzoni, C., and Stephan, P. (2015). Migrant's scientists and international networks. *Res. Policy* 44, 108–120.
- Sugimoto, C. R., Robinson-Garcia, N., Murray, D. S., Yegros-Yegros, A., Costas, R., and Larivière, V. (2017). Scientists have most impact when they're free to move. *Nature News*, 550(7674), 29.
- Todoran C and Peterson C. (2020). Should They Stay or Should They Go? How the 2017 U.S. Travel Ban Affects International Doctoral Students. *Journal of Studies in International Education* 24(4):440-455.
- Van De Walker, D., and Slate, J. R. (2019). The 2017 Trump Administration travel ban and international graduate applications at two Texas public universities. *Higher Education Politics & Economics*, 5(1), 1-14.
- Van Noorden, R. (2012). Global mobility: Science on the move. *Nature* 490, 326–329.
- Wagner, C., Whetsell, T., Baas, J., and Jonkers, K. (2018). Openness and impact of leading scientific countries. *Front. Res. Anal.*
- Weimer, L., and Barlete, A. (2020). The rise of nationalism: The influence of populist discourses on international student mobility and migration in the UK and US. In *Universities as political institutions* (pp. 33-57). Brill.