DAAD

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Wissenschaft weltoffen

Facts and Figures on the International Nature of Studies and Research in Germany and Worldwide

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DZHW German Centre for Higher Education Research and Science Studies

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FOREWORD

What is the status of international mobility among students and researchers around the world? What trends can be observed regarding the number of international students at German universities in recent years? How attractive is Germany for foreign academics and researchers? For over 20 years, on an annual basis, *Wissenschaft weltoffen* has provided answers to this and other questions on the internationalisation of universities and public research institutes in Germany and around the world.

The internationalisation of research and teaching is a decisive factor in Germany's ongoing successful development as a hub of science, higher education and business. Therefore, continuously monitoring the relevant indicators is vital in formulating and implementing adequate support measures. Against this backdrop, *Wissenschaft weltoffen* has become the standard, central source of information on student, academic and researcher mobility in Germany and other major host countries and countries of origin.

Given the highly dynamic nature of internationalisation processes, it is crucial that the concept and data basis of *Wissenschaft weltoffen* be kept up to date at all times and adjusted flexibly in response to current events. In this 23rd edition, therefore, the *Wissenschaft weltoffen* database has again been significantly extended: for the first time, data have been compiled on international preparatory and language centres, or *Studienkollegs,* in Germany, and on participants in the preparatory courses they offer for university admission. One of the spotlights analyses this information in detail and places it in context. The data reveal that, although *Studienkollegs* are an essential stepping stone, granting international students access to German universities, their capacities are limited: the number of qualified applicants greatly exceeds the places available. These statistics will feature regularly in future editions of *Wissenschaft weltoffen*.

Two other spotlights explore the retention of international students in their respective host countries. Based on current OECD analyses, Chapter A looks at the retention of international students in key host countries around the world, including interpretation of the figures by experts from the German Academic Exchange Service (DAAD). Moreover, based on OECD analyses and other evaluations by the German Federal Statistical Office and the DAAD, Chapter B contains a separate, detailed investigation into the retention of international students, specifically for Germany. According to this investigation, over one third of international graduates still reside in Germany ten years after starting their studies. In this regard, Germany and Canada are in joint first place in the ranking of major host countries of international students.

Furthermore, a fourth spotlight in Chapter C is devoted to study-related international mobility among domestic students at German universities. Based on the findings of the DZHW's new "Student Survey in Germany", it traces the overall development in the study-related international mobility of domestic students between 2012 and 2021. These analyses also include conclusions on the developments in study-related international mobility with regard to different types of university, degree and visit, as well as the various subject groups. The latest figures corroborate the observations at many universities that international student mobility declined during the Covid-19 pandemic.

Once again, this edition is accompanied by a number of new features on the *Wissenschaft weltoffen* website, which can be found as usual at www.wissenschaft-weltoffen.de/en. The website now offers an interactive tool for the analysis and evaluation of international student mobility, enabling users to customise data representations and data export according to individual specifications and filters. This interactive section of the website will be extended over the next few months to include additional diagrams on student mobility in Germany.

The DAAD and the DZHW would like to thank Christiane Zay and wbv Media for the graphic design and realisation. Special thanks also go to the Management Board of the Association of Directors of Studienkollegs at German Universities, the German Federal Statistical Office, the scientific community and funding organisations, non-university research institutes and other agencies who provided information and data for *Wissenschaft weltoffen 2023*, along with the Federal Foreign Office and the Federal Ministry of Education and Research, who help fund this publication.

Dr. Kai Sicks
DAAD Secretary General

Prof. Dr. Monika Jungbauer-Gans
Scientific Director of the DZHW

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To accompany this publication, further information is available online under the following address: **https://www.wissenschaft-weltoffen.de/en**.

In the "Data" section, you can download all figures (as PNG files) and the corresponding data tables (as Excel files) for the current issue as well as additional data tables. In the "Publication" section, you will find all previous issues of *Wissenschaft weltoffen* as linked PDF files. You can download the corresponding data tables (as Excel files) for the various figures by clicking on the download symbol.

D INTERNATIONAL ACADEMICS AND RESEARCHERS IN GERMANY

E GERMAN ACADEMICS AND RESEARCHERS ABROAD

APPENDIX

In addition, the DZHW maintains a service point, which advises parties on evaluating this data pool according to their individual requirements and also carries out such evaluations on request. This service is free of charge for universities, academics and researchers.

Enquiries should be sent to: **wissenschaft-weltoffen@dzhw.eu**

SUMMARY: DEVELOPMENT OF THE INTERNATIONAL NATURE OF STUDIES AND RESEARCH IN GERMANY AND WORLDWIDE

The Covid-19 pandemic and its impact on international student mobility

From its onset in early 2020, right through to the beginning of 2023, the pandemic proved to be a profound turning point in the development of the international mobility of students, academics and researchers. Although it is too early to fully appreciate the long-term effects of the restrictions, it is possible to draw further conclusions with regard to the direct impact or, to be more precise, the short-term repercussions of Covid-19 (see *Wissenschaft weltoffen 2022*).

> “ The total number of international students in Germany did not decline during the pandemic, but actually rose significantly during the last two years.

It has now been established that the number of international students in Germany did not decline over the entire duration of the pandemic; quite the opposite, it actually increased slightly at first, before rising significantly in the last two years. Nonetheless, there was a marked downturn in international first-year students during the first year in particular. These decreases chiefly applied to visiting and exchange students, however, affecting international first-year students seeking a university degree in Germany to a much lesser extent. Furthermore, the aftermath of the decline was felt in widely varying degrees in the various countries and regions of origin.

1 International students in Germany since winter semester 2018/19

Source: Federal Statistical Office, student statistics

Meanwhile, national student statistics from the key host countries of German students abroad also permit a review of the development in the international mobility of German students during the first year of the pandemic (see also the previous two editions of *Wissenschaft weltoffen*). The results show that this development differed in the extreme, depending on the host country, and not all major host countries reported a drop in numbers by any means. Particularly striking in this regard are the trends in the Netherlands, Austria and Switzerland, with some unexpectedly marked increases in German students. By contrast, the numbers of German students slumped in other major host countries such as the US, the United Kingdom and France. In the case of the United Kingdom, however, this was obviously due to Brexit rather than to the restrictions introduced to cope with the pandemic.

Finally, a closer inspection of the overall number and re-enrolments of international students in the four key host countries – the US, the United Kingdom, Australia and Germany – reveals that Covid-19 only had a minor impact on these developments in Germany and particularly in the United Kingdom. Conversely, there was a substantial downturn in the numbers of international students in the US and, above all, in Australia.

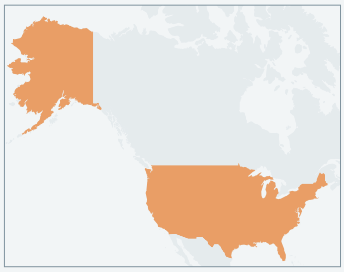
International academic mobility and transnational education (Chapter A)

According to UNESCO, around 6.4 million students were enrolled outside their home country in 2020, an increase of approximately 261,000 international students, or 4%, compared to the previous year. Since 2010, the number of internationally mobile students has surged by roughly 2.6 million or 68%. The US is way out in front as the key host country for international students. In 2020, around 957,000 students from abroad were enrolled at universities in the US, representing approximately 15% of all internationally mobile students worldwide. Therefore, the largest flows of international student mobility lead from China, the most important country of origin by a clear margin, to the US, but also to Australia and the United Kingdom as host countries. In 2020, a total of around 1.1 million students from China were enrolled at universities abroad, alone accounting for some 17% of all internationally mobile students worldwide.

The data situation on internationally mobile academics and researchers at the respective host universities abroad is significantly less conclusive than that relating to internationally mobile students. To date, there are no internationally comparable UNESCO or OECD statistics on this subject similar to those on global student mobility. Looking at the 16 host countries for which data were collected as part of *Wissenschaft weltoffen*, the US turns out to be well ahead of the field as the key host country, with around 124,000 international academics and researchers at US universities, followed by the United Kingdom and Germany (roughly 70,000 each), Switzerland (approximately 31,000) and France, whose universities and non-university research institutes only employ about 15,000 foreign researchers.

Transnational education is the name given to a sub-area of internationalisation in which universities from one country bear academic responsibility for study programmes offered in another country that are

2 German students in major host countries, 2019–2021



German students	Host country: United Kingdom		
	2019/20	2021/22	Evolution in %
Total	12,875	9,915	–23.0
First-year students only	6,385	3,695	–42.1

German students	Host country: Netherlands		
	2019/20	2021/22	Evolution in %
Total	23,015	24,507	+6.5
First-year students only	6,904	9,055	+31.2

German students	Host country: US[1]		
	2019/20	2021/22	Evolution in %
Total	9,242	8,550	–7.5

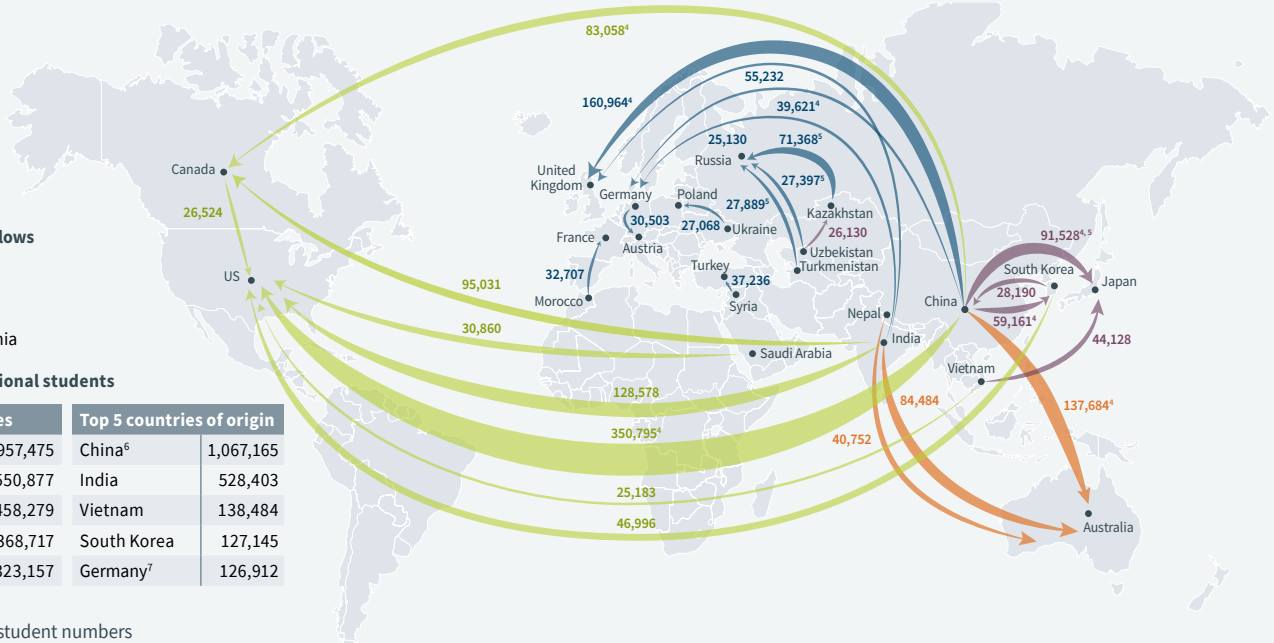
German students	Host country: Austria		
	2019/20	2021/22	Evolution in %
Total	38,874	45,425	+16.9
First-year students only	9,563	11,211	+17.2

German students	Host country: Switzerland		
	2019/20	2021/22	Evolution in %
Total	11,539	12,375	+7.2
First-year students only	3,392	3,666	+8.1

German students	Host country: France[1]		
	2019/20	2021/22	Evolution in %
Total	4,585	4,441	–3.1

Sources: Statistik Austria (Austria); Dienst Uitvoering Onderwijs (Netherlands); Federal Statistical Office (Switzerland); Higher Education Statistics Agency (United Kingdom); Institute of International Education (US); Directrice de l'évaluation, de la prospective et de la performance (France); DAAD calculations

3 Key flows of international student mobility, in 2020[2, 3]



Directions of major flows

- Europe
- North America
- Asia
- Australia/Oceania

Number of international students

Top 5 host countries		Top 5 countries of origin	
US	957,475	China[6]	1,067,165
United Kingdom	550,877	India	528,403
Australia	458,279	Vietnam	138,484
Germany	368,717	South Korea	127,145
Canada	323,157	Germany[7]	126,912

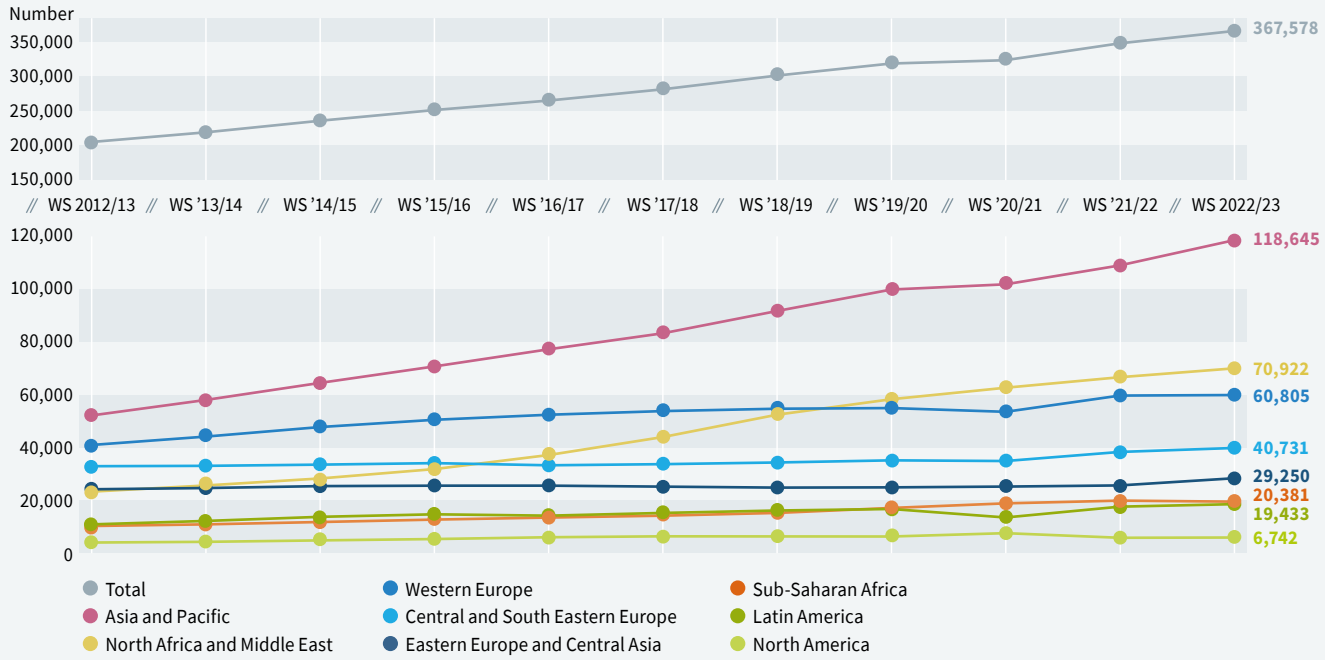
Figures in absolute student numbers

Sources: UNESCO, student statistics; Federal Statistical Office, student statistics; MOE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations

aimed at prospective students from that country. German universities are represented worldwide with transnational education projects at 44 locations in 31 countries and with 317 study programmes. Between 2015 and 2022, the number of students enrolled in German TNE projects jumped from around 26,000 to around 36,000. Although Russia's war of aggression against Ukraine meant that projects had to be suspended, the total number of TNE students in 2022 is unchanged compared to the previous year. The regional focus of German TNE projects is on North Africa and the Middle East (Egypt, Jordan, Oman) and the Asia and Pacific region (China, Vietnam, Singapore).

SUMMARY: DEVELOPMENT OF THE INTERNATIONAL NATURE OF STUDIES AND RESEARCH IN GERMANY AND WORLDWIDE

4 International students in Germany by region of origin, since the 2012/13 winter semester



Source: Federal Statistical Office, student statistics

International students in Germany (Chapter B)

The number of international students at German universities continued to rise in the 2022/23 winter semester, with approximately 367,600 international students enrolled in Germany during this time, a year-on-year increase of 5%. In the 2021/22 winter semester, they made up 11.9% of all students, with 13.5% at universities and 9.3% at the universities of applied sciences (UAS). With roughly 117,900 international first-year students, their number was almost back to the level of 2019, just one year after the steep drop in 2020.

> "With approximately 368,000 international students in the 2022/23 winter semester, Germany overtakes Australia for the first time as the third key host country of international students around the world, beaten only by the US and the United Kingdom.

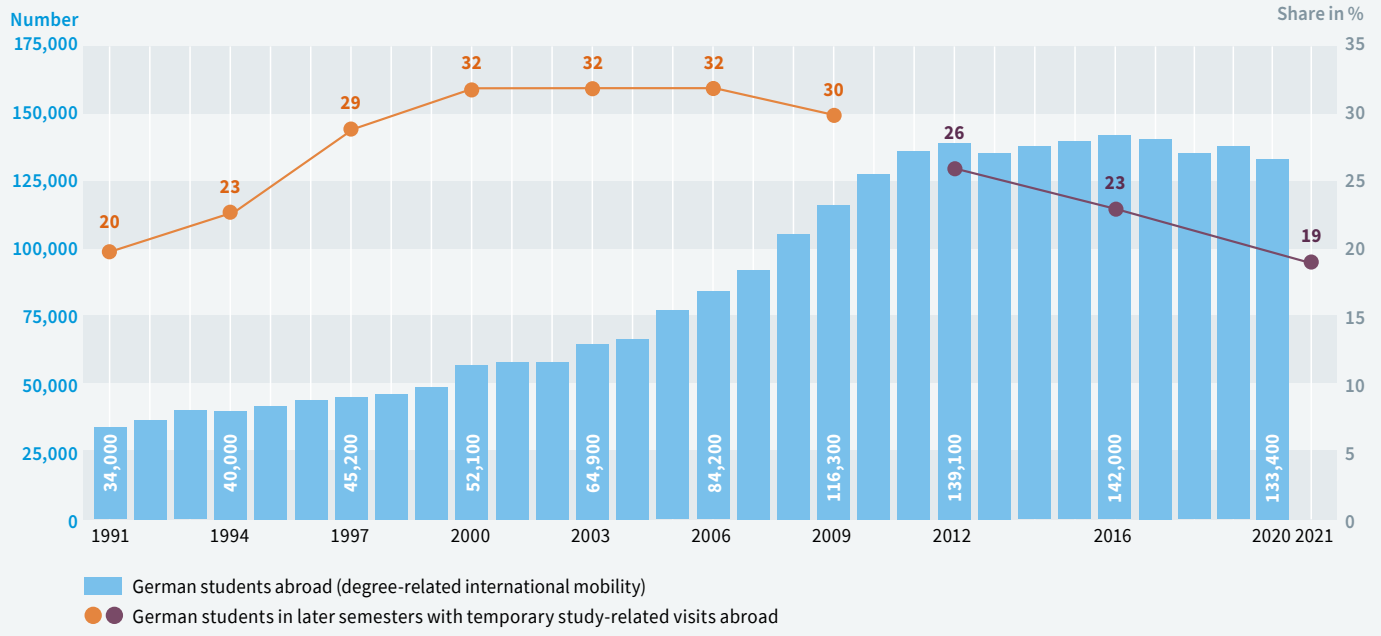
In the 2022/23 winter semester, Asia and Pacific is the key region of origin for international students with a share of 32%, followed by students from North Africa and Middle East with 19% and Western Europe with 17%. At the same time, the number of students from North Africa and the Middle East has soared by 58% in the last five years, considerably faster than that of other regions. After a long period of stagnation, the number of students from Eastern Europe and Central Asia is showing a noticeable spike of 10% since the previous year.

Nonetheless, this may be attributed solely to the increased number of students from Ukraine. India makes its debut as the key country of origin, with around 42,600 students, or 12% of all international students, enrolled in Germany. The number of Indian students has shot up by 146% over the last five years. Slightly fewer students from China, the perennial frontrunner, registered to study, compared to the previous year. It is now in second place with roughly 39,100 students (11%), followed by Syria with 15,600 students (4%). Year-on-year, their number has thus also dropped.

In the 2021/22 winter semester, the overwhelming majority of 94% of international students were intending to graduate from a German university; just 21,400, or 6%, were visiting or exchange students. Although this figure was above that of the previous winter semester, it was still below pre-pandemic levels in the 2019/20 winter semester. 40% of international students intending to graduate are aiming for a bachelor's and 45% for a master's degree. International students represent a share of roughly 23% of all master's students, while 7% of those in bachelor's programmes are from abroad. Some 27% of doctoral students are international junior researchers.

The largest group of international students, as many as 43%, are enrolled in engineering study programmes, whereas approximately 24% are studying law, economics and social sciences. Consequently, these two subject groups also account for most of the around 53,600 international graduates (39% and 27% respectively) who were awarded a degree in 2021. Overall, 10% or thereabouts of all university graduates are from abroad.

5 Degree-related and temporary study-related international mobility of German students since 1991[8]



Sources: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DZHW Social Surveys 2013 & 2016; DZHW's Student Survey in Germany, 2021

German students abroad (Chapter C)

In 2020, around 133,400 German nationals were studying abroad; this figure has thus dwindled by roughly 6% (in the region of 142,000) since 2016. Most of these students (approx. 90%) also intended to graduate abroad. The most popular host countries are Austria (around 34,000 students or 25% of all students abroad), the Netherlands (24,000 or 18%), the United Kingdom (13,000 or 9%) and Switzerland (12,000 or 9%).
A closer look at the development in overall figures reveals that, in the period from 2002 to 2010, in other words, during the introduction of the new, tiered study system, above-average growth rates of 10% and more were achieved in one year. During this period, the proportion of internationally mobile students in relation to the total number of German students rose from 3.4% to 6.0%. This suggests that many students have taken – and are still taking – advantage of the option provided by the new study system of following a bachelor's programme in Germany with a master's programme abroad. Since the new types of degree were introduced, the absolute number of internationally mobile German students has not continued to rise, however. Their share of all German students has even fallen slightly, currently 4.9%, due to the steady growth in the number of students in Germany up to 2015.

> "19% of domestic students in later semesters at German universities had completed at least one temporary study-related visit abroad in 2021.

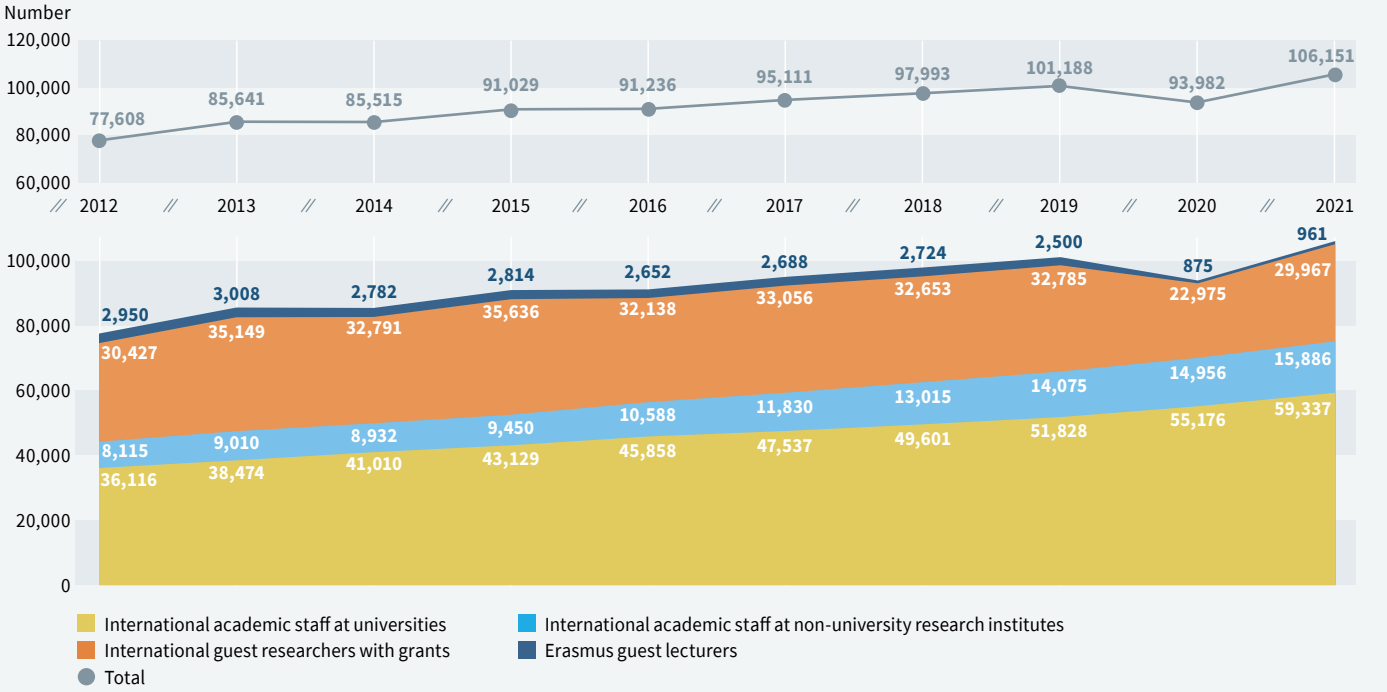
The situation is similar for temporary study-related visits abroad undertaken by German students. Between 1991 and 2000, the share of students (in later semesters) with temporary visits abroad shot up from 20% to 32%, stabilising at this level until 2006. Since then, however, this percentage has steadily fallen, scoring 19% in the most recent survey in 2021.[8] In contrast to degree-related international mobility, the introduction of the two-cycle study system of bachelor's and master's programmes was thus not accompanied by an increase in temporary study-related mobility. In fact, temporary student mobility even declined to a certain extent during this period and continued to do so after the introduction of the bachelor's/master's system. Other striking contrasts to degree-related international mobility can be observed in terms of the host countries favoured. The most popular host country is the United Kingdom (10%), followed by France (9%), Spain (8%) and the US (6%).

International academics and researchers in Germany (Chapter D)

In 2021, around 59,300 academic and artistic staff of foreign nationalities were employed at German universities, including roughly 3,700 international professors. Thus, international personnel accounted for 13.9% of the entire academic staff, while the corresponding percentage of professors was just 7.4%. Since 2007, the number of all international academic staff at German universities has continued to grow, up by 29% in the last five years alone. Among international professors, this increase was 17% over the same period. Western Europe is the key region of origin for international academic staff. 34% of the entire international academic staff and a remarkable 66% of international professors come from Western European countries. The key countries of origin are India,

SUMMARY: DEVELOPMENT OF THE INTERNATIONAL NATURE OF STUDIES AND RESEARCH IN GERMANY AND WORLDWIDE

6 International academics and researchers by type of mobility in Germany since 2012



Sources: Federal Statistical Office, university staff statistics; statistics on non-university research institutes; data provided by funding organisations; DAAD, Erasmus statistics

Italy, China and Austria. Most international professors hail from the two German-speaking countries of Austria (19%) and Switzerland (9%).

In 2021, roughly 15,900 academics and researchers of foreign nationalities were contractually employed by the four largest non-university research institutes (NURI). Their number has more than doubled since 2011 (+112%), with approximately 29% of all academics and researchers coming from abroad in 2021. EU countries account for 39% of foreign academics and researchers, the remaining European countries for 12%. The key countries of origin here are China, India (10% each) and Italy (9%). Around two thirds of international academic staff are engaged in the field of mathematics and natural sciences, with one sixth in engineering.

> “Since 2007, the number of all international academic staff at German universities has continued to grow, up by 29% in the last five years alone.

Besides contractually employed international academics and researchers, international guest researchers also work and teach in Germany, their visits funded by domestic and foreign organisations. This constituted 30,000 visits or thereabouts in 2021. This represents an upswing of 30% year-on-year, thereby almost cancelling out the downturn due to the pandemic. Of these guest visits, 44% were funded by the DFG and 41% by the DAAD alone. With shares of 22% each, Western Europe and Asia and Pacific are the key regions of origin for international guest researchers, whereas India, China (7% each) and Italy (6%) are the three key countries of origin. Moreover, NURI also sponsor visits by international guest researchers. Together, the Max Planck Society and the Helmholtz and Leibniz Associations funded the visits of around 7,200 international guest researchers, up 14% compared to the previous year, yet still approximately 4,000 fewer than in 2019. No relevant data are currently available for the Fraunhofer-Gesellschaft.

German academics and researchers abroad (Chapter E)

Only very few countries currently record the number, origin and status of international academics and researchers employed at their universities. Data of this kind are only available for the Netherlands, Austria, Switzerland and the United Kingdom. Most German academics and researchers are employed in Switzerland (around 9,600), Austria (6,100) and the United Kingdom (5,300). This corresponds to the number of German professors; here again, Switzerland leads the field with 1,300, followed by Austria with approximately 940 and the United Kingdom with 820 German professors. In each of these countries, the proportion of German professors of all international professors is higher than the share of German academics and researchers of all international academics and researchers. German professors make up the highest share of all international professors in Austria, at 70%, and 44% in Switzerland.

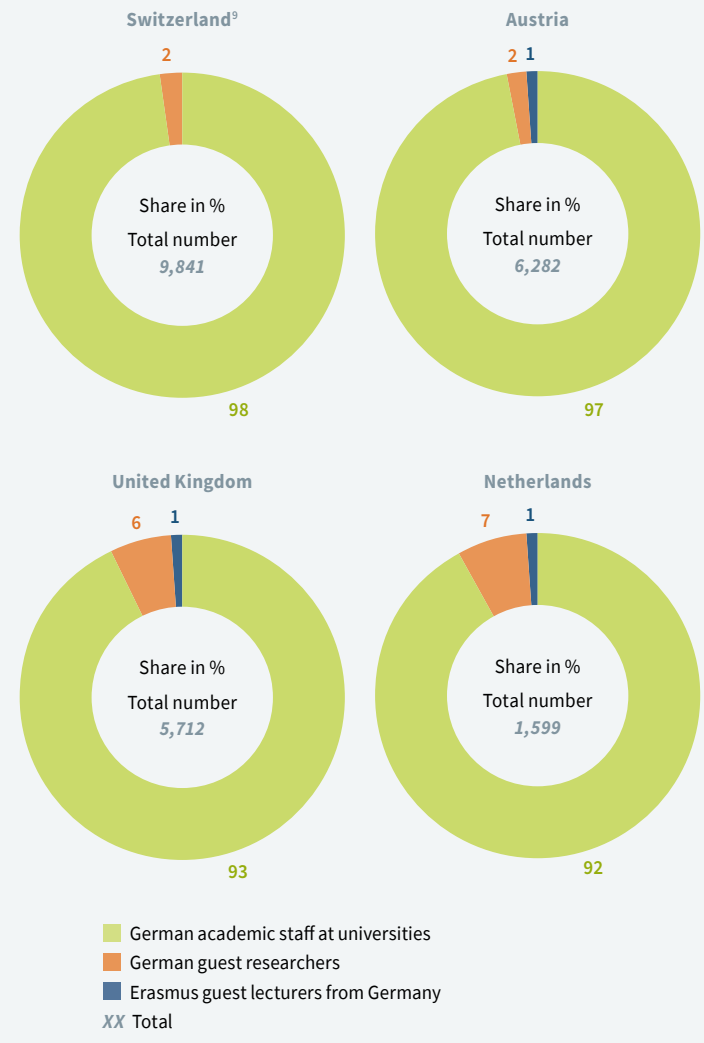
In 2020/21, some 14,000 German junior researchers were enrolled in doctoral studies at foreign universities. The vast majority, namely 78%, obtain their doctorate in Western Europe. Most German doctoral students conduct research in Switzerland (24%), Austria (16%), the United Kingdom (14%) and the US (9%). Moreover, temporary visits abroad are an important element of their doctoral studies for a fair number of German nationals working on their doctorate in Germany. 31% of doctorate holders who were awarded a doctorate between 2019 and 2022 completed at least one doctoral-related temporary visit abroad while studying for their doctorate. 38% of the visits were to Western Europe. Nonetheless, the key host country was the US (17%), with France (7%) and the United Kingdom (6%) in second and third place.

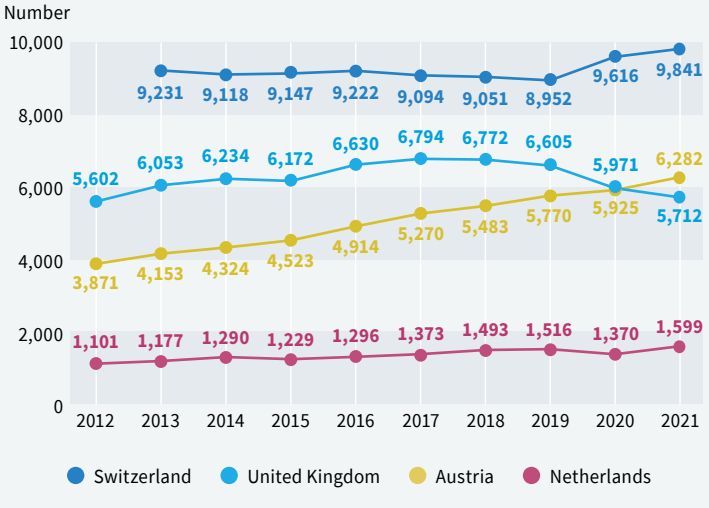
These and other temporary guest visits abroad undertaken by German academics and researchers were funded by domestic and foreign organisations. This was the case for roughly 5,800 visits in 2021. After the dramatic plummet of more than half during the first year of the pandemic, the number of grants has thus gone up by just 9%. Some two thirds of visits were sponsored by the DAAD. Western Europe is the key host region for German guest researchers (30%). Other major host regions are North America (13%) and Central and South Eastern Europe (10%). By a clear margin, the key host country for German guest researchers abroad is the US (11%), followed by the United Kingdom (6%) and France (5%).

Footnotes

1 No data available on German first-year students.
2 For the sake of clarity, only mobility flows with at least 25,000 internationally mobile students are shown.
3 To obtain as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from China's Ministry of Education (MOE) on the countries of origin of international students in China in 2018. They have not yet been included in the UNESCO statistics. The proportion of non-degree related visits of international students has been excluded to obtain figures for international student mobility to China that can be compared as closely as possible with UNESCO statistics for other countries. The reduction in the number of international students in China compared to the previous year is therefore for statistical reasons.
4 Including students from Hong Kong and Macao.
5 Data from 2019 as UNESCO data are not yet available for 2020.
6 Including Hong Kong and Macao. Mobility between Hong Kong and Macao has been excluded. As no country-specific data on incoming students are available for China, students moving from Hong Kong and Macao to China are however still included.
7 The UNESCO statistics were supplemented by data from the Federal Statistical Office to include the number of German students in China in 2020. Thus far, the data are not included in the UNESCO statistics nor in the statistical report of China's Ministry of Education (MOE).
8 As part of the new DZHW Student Survey in Germany 2021, the mobility rate for students in later semesters was adjusted by redefining "later semesters". As a result, the recalculated figures after 2012 can no longer be compared with those from previous Social Surveys carried out between 1991 and 2009 but are slightly lower overall. The decline between 2009 and 2012 could therefore be, at least in part, statistically induced.
9 Switzerland has not been a programme country in the Erasmus+ programme since 2014.

7 German academics and researchers in selected countries in 2021 and overall since 2012





Sources: national data provided by the respective statistical offices; data provided by funding organisations; DAAD, Erasmus statistics; DZHW calculations

1.1 Mobility trends and mobility flows

According to UNESCO, around 6.4 million students were enrolled outside their home country in 2020, an increase of approximately 261,000 international students, or 4%, compared to the previous year. Since 2010, the number of internationally mobile students has rocketed by roughly 2.6 million, or 68%, only about half of which can be explained by the parallel rise in the number of all students worldwide during the same period (+30%). The reasons for this marked upswing can be roughly divided into push and pull factors. Push factors are understood to be problems in the respective countries of origin that act as a motive for mobility. They include, in particular, political and economic instability, often paired with insufficient capacities in the higher education system, poor quality teaching, the lack of reputation of universities and research, and limited employment opportunities. Inadequate capacities at domestic universities often go hand in hand with a growing population. Pull factors, on the other hand, are certain characteristics of the various host countries. Most of these factors are virtually a mirror image of the push factors: political and economic stability, combined with well-developed capacities in the higher education system, high quality teaching, worldwide renown for higher education and research, and good employment opportunities. Viewed on a global scale, the fallout of the pandemic caused barely a ripple in 2020. Nonetheless, for individual countries, such as Australia, significant decreases can be observed in the number of incoming international students from certain countries of origin.

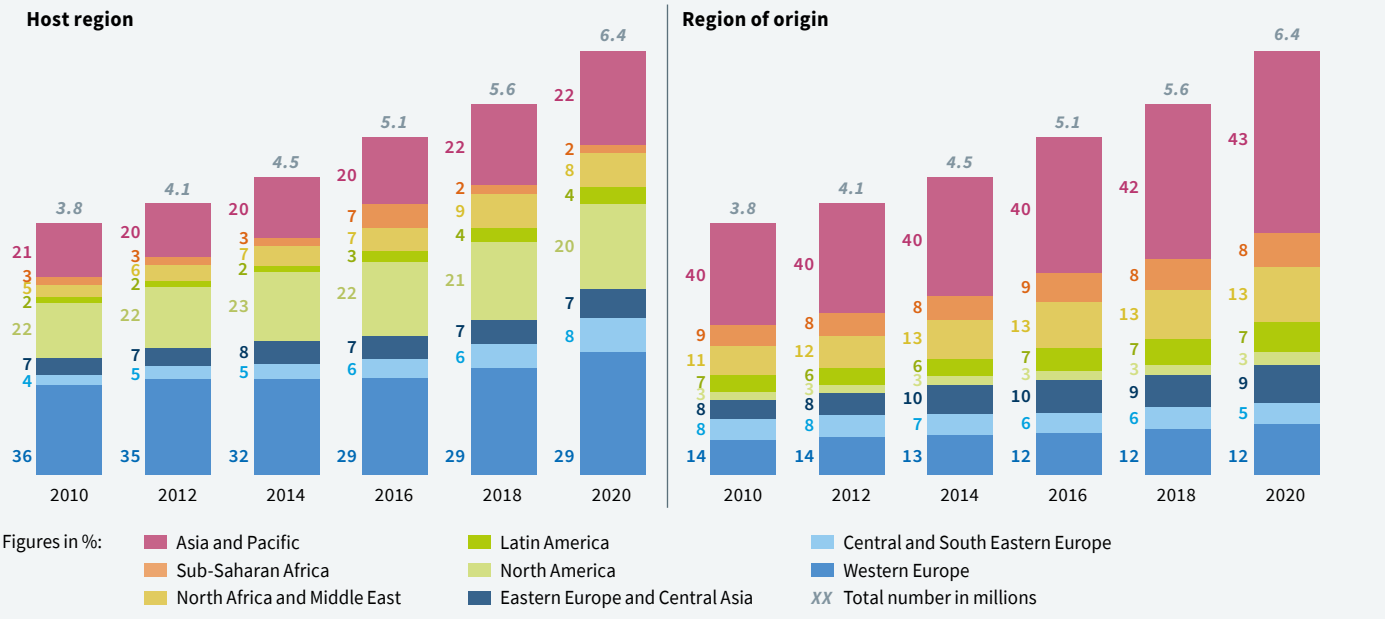
The importance of most host regions and regions of origin of international students fluctuated only slightly between 2010 and 2020. Western Europe continues to dominate the host regions (29%), followed by Asia

Methodology

The basis for the collection and processing of data is the International Standard Classification of Education (ISCED) of 2011, which ensures the international comparability of national data. This may result in deviations from national figures, for example, with regard to Germany.

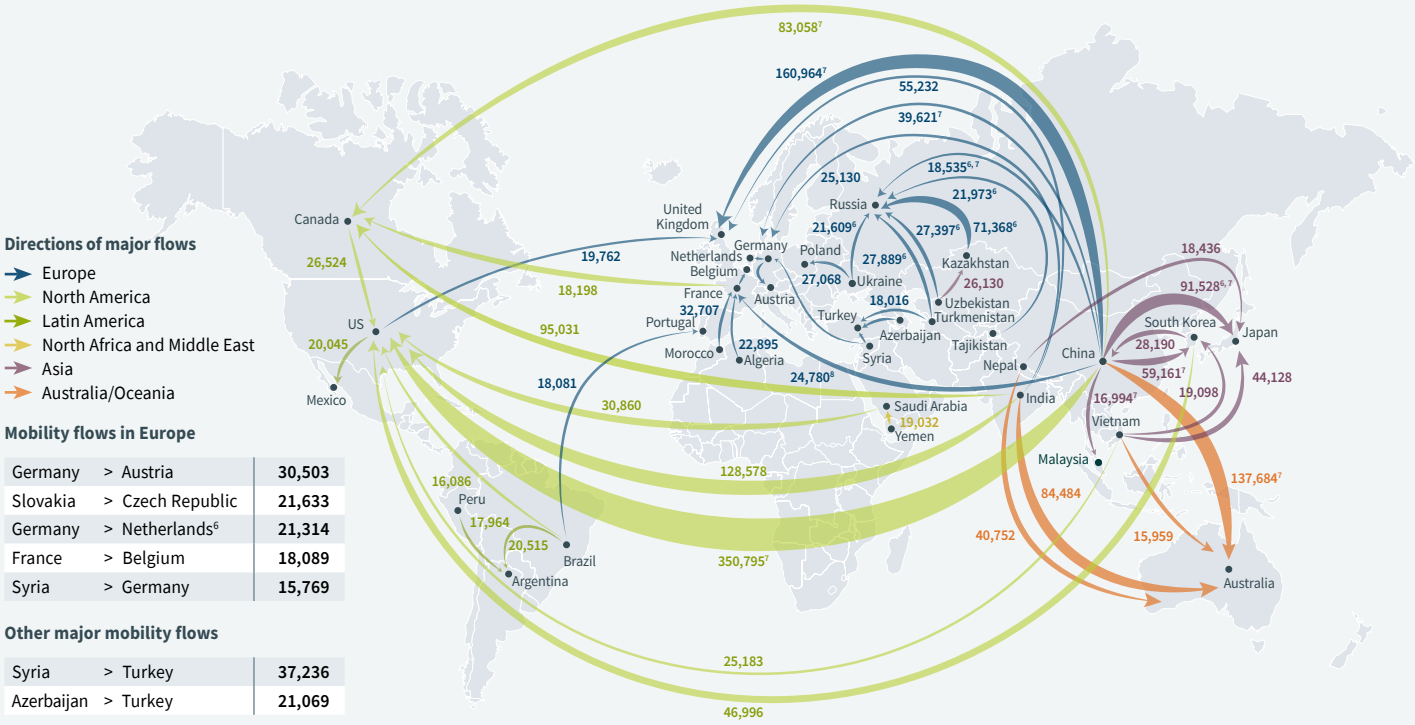
When interpreting the data presented here, it should also be noted that the vast majority of cases of student mobility recorded by UNESCO involve degree-related international mobility (degree mobility) and only a very small proportion are temporary study-related mobility (credit mobility). The data are therefore not comparable with national data on temporary study-related student mobility, such as those on German students presented in Chapter C2. Moreover, the UNESCO statistics are not taken from a complete survey of all mobile students worldwide but are merely the best possible calculation of these statistics, based on the available data. Missing data are estimated. The availability and informative value of the data largely depend on the development of education statistics in the respective countries. To date, some countries, particularly in South and Central America and Africa, have been unable to provide any data whatsoever on international students at their universities. Even China, now a major host country, has not yet provided UNESCO with any data on the origin of international students in China. This inevitably leads to the importance of certain host countries and countries or regions of origin being underestimated.

A1.1 International students worldwide, by host region and region of origin, since 2010[1, 2]



Source: UNESCO, student statistics; country-specific reporting periods; DAAD calculations

A1.2 Major flows of international student mobility in 2020[3, 4, 5]



Mobility flows in Europe

Germany	> Austria	30,503
Slovakia	> Czech Republic	21,633
Germany	> Netherlands[6]	21,314
France	> Belgium	18,089
Syria	> Germany	15,769

Other major mobility flows

Syria	> Turkey	37,236
Azerbaijan	> Turkey	21,069

Figures for absolute numbers of students

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations

Footnotes

1 Deviations in comparison with previous issues of *Wissenschaft weltoffen* and *Wissenschaft weltoffen kompakt* are due to updates of the UNESCO database.

2 Data on regions of origin do not refer to international students in China as their countries of origin have not yet been included in UNESCO statistics and no other data source provides corresponding time series.

3 For the sake of clarity, only mobility flows with at least 15,000 internationally mobile students are shown.

4 To obtain as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from China's Ministry of Education (MOE) on the countries of origin of international students in China in 2018. Data are available on the top 15 countries of origin of international students in China: Bangladesh, France, India, Indonesia, Japan, Kazakhstan, Laos, Malaysia, Mongolia, Pakistan, Russia, South Korea, Thailand, the US and Vietnam. They have not yet been included in the UNESCO statistics. Proportions of the non-degree related visits of international students have been excluded in order to obtain figures for international student mobility to China that can be compared as closely as possible with UNESCO statistics for other countries. The decline in international students to China compared to *Wissenschaft weltoffen 2020* is therefore for statistical reasons. Also includes UNESCO data for international students to Hong Kong and Macao in 2020.

5 Excluding Singapore as a host country since the UNESCO statistics do not include data on the countries of origin of international students.

6 Data from 2019 as UNESCO data are not yet available for 2020.

7 Including students from Hong Kong and Macao.

8 Unclear whether students from Hong Kong and Macao are included.

9 Including students from Hong Kong and Macao. Mobility between China, Hong Kong and Macao has been excluded.

and Pacific (22%) and North America (20%). However, Western Europe's share has fallen by seven percentage points since 2010. Among the regions of origin, Asia and Pacific has for years represented by far the largest share of internationally mobile students (43%), followed by North Africa and Middle East (13%), and Western Europe (12%).

The largest flows of international student mobility lead from China, by a clear margin the most important country of origin, to the US, the United Kingdom and Australia as host countries. In 2020, a rough total of 1,067,000 students from China were enrolled at universities abroad.[9] This alone accounts for 17% of all internationally mobile students worldwide. Their number has increased by around 2% year-on-year, shooting up by 80% in the last decade. Approximately 350,800 Chinese students were enrolled at universities in the US alone in the 2020 academic year. Representing 6% of global student mobility, this figure has gone up slightly by 1% compared to the previous year. For 2020, UNESCO lists around 161,000 Chinese students in the United Kingdom (+16%) and around 138,000 in Australia (–17%). Other notable student mobility flows are from India to the US (around 129,000, –4% year-on-year), from India to Canada (95,000, +28%), from India to Australia (84,000, –9%) and from China to Canada (83,000, +7%).

Within Europe, the principal student flows are from Germany to Austria (31,000, +4%), from Ukraine to Poland (27,000, +/–0%), from Slovakia to the Czech Republic (22,000,+68%) and from France to Belgium (18,000, +17%).

1.2 Major host countries

With regard to the host countries of international students, it is crucial to distinguish between countries with the highest absolute number and countries with the largest percentage of international students. For example, in 2020, the number of international students in the US – by far the most important host country – was in the region of 957,000. However, a closer look at the US share of all students shows that the figure is only around 5%. On the other hand, roughly 216,000 international students studied in the United Arab Emirates (UAE) in the same year, yet the share of all students here is 73%. Other countries with high percentages of international students are Qatar (37%), Singapore (28%), Cyprus (27%) and Australia (26%). By contrast, China, ranked eighth among the key host countries, has a mere 0.5%, and in Japan, which hosts a similar number of international students to the UAE, the figure is just 6%.

> “Countries of origin are considerably more diverse in Germany and France than in Australia and Canada.

A1.3 Host countries with the highest number and the highest proportion of international students in 2020[1, 2]

Host country	Number of international students
US	957,475
United Kingdom	550,877
Australia	458,279
Germany	368,717
Canada	323,157
Russia[3]	282,922
France	252,444
China[4]	233,127
Japan	222,661
United Arab Emirates	215,975

Host country[5]	Proportion of international students in %
United Arab Emirates	73.0
Qatar	37.5
Singapore	27.6
Cyprus	27.2
Australia	26.0
United Kingdom	20.1
Canada	18.2
Switzerland	18.1
Austria	18.0
New Zealand	17.5

Sources: UNESCO/OECD, student statistics; country-specific reporting periods; DAAD calculations

The United Arab Emirates as an education hub[10]

The high proportion of international students in the United Arab Emirates (UAE) is mainly due to the large number of workers posted from abroad (referred to as expats) in the local population and the establishment of the UAE as an education hub. To weaken the country's strong economic dependence on oil, the number of universities and study programmes has been steadily increased since 2000 with the aim of training a skilled workforce in the trade, tourism, finance and transport sectors, for example. Furthermore, efforts have been made to encourage prestigious universities (particularly in the Anglo-American countries) to establish international satellite campuses in the UAE by setting up free trade areas exclusively for educational institutions or entering into specific agreements that included special-purpose buildings or generous financial incentives. The UAE is now home to 37 institutions, the majority of these international branch campuses around the world. As almost all study programmes are available in English, the UAE is in a position to offer a wide range of attractive international degree programmes, not just to the expats already based in the country, but also to international students from the region.

Depending on the host country, the shares of the key countries of origin vary in relation to the respective total number of international students: with the highest number of international students, China and India are the two key countries of origin for the top five host countries US, United Kingdom, Australia, Germany and Canada. While these two countries alone account for approximately half of all international students in

Footnotes

1 Total number of domestic students from OECD statistics where not included in UNESCO data.
2 International doctoral students in Germany including *Bildungsinlaender:* The OECD statistics include the data from the Federal Statistical Office's survey of doctoral students, which – unlike the student statistics compiled by the Federal Statistical Office – include doctoral students who were not enrolled. However, until now, it has not been possible to distinguish between international students and *Bildungsinlaender* in these data.
3 Data from 2019 as UNESCO data are not yet available for 2020.
4 Including Hong Kong and Macao. Mobility between Hong Kong and Macao has been excluded. As no country-specific data on incoming students are available for China, students moving from Hong Kong and Macao to China are however still included.
5 Only countries with at least 10,000 international students.
6 As current data were not yet available for 2020, Russia was excluded from this representation and France included instead.
7 Including Hong Kong and Macao.
8 Unclear whether students from Hong Kong and Macao are included.
9 See Preiss (2012).
10 See Fox/Al Shamisi (2014).

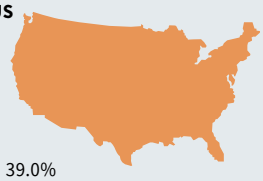
Australia (48%), the US (50%) and Canada (55%), their share is considerably lower in Germany (18%). The countries of origin are thus noticeably more diverse in Germany than in Australia, the US or Canada. A comparatively low level of diversity can also be observed in the United Kingdom, where Chinese and Indian students make up 39% of all international students. For the US, Australia, Canada and the United Kingdom, this means that the enrolment figures for international students largely depend on just one or two countries of origin. Particularly in these four countries, this dependency is further exacerbated by the fact that international students pay significantly higher tuition fees than domestic students and therefore contribute a large share of university funding. Sudden drops in inbound mobility from these two countries of origin can soon cause tremendous problems for the entire university funding in these countries. One example is the conspicuous decline in the number of Indian students in Australia between 2007 and 2011, from over 30,000 students to fewer than 10,000 students.[9]

Apart from China and India, the key countries of origin of international students in Canada notably include France and the US, which are closely linked to Canada by virtue of their language and culture. In the case of Germany, the relatively high number of students from Austria and Russia can certainly also be attributed in part to strong economic and cultural ties. With 63% and 20% of all internationally mobile students from Austria and Russia respectively, Germany is also their key host country.

Apart from China, the key countries of origin of international students in France primarily include francophone African countries, such as Algeria, Morocco, Senegal and Tunisia, which are still intimately connected to France on account of their colonial past. A similarly strong regional profile of origin of international students can be seen in Australia, where the five key countries of origin are all located in their own region (Asia and Pacific).

A1.4 Key countries of origin of international students in the key host countries, 2020[6]

Host country: US



Other countries 39.0%

Country of origin	Number	in %
China[7]	350,795	36.6
India	128,578	13.4
South Korea	46,996	4.9
Saudi Arabia	30,860	3.2
Canada	26,524	2.8

Host country: Germany

Other countries 71.2%

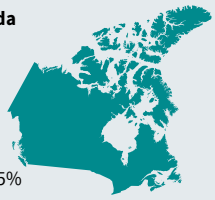
Country of origin	Number	in %
China[7]	39,621	10.7
India	25,130	6.8
Syria	15,769	4.3
Austria	14,514	3.9
Russia	11,055	3.0

Host country: United Kingdom

Other countries 52.0%

Country of origin	Number	in %
China[7]	160,964	29.2
India	55,232	10.0
US	19,762	3.6
Italy	14,479	2.6
France	13,912	2.5

Host country: Canada



Other countries 33.5%

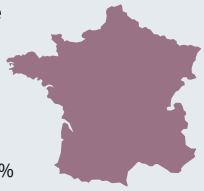
Country of origin	Number	in %
India	95,031	29.4
China[7]	83,058	25.7
France	18,198	5.6
US	9,303	2.9
Vietnam	9,243	2.9

Host country: Australia

Other countries 36.1%

Country of origin	Number	in %
China[7]	137,684	30.0
India	84,484	18.4
Nepal	40,752	8.9
Vietnam	15,959	3.5
Malaysia	14,125	3.1

Host country: France



Other countries 60.0%

Country of origin	Number	in %
Morocco	32,707	13.0
China[8]	24,780	9.8
Algeria	22,895	9.1
Senegal	10,897	4.3
Tunisia	9,796	3.9

Source: UNESCO, student statistics; country-specific reporting periods; DAAD calculations

1.3 Major countries of origin

The two key countries of origin of internationally mobile students are China, with around 1,067,000, and India, with around 528,000 internationally mobile students. These are followed – by a wide margin – by Vietnam (around 138,000), South Korea and Germany (127,000 each), whereby South Korea was in fifth place the previous year. Furthermore, it should be noted that, in addition to the UNESCO figures, these statistics also include publicly accessible data released by China's Ministry of Education (MOE) on the top 15 countries of origin for international students in China in 2018. These data are still missing from the UNESCO statistics. As in the last edition of *Wissenschaft weltoffen*, the proportion of the non-degree related visits of international students has been excluded in order to obtain figures for international student mobility to China that can be compared as closely as possible with UNESCO statistics for other countries. Once again, with regard to the countries of origin, it is crucial to distinguish between countries with the highest absolute number and countries with the largest percentage of internationally mobile students. Although China was by far the most important country of origin in 2020, with some 1,067,000 internationally mobile students, they account for just 2% of all Chinese students. In India, the second key country of origin, the share of internationally mobile students is a mere 1%. By contrast, several other countries report markedly higher shares of internationally mobile students in relation

> "65% of internationally mobile students from South Korea are enrolled in North America, while just 14% remain in the Asia and Pacific region.

A1.5 Countries of origin with the highest number and the highest proportion of internationally mobile students in 2020[2]

Country of origin	Number of internationally mobile students
China[3]	1,067,165
India	528,403
Vietnam	138,484
South Korea	127,145
Germany[4]	126,912
US	120,837
France	114,262
Kazakhstan	96,513
Nepal[5]	95,268
Brazil[5]	89,151

Country of origin[6]	Proportion of internationally mobile students in %
Luxembourg[5]	63.1
Turkmenistan[5]	48.8
Cyprus[5]	32.8
Slovakia[5]	18.3
Nepal[5]	17.7
Moldova[5]	16.7
Azerbaijan[5]	16.3
Uzbekistan[5]	16.2
Kuwait[5]	15.9
Bosnia and Herzegovina[5]	15.4

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DAAD calculations

Footnotes

1 This ratio should be understood as the share of German students studying abroad for a degree in relation to the total number of German students. It is therefore substantially lower than the ratio of students on temporary study-related visits abroad (see Chapter C2).

2 To obtain as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from China's Ministry of Education (MOE) on the countries of origin of international students in China in 2018. Data are available on the top 15 countries of origin of international students in China: Bangladesh, France, India, Indonesia, Japan, Kazakhstan, Laos, Malaysia, Mongolia, Pakistan, Russia, South Korea, Thailand, the US and Vietnam. They have not yet been included in the UNESCO statistics. The proportion of non-degree related visits of international students has been excluded to obtain figures for international student mobility to China that can be compared as closely as possible with UNESCO statistics for other countries. The decline in international students in China compared to *Wissenschaft weltoffen 2020* is therefore for statistical reasons. Also includes UNESCO data for international students to Hong Kong and Macao in 2020.

3 Including Hong Kong and Macao. Mobility between Hong Kong and Macao has been excluded. As no country-specific data on incoming students are available for China, students moving from Hong Kong and Macao to China are however still included.

4 The UNESCO statistics were supplemented by data from the Federal Statistical Office to include the number of German students in China in 2020. Thus far, the data are not included in the UNESCO statistics nor in the statistical report of China's Ministry of Education (MOE).

5 Excluding the number of international students in China as they are not included in the UNESCO statistics nor in the statistical report of China's Ministry of Education (MOE).

6 Only countries with at least 10,000 internationally mobile students.

7 Data from 2019 as UNESCO data are not yet available for 2020.

8 Including Hong Kong and Macao.

9 See also Barnett et al. (2016), Didelon/Richard (2012), Shields (2013), Shields (2016).

10 It should, however, be noted that, the larger the size and number of countries within a region, the greater the likelihood of a high proportion of intraregional mobility, which is therefore strongly influenced by the regional classification used. This is clearly illustrated, for example, by comparing North America with the Asia and Pacific region.

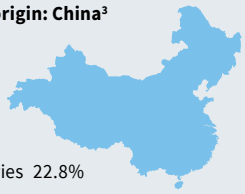
to the total number of students. In particular, they include countries with limited study capacities or an underdeveloped higher education system by global standards: Luxembourg (63%), Turkmenistan (49%), Cyprus (33%), Slovakia, Nepal (18% each), Moldova (17%), Azerbaijan, Uzbekistan, Kuwait (16% each), plus Bosnia and Herzegovina (15%). According to UNESCO statistics, the share of internationally mobile students in Germany is around 4% of all students.[1]

Looking at both the countries of origin with the highest shares and those with the greatest increase in the number of internationally mobile students recorded by UNESCO, it is striking that smaller countries, as well as countries that do not yet have an internationally renowned higher education system, record particularly high percentages and growth rates. On the other hand, the mobility rates and growth rates are much lower by comparison in countries such as Germany, the US or the United Kingdom. This is partly explained by the fact that UNESCO statistics primarily record degree-related international student mobility (see the methodology info box on p. 12). The motives for this form of mobility differ fundamentally from those for temporary study-related mobility. While degree-related international mobility generally stems from the individual's endeavour to improve their life and career prospects by graduating from a foreign university, temporary study-related mobility tends to be characterised by motives such as broadening horizons, honing language skills and career promotion.

Historical, linguistic, economic and political factors lead to clear preferences among the host countries favoured by internationally mobile students.[9] In some cases, this may create a strongly regional orientation of student mobility.[10] For example, 72% of German students remain within the Western European region when studying abroad, while 61% of internationally mobile Vietnamese students stay in the Asia and Pacific region. By contrast, a significantly lower proportion of intraregional mobility is evident among Chinese and Indian students, only 25% and 21% of whom choose a country in the Asia and Pacific region respectively, while 47% and 46% respectively opt to study in North America. The same finding applies to an even greater extent among South Korean students. In this case, 65% of internationally mobile students are currently enrolled in North America, while the share of students preferring to stay in the Asia and Pacific region is just 14%.

A1.6 Preferred host countries of internationally mobile students from the key countries of origin in 2020[2]

Country of origin: China[3]



Other countries 22.8%

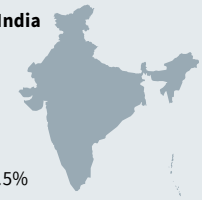
Host country	Number	in %
US	350,795	32.9
United Kingdom	160,964	15.1
Australia	137,684	12.9
Japan[7]	91,528	8.6
Canada	83,058	7.8

Country of origin: Germany

Other countries 35.2%

Host country	Number	in %
Austria	30,503	24.0
Netherlands[7]	21,314	16.8
United Kingdom	12,445	9.8
Switzerland	11,185	8.8
US	6,823	5.4

Country of origin: India



Other countries 26.5%

Host country	Number	in %
US	128,578	24.3
Canada	95,031	18.0
Australia	84,484	16.0
United Kingdom	55,232	10.5
Germany	25,130	4.8

Country of origin: South Korea

Other countries 17.4%

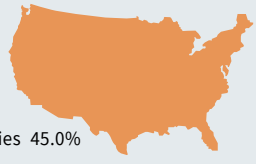
Host country	Number	in %
US	46,996	37.0
China[8]	28,190	22.2
Japan[7]	14,328	11.3
Australia	8,213	6.5
Canada	7,143	5.6

Country of origin: Vietnam

Other countries 17.9%

Host country	Number	in %
Japan	44,128	31.9
US	25,183	18.2
South Korea	19,098	13.8
Australia	15,959	11.5
Canada	9,243	6.7

Country of origin: US



Other countries 45.0%

Host country	Number	in %
Mexico	20,245	16.8
United Kingdom	19,762	16.4
China[8]	11,161	9.2
Canada	9,303	7.7
Germany	8,246	6.8

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations

1.4 Student mobility in Europe

One of the central objectives of European higher education policy is to increase student mobility in the European Higher Education Area (EHEA). In 2011, a specific mobility goal was set for all EU countries in the "Council conclusions on a benchmark for learning mobility" and subsequently adopted for all EHEA countries one year later in the Bucharest Communiqué, as part of the Bologna Process. According to this, by 2020 at least 20% of any cohort of university graduates in the EU or EHEA countries should have obtained a degree abroad or gained temporary study-related mobility experience. Temporary study-related mobility is defined as recognised study visits and placements of at least three months' duration or with at least 15 ECTS credits. Corresponding data have so far only been published for the EU countries. According to the latest statistics, in 2020, 13.5% of university graduates in the EU were internationally mobile during their studies, as per the criteria of the EU mobility benchmark. The largest share of these, 9.1%, was temporary study-related mobility (credit mobility), while the remaining 4.3% was degree mobility. Not only was the EU mobility goal not met by the target year 2020, it may be assumed to have plummeted year-on-year due to the pandemic.[1]

A comparison between the individual EU countries shows noticeable differences with regard to student mobility. Luxembourgish students lead by a clear margin, with an overall mobility rate of roughly 85%. 74% of Luxembourgish students alone are mobile in relation to their degree and spend their entire period of study abroad. Cyprus (36%), the Netherlands (24%) and Slovakia (21%) are considerably further behind, but also report mobility rates that are well above average. There are large differences between these three countries – as in a comparison of all other EU countries – in terms of which type of mobility is preferred by students. While students from Cyprus and Slovakia almost exclusively study abroad for a degree (34% and 17% respectively), temporary study-related visits abroad dominate in the Netherlands (21%). All other EU countries are still below the target of 20%, including Germany (17%)[2].

As of 2020, the key student mobility flows within the EHEA, with over 20,000 students each, go from Germany to Austria from Ukraine to Poland, from Slovakia to the Czech Republic, and from Azerbaijan to Turkey. The key host country for students from the EHEA is the United Kingdom with

A1.7 Mobility rates of students in the EU by countries of origin in 2020[3]

Country of origin	Proportion of internationally mobile students in %		
Luxembourg	73.7	11.7	85.4
Cyprus	33.5	2.1	35.6
Netherlands	3.4	20.9	24.3
Slovakia	17.2	3.6	20.9
France	3.7	15.3	19.0
Finland	4.4	13.2	17.6
Germany	5.2	11.9	17.1
Malta	10.2	6.7	16.9
Lithuania	10.4	6.3	16.7
Estonia	9.4	5.5	14.9
Sweden	3.7	10.6	14.4
Italy	4.6	9.6	14.3
Austria	5.8	8.4	14.2
Greece	12.5	1.7	14.2
Latvia	7.5	6.2	13.7
Czech Republic	5.3	7.4	12.7
Bulgaria	10.0	1.6	11.5
Spain	2.2	9.0	11.2
Denmark	1.9	9.1	11.1
Portugal	4.7	6.2	10.9
Belgium	3.9	6.3	10.2
Croatia	4.0	3.5	7.5
Romania	5.4	1.5	6.9
Slovenia[4]	5.9	n.a.	5.9
Ireland[4]	5.6	n.a.	5.6
Hungary	1.8	1.8	3.6
Poland	1.5	1.5	3.0
Total EU	4.3	9.1	13.5

Figures in %
XX Total mobility
Degree-related international mobility
Temporary study-related mobility

Source: European Commission, Education and Training Monitor 2022

Footnotes

1 It should be noted here that, in some countries (including Germany), mobility data are still based on estimates or projections as their national higher education statistics have not yet provided any corresponding official data. Moreover, no data on temporary study-related mobility are currently available for two countries (Ireland and Slovenia). However, since all EU countries are encouraged to enhance their higher education statistics accordingly, the data situation is expected to continue to improve in the coming years.

2 The drop in Germany's mobility rate from 19.9% (2018) to 17.1% may be explained by a change in reporting statistics. As of reporting year 2019, the Federal Statistical Office also included upgrading training courses in vocational tertiary education in its calculation for Germany. However, as virtually no international mobility takes place in this sector, this addition inevitably led to a significant reduction in the mobility rate.

3 Deviations of the combined individual percentages from the total figure are due to rounding.

4 No data on temporary study-related mobility are currently available for these countries.

5 For the sake of clarity, only mobility flows with at least 5,000 students are shown.

6 Data from 2019 as UNESCO data are not yet available for 2020.

7 To obtain as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from China's Ministry of Education (MOE) on the countries of origin of international students in China in 2018. Data are available on the top 15 countries of origin of international students in China: Bangladesh, France, India, Indonesia, Japan, Kazakhstan, Laos, Malaysia, Mongolia, Pakistan, Russia, South Korea, Thailand, the US and Vietnam. They have not yet been included in the UNESCO statistics. The proportion of non-degree related visits of international students has been excluded to obtain figures for international student mobility to China that can be compared as closely as possible with UNESCO statistics for other countries. The decline in international students in China compared to *Wissenschaft weltoffen 2020* is therefore for statistical reasons. Also includes UNESCO data for international students to Hong Kong and Macao in 2020.

8 The UNESCO statistics were supplemented by data from the Federal Statistical Office to include the number of German students in China. They have not yet been included in the UNESCO statistics.

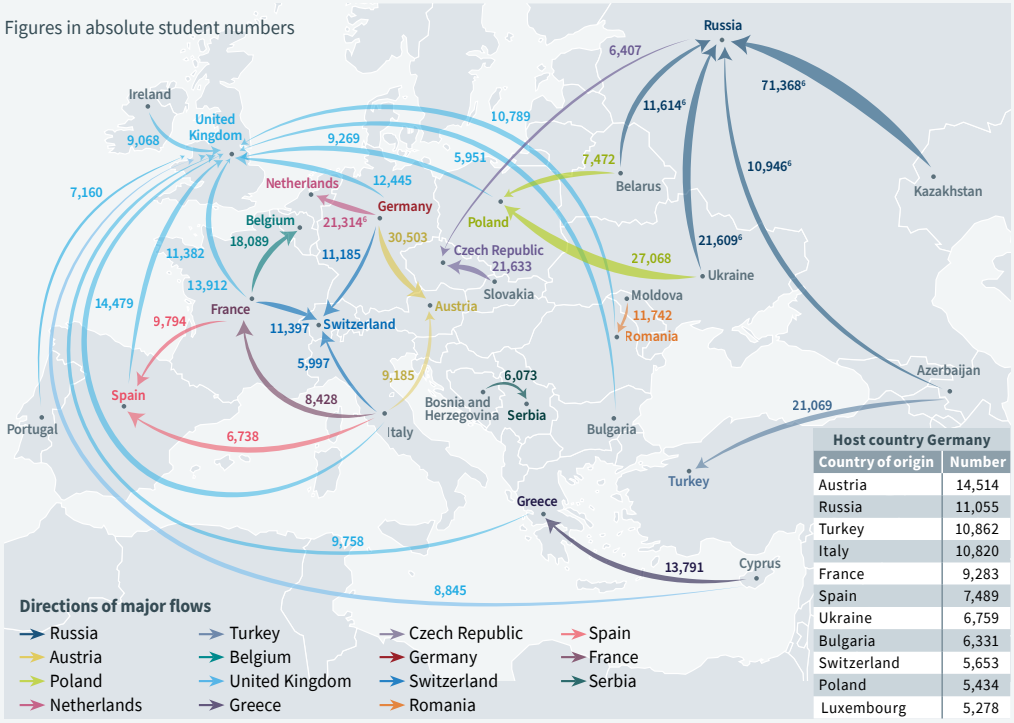
9 Includes data from 2019 on the host countries Russia and the Netherlands as no data are available for 2020.

around 166,000 international students from other EHEA countries, followed by Germany (137,000), Austria (66,000) and Poland (47,000). The key country of origin of students from the EHEA is Germany, with roughly 111,000 internationally mobile students in other EHEA countries, followed by Kazakhstan (83,000), France (78,000), Ukraine (75,000) and Italy (74,000).

Looking at the 20 key host countries of the EHEA, it is clear that the EHEA plays a very different role as a region of origin for international students in these countries. The countries with the highest shares of students from EHEA countries are Austria (89%), the Czech Republic (86%), Denmark (80%) and Poland (76%). Comparatively low proportions of international students from EHEA countries are found in Kazakhstan (5%), Portugal (15%) and France (17%), for example.

By the same token, there are also considerable differences within the EHEA with regard to the 20 key countries of origin. At 98% each, Cyprus, Belarus, Slovakia and Azerbaijan report the highest shares of internationally mobile students in other EHEA countries. Conversely, the proportion of host countries outside the EHEA does not exceed 50% in any country. The highest shares are observed in the United Kingdom (43%), Russia (33%), France (31%) and Turkey (27%). Although most internationally mobile students from many EHEA countries appear to be studying in other EHEA countries, this does not mean that they represent the majority of international students in these countries. Students from non-EHEA countries dominate particularly in the United Kingdom and Germany, the two key host countries of the EHEA.

A1.8 Major flows of student mobility within the European Higher Education Area in 2020[5]



Host country Germany

Country of origin	Number
Austria	14,514
Russia	11,055
Turkey	10,862
Italy	10,820
France	9,283
Spain	7,489
Ukraine	6,759
Bulgaria	6,331
Switzerland	5,653
Poland	5,434
Luxembourg	5,278

Sources: UNESCO/OECD, student statistics

A1.9 Key host countries of the European Higher Education Area by shares of incoming students from EHEA and non-EHEA countries, 2020

	Number of incoming students				
	From EHEA countries			From non-EHEA countries	
Host country	Number	Ratio in %			Number
Austria	65,617	89		11	8,204
Czech Republic	40,680	86		14	6,873
Denmark	25,268	80		20	6,205
Netherlands[6]	62,175	76		24	19,305
Poland	46,767	76		24	15,176
Switzerland	41,702	75		25	13,540
Romania	23,671	73		27	8,880
Belgium	30,601	71		29	12,668
Hungary	19,672	51		49	18,599
Sweden	12,149	48		52	13,066
Russia[6]	128,729	47		53	145,737
Germany	137,279	40		60	203,341
Italy	22,051	38		62	35,682
Spain	30,447	37		63	51,189
United Kingdom	165,959	30		70	384,868
Turkey	44,276	24		76	140,012
Ukraine	11,388	19		81	49,633
France	42,293	17		83	201,817
Portugal	6,522	15		85	37,460
Kazakhstan	2,222	5		95	38,516

Source: UNESCO, student statistics; DAAD calculations

A1.10 Key countries of origin of the European Higher Education Area by shares of outgoing students to EHEA and non-EHEA countries, 2020[7, 9]

	Number of outgoing students				
	To EHEA countries			To non-EHEA countries	
Country of origin	Number	Ratio in %			Number
Cyprus	25,466	98		2	483
Belarus	23,847	98		2	566
Slovakia	30,151	98		2	734
Azerbaijan	44,091	98		2	1,093
Bulgaria	24,148	96		4	970
Romania	30,041	96		4	1,323
Ukraine	75,381	95		5	3,782
Austria	22,450	94		6	1,499
Greece	37,500	93		7	2,829
Poland	24,004	91		9	2,400
Portugal	20,470	90		10	2,198
Germany[8]	110,705	88		12	15,733
Italy	73,608	87		13	10,562
Kazakhstan	82,798	87		13	12,720
Netherlands	15,418	81		19	3,531
Spain	35,744	77		23	10,957
Turkey	36,839	73		27	13,812
France	77,878	69		31	35,339
Russia	44,318	67		33	21,360
United Kingdom	22,270	57		43	16,482

Sources: UNESCO, student statistics; Federal Statistical Office, "Deutsche Studierende im Ausland" survey; MOE, statistical report on international students in China for 2018; DAAD calculations

SPOTLIGHT

Retention of international students in major host countries

How many international students remain in their respective host country after completing their degree? And how big are the differences between the various host countries? The OECD discussed these questions as part of its "International Migration Outlook", published in late 2022, particularly in light of the skills shortages lamented by many of the OECD member countries reviewed therein. It should be noted that not all OECD countries were able to provide the corresponding data, including the US. Moreover, the calculated quotas for all EU countries refer only to international students from non-EU countries as EU students do not require a residence permit due to the freedom of movement within the EU and are thus not included in the respective register data.

The OECD analysis compares the shares of international first-year students in the OECD countries under review who were still resident in that country after five and ten years respectively. First, the two five-year retention rates were calculated for the first-year cohorts of 2010 and 2015, followed by the ten-year retention rate for the first-year cohort of 2010. A comparison of the findings by country reveals that Canada and Germany report by far the highest retention rates. By contrast, the lowest retention

Benedikt Brisch, Director of the DAAD Regional Office in New York and Director of the German Center for Research and Innovation New York

It is no coincidence that **Canada** tops the league, along with Germany, regarding the retention rates of international students. This is also the result of a positive culture of welcome with specific opportunities for well-qualified international students who want to stay. A territorial state with a high quality of life and a globally networked economy, Canada is a traditional immigration country that is in sore need of highly qualified specialists. In the past, the Canadian government has consistently organised strategic programmes aimed at retaining international students, outlining specific routes with clear requirements and advisory services. One requirement is that, in addition to living expenses, international students have to pay substantial tuition fees, which the universities then invest in ensuring a sound infrastructure, with excellent teaching and support. Canada's International Education Strategy 2019–2024 aims to increase the number of international students, clearly stating that well-qualified students will be given opportunities to stay. However, the success of this policy has also created new problems: on occasion, Canadian authorities were unable to issue visas on time and the questionable practices of some consulting agencies, who made dubious promises, came to light.

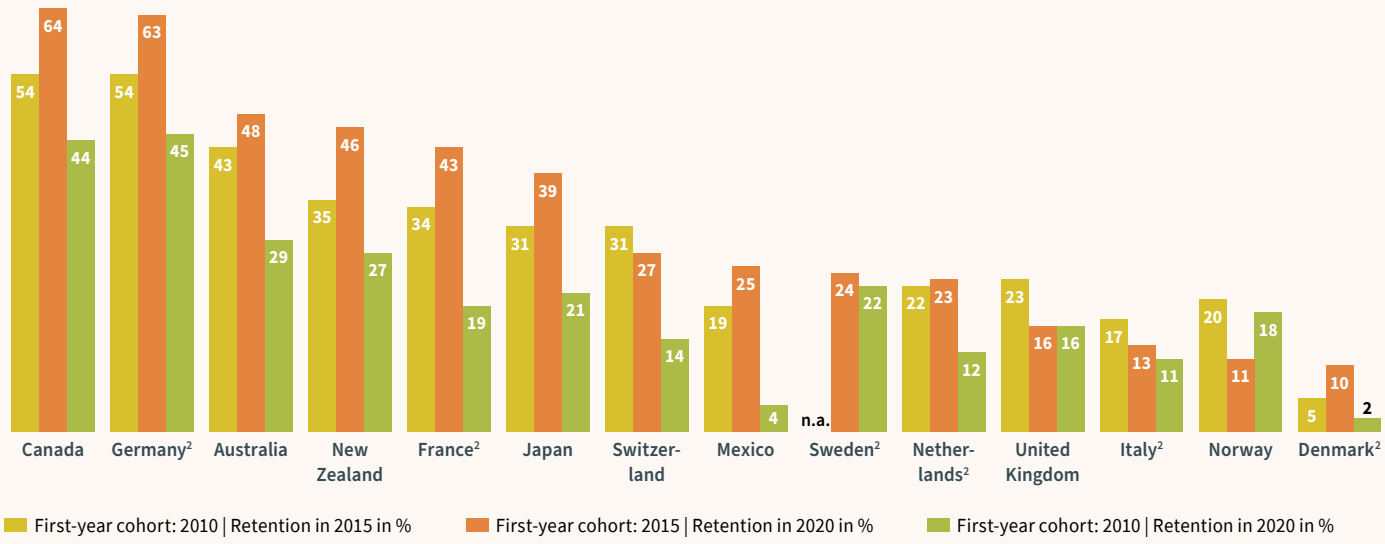
Database as the method of calculation

The OECD analysis on the retention of international students is based on national data on the study-related residence permits issued to these students. These data show in what year an individual first received a residence permit for the purpose of studying in a particular country. To calculate the retention rates, the OECD defined the initial group as all students who were issued a residence permit for the first time in a specific year for the purpose of studying. The second step was to check how many members of this initial group were still resident in the country in question after five or ten years. Accordingly, the retention rates refer to a first-year student cohort, not a graduate cohort, as the corresponding register data in most countries do not document whether a course of study was successfully completed. For example, the data source for Germany was the Central Register of Foreigners (Ausländerzentralregister, AZR), which records the residence permits of all visitors from non-EU and non-EEA countries. This group requires a residence document or permit if they wish to stay in Germany for more than 90 days. However, visitors from EU or EEA countries do not require a residence permit and are thus not registered in the AZR.

Silke Schoppe, Educational Project Manager of the DAAD Information Centre in Sydney

For many international students, **Australia** is the country of their dreams. Offering a high quality of life, it is considered extremely safe. In addition to breathtaking natural scenery and vibrant, multicultural metropolises like Sydney and Melbourne, students discover a higher education system with an international outlook and a high quality of teaching. It therefore comes as no surprise that the retention rate of students is high by OECD standards. One major factor is the enormous demand for skilled workers, which the government has addressed by introducing graduate visas and adequate labour legislation, both of which facilitate the migration of specialised personnel. The excellent quality of life in Australia is another compelling reason. The country has earned a reputation for being extremely safe, with spectacular scenery and multicultural cosmopolitan cities offering a wealth of recreational activities. While at university, international students forge ties and establish networks that prove to be invaluable for their career opportunities and employment prospects, often serving as a catalyst for their decision to remain in Australia. They gain work experience, secure long-term employment contracts and undertake further training to improve their chances on the labour market. In turn, this lays the foundations for obtaining permanent residence.

AS1 Retention rates for international first-year students in selected OECD host countries in 2015 and 2020 (retention after five and ten years)



Source: OECD, International Migration Outlook 2022

rates can be observed in Denmark, Norway and Italy, while the quotas in the United Kingdom and the Netherlands are only slightly higher. Other major host countries such as Australia, New Zealand and France rank somewhere in between.

Comparing the ten-year retention rates between 2010 and 2020 in the countries studied, Germany just beats Canada to first place, with 45% and 44% respectively, followed by Australia (29%), New Zealand (27%), Sweden (22%)and Japan (21%).

The corresponding shares are relatively low in the United Kingdom (16%), Switzerland (14%), the Netherlands (12%) and Italy (11%). It is also striking that, in many countries, the five-year retention rate found among the 2015 first-year

Germany is a popular host country for international students and tops the ranking of non-English speaking countries. However, Germany does not traditionally define itself as an immigration country and has long struggled to attract international students for recruitment onto the German labour market. Instead, its focus was on developing the respective countries of origin. The regulations for obtaining a work permit make this clear: for a long time, those graduating in Germany were subject to the same rigid immigration rules as any other applicants. At first glance, then, the high retention rate is astonishing. Key factors probably include the robust German labour market, the high standard of living and employers' ever-increasing interest in international skilled workers. A shortfall of some 240,000 specialists is anticipated by 2026 alone – and demographic development will only exacerbate the situation. Compare this to the 75,000 international students embarking on their studies in Germany every year, a disproportionately high number of whom drop out of their studies, however. Therefore, the DAAD recently published a position paper, putting forward specific proposals of how to inspire even more young people to study in Germany, how to improve the academic success of these students and facilitate their transition into the workforce.

Stephan Fuchs, Head of DAAD Section for Strategic Development and Higher Education Policy

Footnotes

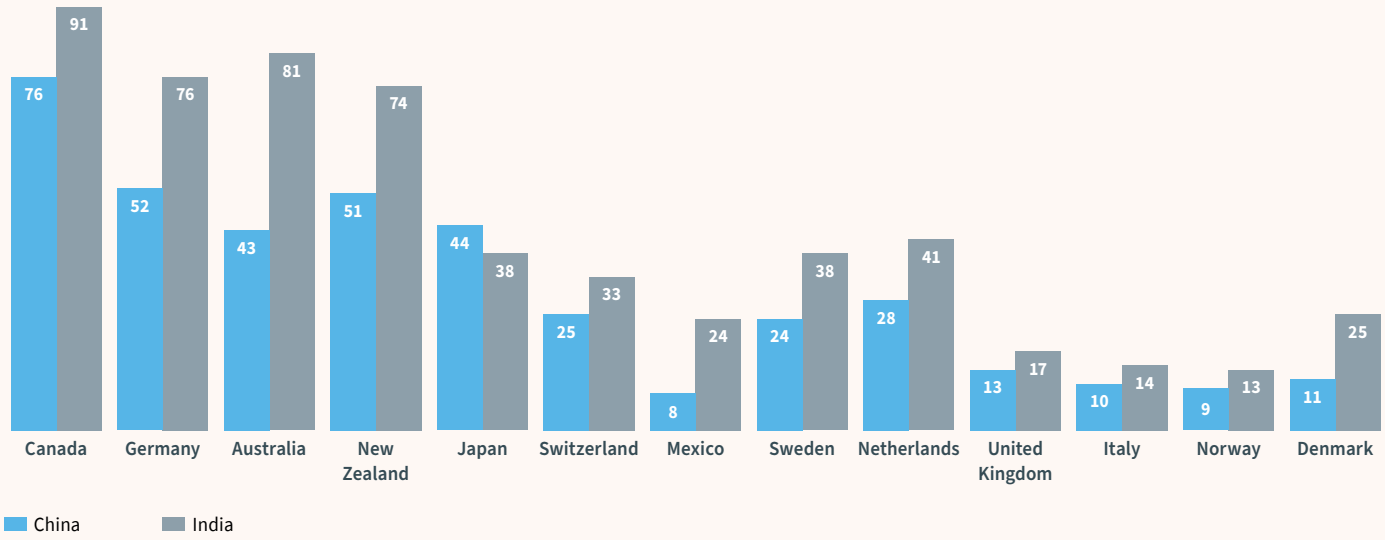
1 In Canada, for example, international students' study-related residence permits may be extended by up to 36 months on obtaining their degree, while in Germany, students from non-EU countries are granted the right to stay for 18 months after graduating to look for employment.

2 Only students from non-EU countries of origin.

SPOTLIGHT

Retention of international students in major host countries

AS2 Retention rates for international first-year students from China and India in selected OECD host countries in 2020 (retention after five years)



Source: OECD, International Migration Outlook 2022

cohort is higher than that of the 2010 first-year cohort. This applies inter alia to Canada (64% vs. 54%), Germany (63% vs. 54%), Australia (48% vs. 43%) and France (43% vs. 34%). Arguably, the intensified efforts devoted by the various host countries over the last two decades to retaining foreign specialists are having an impact, for example, in the form of more liberal residence regulations on obtaining a degree.[1] Other important reasons that might explain the identified increase in retention rates include rising academic success rates, positive economic developments and targeted initiatives to facilitate international graduates' transition into the labour markets of the various host countries, for example, by establishing specialised career services for international students or structured language training.

A further finding of the OECD analysis clearly shows that the retention rates of international students vary considerably, not just from one host country to another, but also from one country of origin to another. These rates were compared in the two key countries of origin, China and India. Almost all host countries reported an above-average retention rate among Indian students, as opposed to a below-average retention rate for Chinese students.

Ruth Krahe, Director of the DAAD Regional Office in London

Efforts are also being made to attract skilled personnel to the **United Kingdom**. Analyses suggest that Brexit has made the skills shortage even more acute. Two aspects probably play a crucial role in explaining the exceptionally low retention rates in the OECD evaluation, despite the skills shortage: firstly, unlike in Australia and Japan, for example, all EU citizens can be disregarded as they did not require a visa to settle and take up employment there prior to Brexit, in line with EU legislation on freedom of movement. Studies indicate that, before Brexit came into force, EU students certainly considered the United Kingdom an attractive base from which to work. Moreover, the declining retention rate of international students compared to that from 2010 to 2015 is linked to a change in legislation under then Home Secretary Theresa May. In 2012, she suspended the simplified visa process for international students. As a result, all non-EU students had to leave the country within four months of graduating. The Graduate visa scheme was re-introduced in April 2021, offering international bachelor's and master's graduates the opportunity to work in the United Kingdom for two years after successfully completing their course.

Axel Karpenstein, Director of the DAAD Regional Office in Tokyo and Director of the German Centre for Research and Innovation Tokyo

Japan is facing daunting demographic challenges. A shortfall of no less than 6.4 million specialised personnel, approximately 9% of the working population, is predicted by 2030. Since 2008, therefore, the government has been reinforcing its efforts to recruit international students for integration in the workforce. To date, the conservative government has struggled with opening up the labour market for foreign workers. International students who have spent several years at a Japanese university are considered to be better acculturated. In fact, the number of students from abroad who extend their stay in Japan after graduating almost quadrupled between 2010 and 2019, soaring to just under 30,000 students. The rise in OECD retention rates between 2015 and 2020 reveals international graduates' increased interest in employment. Nonetheless, the drop in the rate of those remaining after ten years also highlights the challenges involved, such as the high demands for fluency in the workplace and problems with social integration. Japanese employers also indicate that insufficient language and workplace skills are obstacles to employment. It is thus doubtful whether international students will truly be able to help alleviate the skills shortage.

2.1 Mobility trends and mobility flows

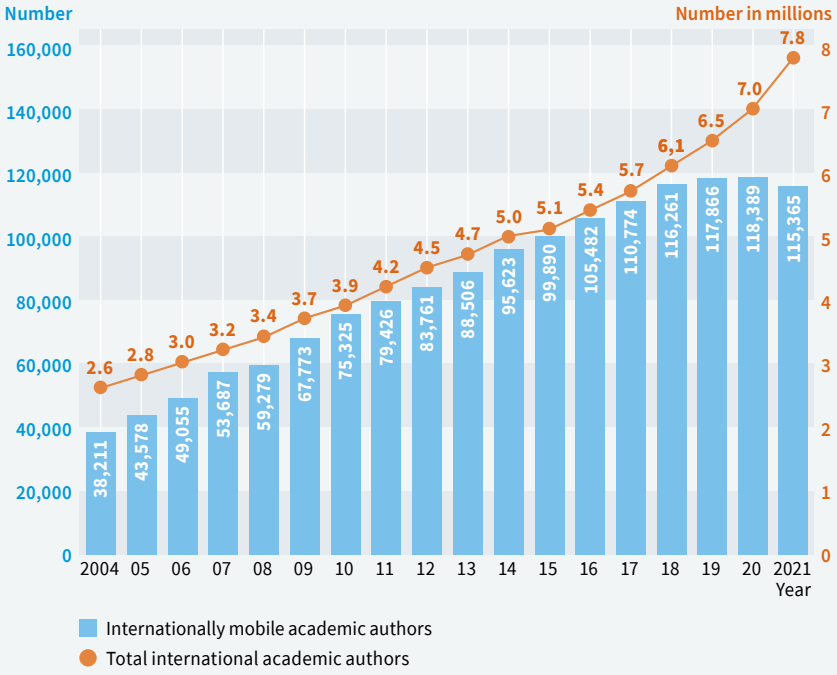
A bibliometric analysis carried out for *Wissenschaft weltoffen* on the basis of Scopus data found approximately 115,000 internationally mobile academic authors around the world for 2021 (see the methodology info box). This represents a year-on-year reduction of roughly 3% (around 118,000), which may perhaps be attributed to the mobility restrictions caused by Covid-19. Since 2011, the number of internationally mobile academics and researchers has shot up by 45%. The percentage of internationally mobile academics and researchers of all academics and researchers recorded worldwide rose from 1.5% in 2004, when the survey was first conducted, to 1.7% in 2008; this figure barely fluctuated at 1.8% or 1.9% until 2019, subsequently dropping back to 1.5% in 2021.[1] In other words, the increase in internationally mobile academics and researchers between 2004 and 2019 shown here may be primarily attributed to the fact that the number of academics and researchers worldwide who contribute to academic journals continues to rise and not to a growing propensity for mobility among these academics and researchers.

With one exception, the US is the destination country or country of origin in the ten most significant international mobility flows of academics and researchers (i.e. the country pairings with the most mobile academics and researchers during the period 2019–2021).[2, 3] The highest numbers of mobile academics and researchers can be found in both directions between the US and China, Canada, Germany and the United Kingdom. As in the previous year, the two mobility flows between China and the US (and vice versa) are those with the most mobile researchers. The largest increases by far compared to the period 2016–2018[4] can be observed in the

Methodology

The international publication and citation database Scopus (Elsevier) is used as a data basis for bibliometric analyses of the mobility of academics and researchers presented here. This database documents the respective country of location of the author's institution for every publication. By this means, these databases can also be used to analyse the international mobility of academics and researchers since a comparison of the country of location of different articles submitted by an author allows conclusions to be drawn about their mobility biography. However, at least two publications during the period under review are required to determine mobility. Accordingly, junior researchers who have no or only one academic journal article to show for the period under review are excluded from the analysis, along with researchers whose publications are not documented in Scopus, for example, because they are monographs or form part of an edited volume. By the same token, if an academic or a researcher is mobile without publishing an article in their respective country of residence, this is not taken into account in the bibliometric analysis. Therefore, when interpreting the data, it is important to bear in mind that this analysis only provides an incomplete picture of the international mobility of academics and researchers (see also pp. 124/125). Nonetheless, this measurement is currently the best, most comprehensive method of calculating the international mobility of academics and researchers in a way that facilitates continuous monitoring.

A2.1 Number of internationally mobile academic authors and total number of academic authors worldwide since 2004[1]



Source: Scopus database (Elsevier); DZHW calculations

Footnotes

1 In the meantime, recalculations have produced more precise figures in terms of the numbers of mobile academic authors for 2018 and earlier, compared to the representation in *Wissenschaft weltoffen 2022*.

2 Owing to the associated low case figures, the period under review has been extended to three-year periods when analysing the mobility flows between individual countries in order to make the measurement less susceptible to short term developments (deviations) in individual years.

3 The term "host country" has been deliberately avoided in the following as the bibliometric analysis of academics and researchers' mobility cannot establish with certainty whether the country in question is actually hosting the academics and researchers or constitutes their home country, to which they returned after their visit abroad.

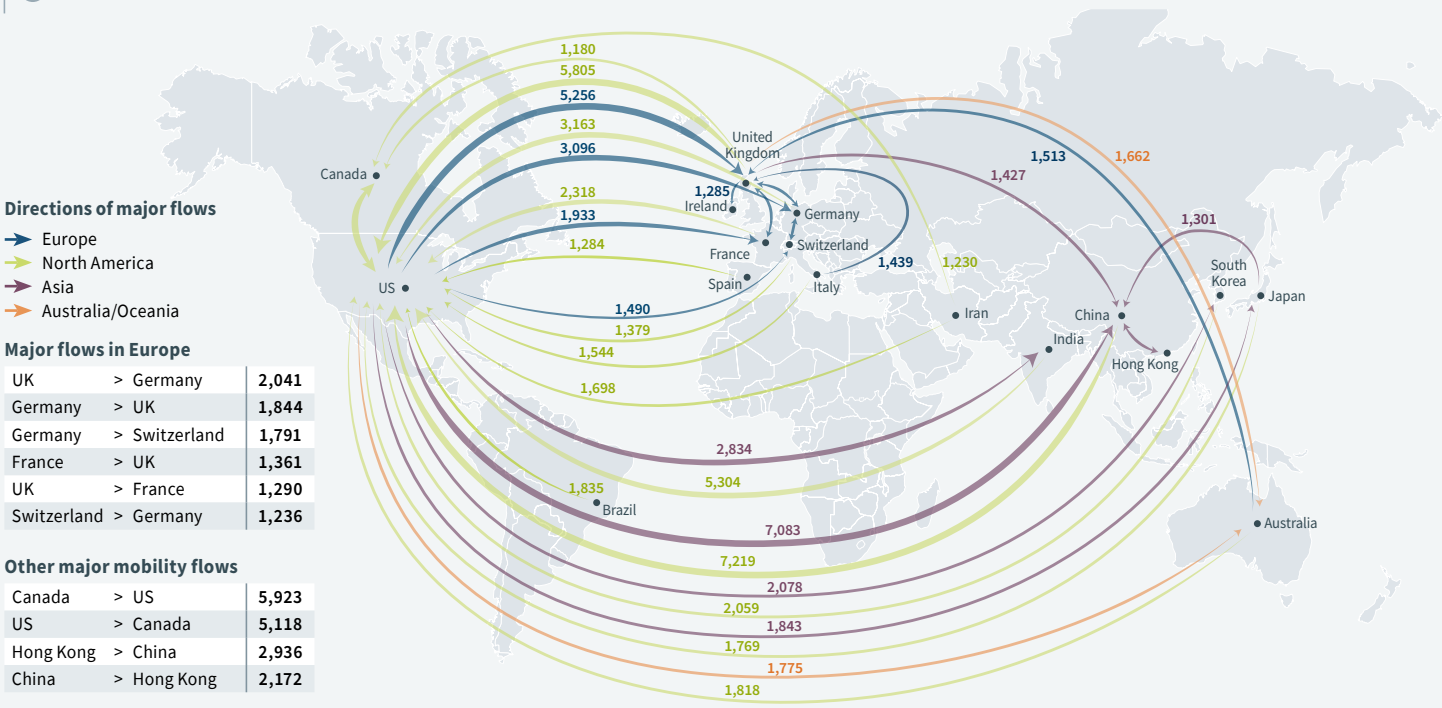
4 Please refer to the data table for Fig. A2.2 for information on the most important mobility flows during the period 2016–2018.

5 Due to its unique significance in China, China's special administrative region Hong Kong was included as a separate destination or origin.

6 For the sake of clarity, only the 40 most important mobility flows worldwide are shown.

7 Only countries with at least 5,000 incoming and outgoing academic authors in total.

A2.2 Key mobility flows of international academic authors from 2019–2021[4, 5, 6]



Major flows in Europe

UK	> Germany	**2,041**
Germany	> UK	**1,844**
Germany	> Switzerland	**1,791**
France	> UK	**1,361**
UK	> France	**1,290**
Switzerland	> Germany	**1,236**

Other major mobility flows

Canada	> US	**5,923**
US	> Canada	**5,118**
Hong Kong	> China	**2,936**
China	> Hong Kong	**2,172**

Figures in absolute numbers of academic authors

Source: Scopus database (Elsevier); DZHW calculations

mobility flows from the United Kingdom to Ireland (+59%), Hong Kong to China (+47%), from Iran to Canada (+38%), from the United Kingdom to China (+24%) and from China to Hong Kong (+23%).[5] By contrast, substantial declines are found in the flows from Spain (–23%), Japan (–20%), France (-19%) and Germany (–17%) to the US and from the US to France (-17%).

The international mobility flows of academics and researchers presented here indicate differing mobility parity in the various destination countries and countries of origin. The results show that the mobility parity in Germany and Belgium in particular is almost equal, in other words, the numbers of incoming and outgoing academics and researchers are virtually identical in the period under review (2019–2021). By contrast, certain trends are emerging in one direction for other major destination countries and countries of origin: while inbound mobility clearly predominates in Sweden, Switzerland, China, Australia and the US, outgoing mobility is equally pronounced in France, Spain, South Korea, Hong Kong and Italy. This disparity is even more noticeable in countries such as Saudi Arabia, Brazil, India and Iran.

A2.3 Mobility parity regarding internationally mobile academic authors in selected destination countries and countries of origin, 2019–2021[7]

	Internationally mobile academic authors				
	Incoming			Outgoing	
Country	Number	Share in %			Number
Saudi Arabia	5,170	65		35	2,802
Sweden	5,561	59		41	3,888
Switzerland	9,928	58		42	7,175
China	24,197	54		46	20,762
Australia	11,390	53		47	9,997
US	63,491	53		47	56,213
Canada	15,670	53		47	14,071
Netherlands	7,827	52		48	7,116
Germany	20,160	51		49	19,042
Belgium	4,615	51		49	4,441
United Kingdom	27,183	48		52	29,842
Japan	6,754	47		53	7,770
France	13,413	46		54	15,636
Spain	7,925	46		54	9,469
South Korea	5,081	45		55	6,194
Hong Kong	3,550	44		56	4,469
Italy	7,535	42		58	10,208
Brazil	3,674	35		65	6,683
India	8,088	35		65	15,124
Iran	1,814	21		79	6,726

Source: Scopus database (Elsevier); DZHW calculations

2.2 Major destination countries and the profiles of their countries of origin

Just as with international student mobility, internationally mobile academics and researchers have different preferences in terms of their destination countries. It is striking that the twelve destination countries around the world that each represent at least 2% of all internationally mobile academic authors primarily include European and Anglo-American countries. The sole exceptions are China and India.

The US is by far the most important destination country for internationally mobile academic authors. The bibliometric analysis found that the United States alone accounts for 18% of the total inbound mobility during the period 2019–2021. Lagging behind in second, third and fourth place are the United Kingdom (8%), China (7%) and Germany (6%).[1] Compared to the previous period 2016–2018, shares are down slightly in almost all major destination countries with the largest declines occurring in the US (–2.1 percentage points), the United Kingdom (–0.7) and France (–0.4).[2] By contrast, China shows sharp growth, with a plus of 1.2 percentage points, ranking third in the list of key destination countries, ahead of Germany.

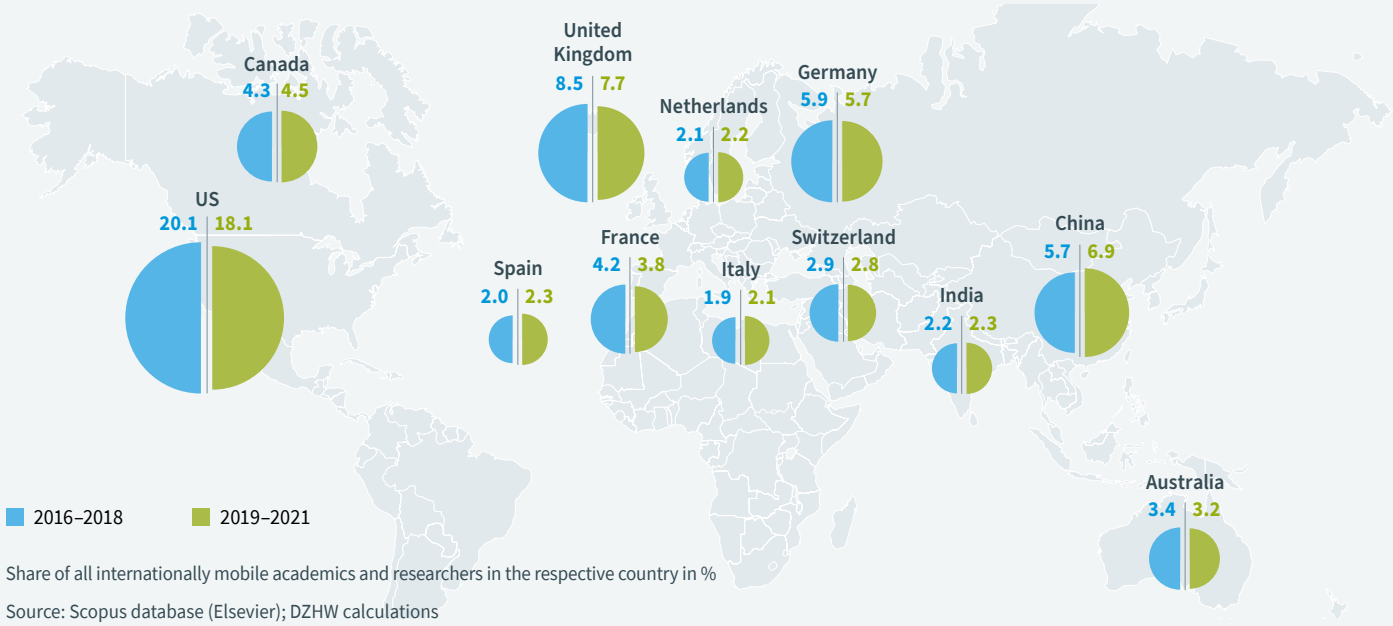
> “ The significance of the US as a country of origin has dwindled in all destination countries under review, particularly in China.

The proportion of incoming academics and researchers (including returnees) of all academics and researchers in the 30 key destination countries in 2021 is highest in Hong Kong at roughly 12%[3], followed by Saudi Arabia (10%), Switzerland (9%), Ireland (8%) and Singapore (7%). With a share of around 4%, Germany is in 17th place, behind the United Kingdom and the Netherlands (5% each), yet ahead of France and the US (3% each), Japan and China (1% each).

International academics and researchers in the US, the top destination country, have a highly diverse profile of origin. The three key countries of origin – China, Canada and the United Kingdom – collectively represent just approximately 30% of incoming academics and researchers, while the proportion is appreciably higher in destination countries like Canada (48%; countries of origin: US, Iran, UK) and China (47%; countries of origin: US, Hong Kong, UK) in particular. In both cases, this is mainly due to the US' remarkably high share as a country of origin. Switzerland as the third and Austria as the eighth key country of origin of incoming academics and researchers in Germany present special regional characteristics in their profiles of the countries of origin, along with Italy as the third key country of origin of incoming academics and researchers in France, and Japan as the fourth key country of origin of incoming academics and researchers in China. Furthermore, a glance at the key destination countries and countries of origin of mobile academics and researchers from or in China (see also p. 29) clearly shows a lively academic exchange between Hong Kong and mainland China.

Comparing the periods 2016–2018 and 2019–2021, a downward trend can be observed in the share of the ten key countries of origin in the destination countries under review, with the exception of the US. Conversely, the share of the other countries of origin rose relatively significantly, attesting to the ongoing diversification of the countries of origin among international academics and researchers in the key destination countries. The greatest increases in the shares of other countries of origin can be seen in China and Germany (roughly +2 percentage points in each case).

A2.4 Share of internationally mobile academic authors of all internationally mobile academic authors worldwide by key destination countries, 2016–2018 and 2019–2021[2]



Share of all internationally mobile academics and researchers in the respective country in %

Source: Scopus database (Elsevier); DZHW calculations

A2.5 Key countries of origin of internationally mobile academic authors in the six key destination countries, 2016–2018 and 2019–2021

Destination country: US

Origin: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
China	7,138	10.7	7,219	11.4
Canada	6,531	9.8	5,923	9.3
UK	6,416	9.6	5,805	9.1
India	4,456	6.7	5,304	8.4
Germany	3,803	5.7	3,163	5.0
France	2,852	4.3	2,318	3.7
South Korea	2,066	3.1	2,059	3.2
Brazil	1,563	2.3	1,835	2.9
Australia	2,041	3.1	1,818	2.9
Japan	2,219	3.3	1,769	2.8
Other	**27,798**	**41.6**	**26,278**	**41.4**

Destination country: United Kingdom

Origin: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	6,051	21.5	5,256	19.3
Germany	1,966	7.0	1,844	6.8
Australia	1,516	5.4	1,513	5.6
Italy	1,706	6.1	1,439	5.3
France	1,475	5.2	1,361	5.0
Spain	1,387	4.9	1,167	4.3
China	903	3.2	1,153	4.2
Canada	1,197	4.3	1,125	4.1
Ireland	889	3.2	1,021	3.8
India	642	2.3	909	3.3
Other	**10,379**	**36.9**	**10,394**	**38.2**

Destination country: Germany

Origin: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	3,297	16.8	3,096	15.4
UK	1,899	9.7	2,041	10.1
Switzerland	1,291	6.6	1,236	6.1
France	1,107	5.7	1,119	5.6
China	913	4.7	1,047	5.2
Italy	883	4.5	900	4.5
Netherlands	912	4.7	889	4.4
Austria	1,025	5.2	888	4.4
Spain	788	4.0	681	3.4
India	548	2.8	659	3.3
Other	**6,929**	**35.4**	**7,603**	**37.7**

Destination country: China

Origin: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	6,201	33.0	7,083	29.3
Hong Kong[3]	1,996	10.6	2,936	12.1
UK	1,153	6.1	1,427	5.9
Japan	1,333	7.1	1,301	5.4
Singapore	842	4.5	1,117	4.6
Germany	796	4.2	1,084	4.5
Australia	642	3.4	973	4.0
Taiwan	754	4.0	951	3.9
Canada	664	3.5	849	3.5
Pakistan	496	2.6	820	3.4
Other	**3,935**	**20.9**	**5,656**	**23.4**

Destination country: Canada

Origin: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	4,829	33.9	5,118	32.7
Iran	892	6.3	1,230	7.8
UK	1,093	7.7	1,180	7.5
France	970	6.8	871	5.6
China	763	5.4	765	4.9
India	441	3.1	583	3.7
Australia	410	2.9	475	3.0
Brazil	283	2.0	470	3.0
Germany	462	3.2	440	2.8
Saudi Arabia	171	1.2	216	1.4
Other	**3,919**	**27.5**	**4,322**	**27.6**

Destination country: France

Origin: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	2,323	16.6	1,933	14.4
UK	1,158	8.3	1,290	9.6
Italy	1,008	7.2	913	6.8
Germany	995	7.1	866	6.5
Canada	683	4.9	700	5.2
Spain	823	5.9	655	4.9
Switzerland	656	4.7	628	4.7
Belgium	569	4.1	579	4.3
China	393	2.8	389	2.9
Brazil	335	2.4	355	2.6
Other	**5,015**	**35.9**	**5,105**	**38.1**

Source: Scopus database (Elsevier); DZHW calculations

Finally, it is remarkable that, compared to the period 2016–2018, the significance of the US as a country of origin dwindled in all destination countries under review, particularly in China. During the same period, although China lost its impact as a country of origin in Canada, it came to the fore in the remaining destination countries under consideration, particularly in the United Kingdom and the United States. Moreover, Japan's share as a country of origin in China fell sharply between the two periods under review.

A2.6 Share of incoming academic authors of all academic authors in key destination countries, 2021[4]

Source: Scopus database (Elsevier); DZHW calculations

Footnotes

1 It may be assumed, however, that the restriction of using English-language publications as a database results in systematic under-reporting.

2 Only destination countries with at least a 2% share of all internationally mobile academics and researchers worldwide.

3 Due to its unique significance in China, China's special administrative region Hong Kong was included as a separate destination or origin.

4 The 30 destination countries (including China's special administrative region Hong Kong) with the highest numbers of incoming academic authors worldwide in 2021 were taken into consideration.

2.3 Major countries of origin and their destination country profiles

The US is not just the key destination country for internationally mobile academic authors but also the key country of origin. During the period 2019–2021, academics and researchers from the US accounted for approximately 16% of the global outgoing mobility reviewed here. This finding is in stark contrast to international student mobility, where the US only plays a minor role as a country of origin (see pp. 16/17). It is important to bear in mind, however, that the mobile academics and researchers under consideration here are not necessarily citizens of the respective country of origin but – based on the bibliometric survey method – constitute all academics and researchers whose first article was published during the reference period (in this case: as of 2004) in the relevant country of origin.[1] In all probability, therefore, a (currently non-quantifiable) number of the academics and researchers leaving the US do not actually come from the United States but had arrived there prior to having their first article published (according to the bibliometric data), for example, international doctoral students in the US. Further down the ranks, yet trailing some way behind are the United Kingdom (8%), China (6%), Germany (5%) and France (4%). Compared to the previous period 2016–2018, the key countries of origin chiefly indicate declining shares of inbound mobility worldwide, particularly the US (–1.2 percentage points), Spain and France (–0.5 percentage points each).

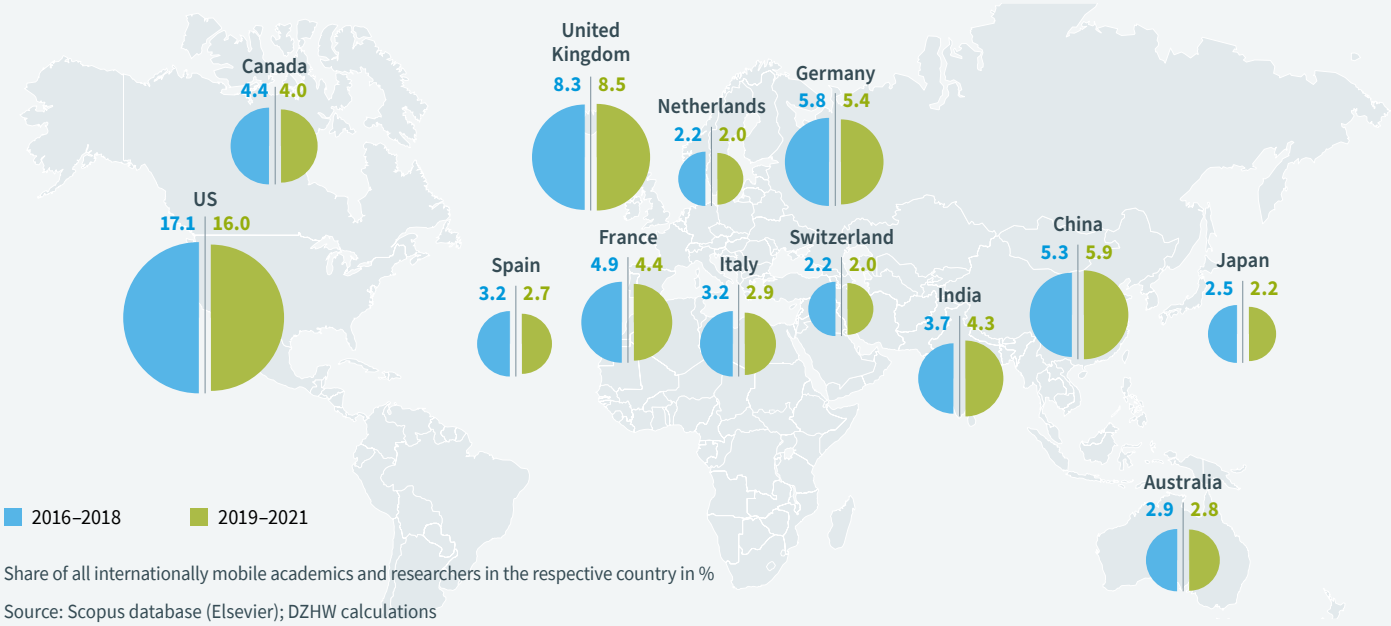
> “China now figures more prominently as a destination country for all countries of origin under review, most notably for Germany and the US.

With regard to the proportion of outgoing academics and researchers of all academics and researchers in the key countries of origin, Asian countries report the highest mobility rates, as is the case with incoming academics and researchers (see pp. 26/27). Scoring around 14%, Hong Kong has by far the greatest proportion of outgoing academics and researchers, followed by Singapore (8%), Ireland (7%), Switzerland and the United Kingdom (6% each).[3] Placing fifth to tenth are Saudi Arabia (6%), Belgium and Canada (5% each), Malaysia and Austria (4% each). With a share of 3%, Germany is in 17th place, behind the Netherlands and France (4% each), yet ahead of the US (2%), Japan and China (1% each).

Similar to its country of origin profile (see pp. 26/27), the US' destination country profile has a comparatively high level of diversity. As key destination countries, China, the United Kingdom and Canada together only account for approximately 31% of all outgoing academics and researchers from the US. By comparison, the proportion of the three key destination countries of academics and researchers from China (51%; destination countries: the US, Hong Kong and the UK) and Canada (56%; destination countries: the US, the UK and China) is substantially higher. Special regional characteristics in terms of the key destination countries can be found among academics and researchers from Germany, for example, who show a striking preference for the German-speaking countries of Austria and Switzerland. The Asian countries or territories of Hong Kong, Japan, Singapore and Taiwan are exceptionally popular destinations for academics and researchers from China.

Furthermore, a glance at the key destination countries and countries of origin of mobile academics and researchers from or in China (see also

A2.7 Share of internationally mobile academic authors of all internationally mobile academic authors worldwide by key countries of origin, 2016–2018 and 2019–2021[2]



Share of all internationally mobile academics and researchers in the respective country in %

Source: Scopus database (Elsevier); DZHW calculations

A2.8 Key destination countries of internationally mobile academic authors from the six key countries of origin, 2016–2018 and 2019–2021

Country of origin: US				
Destinations: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
China	6,201	10.9	7,083	12.6
UK	6,051	10.6	5,256	9.4
Canada	4,829	8.5	5,118	9.1
Germany	3,297	5.8	3,096	5.5
India	2,807	4.9	2,834	5.0
South Korea	2,462	4.3	2,078	3.7
France	2,323	4.1	1,933	3.4
Japan	2,156	3.8	1,843	3.3
Australia	1,959	3.4	1,775	3.2
Switzerland	1,522	2.7	1,490	2.7
Other	**23,408**	**41.1**	**23,707**	**42.2**

Country of origin: United Kingdom				
Destinations: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	6,416	23.3	5,805	19.5
Germany	1,899	6.9	2,041	6.8
Australia	1,771	6.4	1,662	5.6
China	1,153	4.2	1,427	4.8
France	1,158	4.2	1,290	4.3
Ireland	807	2.9	1,285	4.3
Canada	1,093	4.0	1,180	4.0
Italy	742	2.7	1,016	3.4
Netherlands	766	2.8	983	3.3
Spain	754	2.7	969	3.2
Other	**11,034**	**40.0**	**12,183**	**40.8**

Country of origin: Germany				
Destinations: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	3,803	19.7	3,163	16.6
UK	1,966	10.2	1,844	9.7
Switzerland	1,848	9.6	1,791	9.4
Austria	1,102	5.7	1,097	5.8
China	796	4.1	1,084	5.7
Netherlands	749	3.9	957	5.0
France	995	5.2	866	4.5
Italy	575	3.0	617	3.2
Spain	474	2.5	535	2.8
Sweden	488	2.5	517	2.7
Other	**6,513**	**33.7**	**6,571**	**34.5**

Country of origin: China				
Destinations: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	7,138	40.1	7,219	34.8
Hong Kong[3]	1,764	9.9	2,172	10.5
UK	903	5.1	1,153	5.6
Germany	913	5.1	1,047	5.0
Australia	871	4.9	941	4.5
Japan	789	4.4	883	4.3
Canada	763	4.3	765	3.7
Singapore	654	3.7	702	3.4
Pakistan	322	1.8	697	3.4
Taiwan	440	2.5	590	2.8
Other	**3,229**	**18.2**	**4,593**	**22.1**

Country of origin: Canada				
Destinations: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	6,531	44.7	5,923	42.1
UK	1,197	8.2	1,125	8.0
China	664	4.5	849	6.0
France	683	4.7	700	5.0
Australia	541	3.7	472	3.4
Germany	450	3.1	413	2.9
Saudi Arabia	315	2.2	411	2.9
Switzerland	290	2.0	284	2.0
India	276	1.9	264	1.9
Iran	212	1.5	192	1.4
Other	**3,797**	**23.5**	**3,437**	**24.4**

Country of origin: France				
Destinations: top 10	2016–2018		2019–2021	
	Number	in %	Number	in %
US	2,852	17.4	2,318	14.8
UK	1,475	9.0	1,361	8.7
Germany	1,107	6.7	1,119	7.2
Switzerland	1,093	6.7	1,046	6.7
Canada	970	5.9	871	5.6
Italy	631	3.8	724	4.6
Belgium	641	3.9	646	4.1
China	514	3.1	581	3.7
Spain	532	3.2	573	3.7
Netherlands	316	1.9	351	2.2
Other	**6,286**	**38.3**	**6,046**	**38.7**

Source: Scopus database (Elsevier); DZHW calculations

pp. 26/27) clearly shows a lively academic exchange between Hong Kong and mainland China. Lastly, compared to the previous period 2016–2018, China in particular unmistakably figures more prominently as a destination country. This applies to all countries of origin under review here, but most notably to the United States and Germany. By contrast, despite consistently topping the destination country ranking for all countries of origin considered here, the US has suffered a decline, especially in China and the United Kingdom.

A2.9 Share of outgoing academic authors of all academic authors in key countries of origin in 2021[4]

Origin	Outgoing academic authors in %	Origin	Outgoing academic authors in %
Hong Kong[3]	13.5	Sweden	3.7
Singapore	7.8	Germany	3.4
Ireland	7.2	Iran	3.3
Switzerland	6.4	Mexico	2.7
UK	5.7	Spain	2.5
Saudi Arabia	5.6	US	2.4
Belgium	5.2	India	2.2
Canada	4.6	Italy	2.1
Malaysia	4.3	Taiwan	2.1
Austria	4.2	South Korea	1.9
Netherlands	4.2	Turkey	1.8
Pakistan	4.0	Brazil	1.7
Australia	3.9	Japan	1.3
France	3.8	Russia	0.8
Denmark	3.8	China	0.7

Source: Scopus database (Elsevier); DZHW calculations

Footnotes

1 Bibliometric analyses of academics and researchers' mobility define the institution's country of location of the first publication during the reference period as the country of origin. It is therefore conceivable that previous mobility may not be excluded and that the presumed country of origin is actually a destination country (see also the methodology info box on p. 24).

2 Only countries of origin with at least a 2% share of all internationally mobile academics and researchers worldwide.

3 Due to its unique significance in China, China's special administrative region Hong Kong was included as a separate destination or origin.

4 The 30 countries of origin (including China's special administrative region Hong Kong) with the highest numbers of outgoing academic authors worldwide in 2021 were taken into consideration.

2.4 International academics and researchers at public universities and research institutes

The data situation on international academics and researchers at the respective host universities abroad is significantly less conclusive than that relating to international students. To date, there are no internationally comparable UNESCO or OECD statistics on this subject similar to those on global student mobility. This may chiefly be explained by the fact that, in many countries, data on international university staff are not sufficiently differentiated (e.g. with respect to their countries of origin). The only exception are international doctoral students as they are included in the student statistics of most countries.

The US is easily the key host country for international doctoral students. In 2020, around 152,000 junior researchers from abroad were intending to gain a doctorate at US universities, as opposed to those in the United Kingdom (45,000), Germany (42,000), France (25,000) and Canada (20,000). However, it should be noted that no figures are yet available on international doctoral students in countries such as China, India or South Africa.

As with the key host countries for international students, it is also possible to differentiate between host countries with the highest absolute number of international doctoral students and those with the largest percentage of international doctoral students. Particularly high shares can be observed in Luxembourg (89%), Switzerland (57%), New Zealand (49%) and the Netherlands (48%). These small and medium-sized countries plainly excel, not only with universities that are highly research-oriented but also by offering attractive doctoral programmes for international doctoral students.

A2.10 Host countries with the highest number and the highest proportion of international doctoral students in 2020[4, 5, 6]

Host country	Number of intl. doctoral students
US	151,900
United Kingdom	45,365
Germany	42,200
France	25,035
Canada	20,355
Australia	18,189
Spain	17,811
Japan	16,632
Switzerland	14,698
South Korea	13,156

Host country	Share of intl. doctoral students in %
Luxembourg	89.0
Switzerland	56.6
New Zealand	49.3
Netherlands	47.9
US	44.9
United Kingdom	41.2
France	37.9
Austria	36.8
Denmark	36.1
Canada	35.8

Sources: OECD, student statistics; US Department of Homeland Security, SEVIS data; country-specific reporting periods; DAAD calculations

Footnotes

1 Major host countries were defined as those with more than 4,000 international doctoral students according to the OECD or more than 100,000 international students according to UNESCO in 2020. Corresponding national data were collected for 16 of the 24 countries meeting this definition; however, this was not possible for Argentina, Australia, Belgium, Canada, China, the Czech Republic, New Zealand and Russia.

2 Many of the available national statistics are unclear as to which groups of persons or from what career level academics and researchers are included in the statistics on academic staff. For example, whether student assistants or guest researchers on temporary visits are considered part of the academic staff may significantly affect the respective statistics. For this reason, these two groups have been excluded from the data presented here wherever possible.

3 The following groups were recorded in the countries in question (number of persons in each case, no full-time equivalents): US: foreign research and teaching staff without immigrant visas at research universities in 2019/20; United Kingdom: foreign academic staff at universities in 2019/20; Germany: full-time foreign academic staff at universities and non-university research institutes in 2020; Switzerland: foreign university staff in 2020; France: foreign and contractually employed teaching and research staff at public universities and non-university research institutes in 2018/19; Japan: foreign academic staff at universities in 2020; Netherlands: foreign academic staff at universities in 2018; Austria: foreign academics and researchers at universities in 2020; South Korea: foreign professors, academics and researchers in 2020; Spain: foreign teaching and research staff at public universities (PDI/PEI) in 2019/20; Turkey: foreign teaching staff at universities in 2019/20; Finland, Italy, Portugal, Sweden: foreign academic staff in 2020 ("foreign academic staff" according to the ETER definition); United Arab Emirates: foreign teaching staff at public and private universities in 2018.

4 Only countries with at least 500 international doctoral students (Fig. A2.10) or internationally mobile doctoral students (Fig. A2.11).

5 International doctoral students in the US: as OECD statistics do not contain any data on international doctoral students in the US, they were supplemented by US data from the database of the Student and Exchange Visitor Information System (SEVIS) (survey date: December 2020).

6 International doctoral students in Germany including *Bildungsinlaender:* The OECD statistics include the data from the Federal Statistical Office's survey of doctoral students, which – unlike the student statistics compiled by the Federal Statistical Office – include doctoral students who were not enrolled. However, until now, it has not been possible to distinguish between international students and *Bildungsinlaender* in these data.

7 Including data on international doctoral students in the US from the SEVIS statistics (see footnote 5).

8 Including Hong Kong and Macao.

9 Data from 2019 as no UNESCO data are available on the number of domestic, in-country doctoral students for 2020.

10 See also the info box on p. 14 for the number of international academics and researchers in the United Arab Emirates.

As the key country of origin for internationally mobile doctoral students, China is well ahead of all other countries. Around 101,000 Chinese doctoral students conducted research at universities abroad in 2020, with India (37,000), Iran (20,000) and Italy (15,000) trailing behind. With around 8,000 doctoral students, Saudi Arabia ranks tenth. The proportion of internationally mobile doctoral students in relation to all doctoral students in the respective country shows that this group accounts for a comparatively small share in Germany, namely 7%. This share is substantially higher in some developing and emerging countries, especially in Afghanistan (98%), Ecuador (93%), Kuwait (91%), the Palestinian territories and Nepal (64% each). The conspicuously high percentages in Afghanistan, Ecuador and Kuwait may be attributed to the very limited doctoral opportunities in these countries and the small number of universities that are entitled to confer doctorates. In Afghanistan, for example, it was only possible to obtain a doctorate in linguistics at Kabul University in 2020.

To obtain a more comprehensive picture of the mobility of academics and researchers than is possible with the data on international doctoral students worldwide alone, research was conducted on (contractually employed) international academic staff at public universities and research institutes in major host countries as part of the *Wissenschaft weltoffen* project.[1] When comparing these national data, it should be noted that the definitions of academic staff and/or that of the universities and research institutes concerned differ from country to country.[2] As far as possible, the aim of this data collection was to document contractually employed, full-time, international academic staff.[3]

Looking at the 16 host countries for which data were available, the US turns out to be the key host country by a noticeable margin, with around 123,500 international academics and researchers at US universities. It is followed by the United Kingdom (70,200), Germany (70,100), Switzerland (31,100) and France (14,800). Particularly striking here is the low number of international researchers in France by direct comparison with Germany, although here – as in Germany – academic staff at non-university research institutes were also included. The language may represent a higher obstacle for recruiting international academic staff in France than in Germany and other countries where, for example, English is often the dominant working language in scientific disciplines.

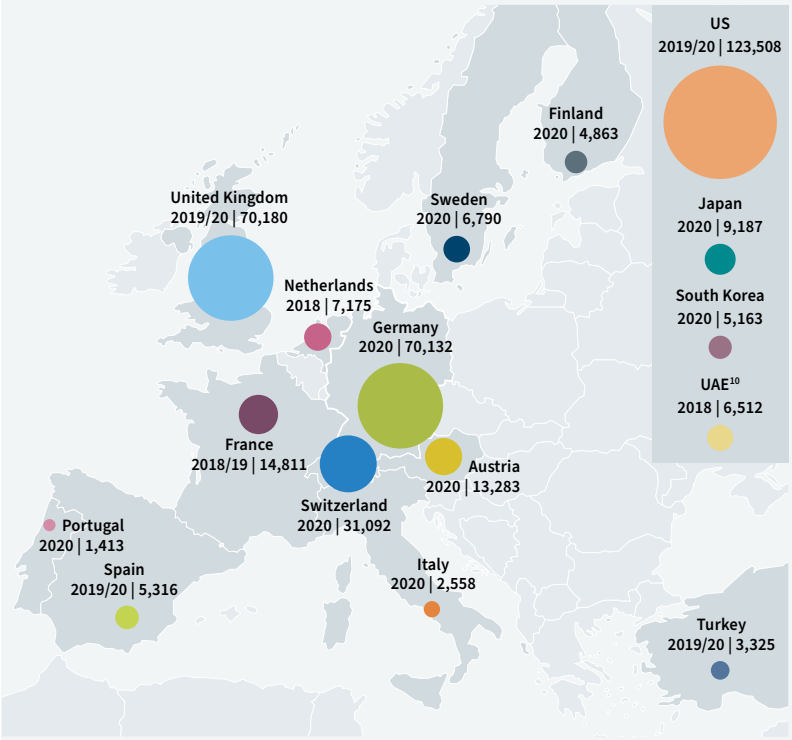
A2.11 Countries of origin with the highest number and the highest proportion of internationally mobile doctoral students in 2020[4, 7]

Country of origin	Number of internationally mobile doctoral students
China[8]	101,392
India	36,683
Iran	20,198
Italy	15,035
Germany	14,135
South Korea	12,885
Brazil	10,742
France	8,210
US	8,113
Saudi Arabia	8,065

Country of origin	Share of internationally mobile doctoral students in %
Afghanistan	98.3
Ecuador	92.6
Kuwait	90.5
Palestinian territories	64.1
Nepal	64.0
Colombia	50.8
Costa Rica[9]	48.6
Ghana	45.5
Bangladesh	44.1
Sri Lanka	41.9

Sources: OECD/UNESCO, student statistics; US Department of Homeland Security, SEVIS data; country-specific reporting periods; DAAD calculations

A2.12 International academics and researchers at public universities and research institutes in major host countries[3]



Sources: statistical offices and/or science organisations in the respective countries; ETER database (Finland, Italy, Portugal, Sweden); country-specific reporting periods and staff definitions

2.5 International co-publications

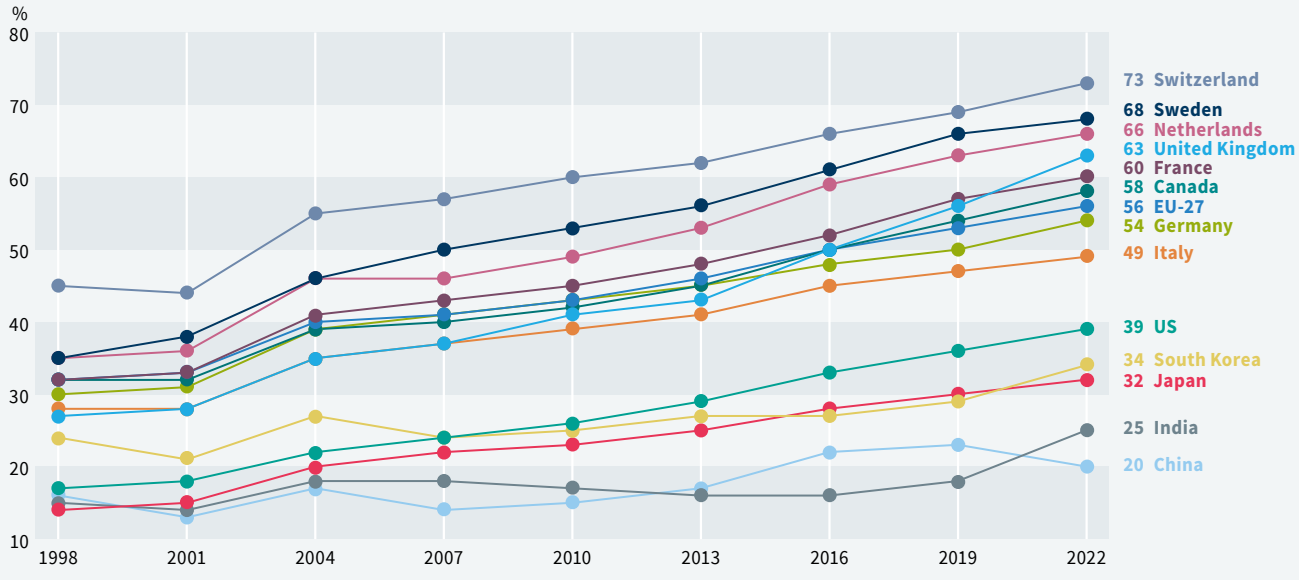
Academic co-publications in different countries that are the result of cross-border collaborations are a key indicator for the international exchange between academics and researchers in these countries. International publication and citation databases can be used to analyse these international co-publication networks (see also the info box on the database). According to the data of the publication and citation database Scopus, 73% of all publications in which academics and researchers in Switzerland were involved in 2022 were part of a collaborative effort with authors in other countries. Otherwise, of the countries under review, only Sweden (68%), the Netherlands (66%), the United Kingdom (63%) and France (60%) account for more than 60%, followed by Canada (58%), Germany (54%) and Italy (49%). Together, all EU-27 countries represent a share of 56%. By contrast, significantly low percentages can be observed in China (20%) and India (25%), but also in Japan (32%), South Korea (34%) and the US (39%).

> “ Since 1998, the proportion of international co-publications has gone up in all countries under review here, most notably in Japan, the United Kingdom and the United States however.

It turns out that smaller countries in particular indicate comparatively high shares of international co-publications. One important reason for this is that academics and researchers in these countries rely more heavily on co-authors in other countries for their research than researchers in bigger countries, who can draw on a large pool of potential co-authors within their national borders. The above figures also point to another major discovery: small percentages of international co-publications are not restricted to countries with a generally low level of scientific development, which tends to be associated with limited international networking. In the case of the United States and Japan, these countries show a relatively insignificant level of international integration in terms of cross-border co-authoring, despite their highly developed science systems. Co-authors in these countries are evidently in greater demand within the confines of their own science system than beyond national borders. Without exception, the proportion of international co-publications has gone up since 1998 in all countries under review here. Nevertheless, this uptick since 1998 is exceptionally noticeable in the United Kingdom (+135%), the United States (+123%) and Japan (+119%). However, the share of international co-publications since 1998 has also virtually doubled in Sweden (+92%), with enormous gains also reported by the Netherlands (+88%), France (+87%), Canada (+83%) and Germany (+78%). By contrast, strikingly minor growth rates can be observed in South Korea (+43%) and China (+29%). Although the Covid-19 pandemic restricted the mobility of students and academic authors between 2019 and 2022, it seems to have had no major impact on international co-publications. With the exception of China, the percentages of international co-publications increased in the countries under review.

If a country’s share of international co-publications is regarded as an indicator of the internationalisation of its academic collaboration, the question arises as to whether certain countries dominate these

A2.13 Share of international co-publications by selected countries of authors’ residence and in the EU-27 since 1998[2, 3]



Share in %

Source: Scopus database (Elsevier); DZHW calculations

Database

The bibliometric analyses presented here were carried out by the German Centre for Higher Education Research and Science Studies (DZHW), based on data from the international publication and citation database Scopus (Elsevier). It includes most of the papers published worldwide in (English-language) academic journals. For each paper, the country of location of the institution to which the respective authors were affiliated on the date it was published is documented. This differentiates between national and international co-publications. However, the bibliometric analyses have several important limitations: in particular, only those researchers who have (already) published papers in academic journals included in the publication database used here are taken into consideration. These are primarily English-language journals from the natural sciences and economics. This means that academics and researchers from disciplines where monographs and edited volumes also play an important role as publication media (i.e. primarily the humanities and social sciences) are strongly under-represented.

relationships and which countries they are.[1] A high concentration of co-authors' three key countries of residence can be observed among the countries considered here, Canada (48%), Japan (41%), Switzerland (39%) and China (38%). By contrast, the proportion in Germany, France and Sweden is a mere 30% or thereabouts. In other words, the diversification of international co-authoring is comparatively high.

On establishing the five key countries of residence of the co-authors for each of the countries under review here, it transpires that the US is the key location of the co-authors for almost all these countries, apart from Switzerland, often well ahead of the second key country. This margin is particularly significant in the case of China and Canada, where authors in the US account for just under 30% of international co-publications. Moreover, Germany, the United Kingdom and China are among the five key locations of international co-authors for almost all other countries considered here.

A2.14 Shares of the key countries of residence of international co-authors of academics and researchers in selected countries, 2022[4]

Country of residence	Key countries of residence of co-authors	Share in %	Total share of the three key countries of residence of co-authors
China	US	26.2	38
	United Kingdom	7.6	
	Canada	4.5	
	Germany	4.3	
	Japan	4.1	
Germany	US	15.5	31
	United Kingdom	8.1	
	China	7.8	
	Italy	5.3	
	France	4.8	
France	US	13.7	28
	United Kingdom	7.4	
	Germany	7.3	
	Italy	7.1	
	China	5.8	
Japan	US	19.0	41
	China	17.4	
	Germany	4.8	
	United Kingdom	4.7	
	South Korea	3.6	
Canada	US	28.3	48
	China	13.5	
	United Kingdom	6.3	
	France	4.2	
	Germany	4.0	
Netherlands	US	14.7	36
	United Kingdom	10.8	
	Germany	10.7	
	China	6.0	
	Italy	5.4	
Sweden	US	12.9	30
	United Kingdom	8.9	
	China	7.9	
	Germany	7.8	
	Italy	4.3	
Switzerland	Germany	15.7	39
	US	15.4	
	United Kingdom	8.4	
	Italy	7.8	
	France	6.9	
US	China	20.2	34
	United Kingdom	7.1	
	Canada	6.3	
	Germany	5.6	
	Italy	3.9	
United Kingdom	US	15.2	33
	China	11.2	
	Germany	6.2	
	Italy	5.3	
	France	3.7	

Source: Scopus database (Elsevier); DZHW calculations

Footnotes

1 See also Zhao/Wei (2018).

2 In the meantime, recalculations have produced more precise figures in terms of the numbers of international co-publications for 2019 and earlier, compared to the representation in *Wissenschaft weltoffen 2021*.

3 The absolute or whole count method is used here. Simply adding a publication is regarded as one unit of analysis. In doing so, the publication is attributed in full to each institution that was instrumental in preparing it. If several institutions collaborated to create a publication, the publication is attributed once to each institution.

4 Fractional counting is applied here, based on the number of participating institutions. This method of counting calculates a country's share of a publication using the number of participating institutions in that country. For example, under fractional counting, if a publication is written by authors from one German, one French and one Swiss institution, it is attributed to Germany, France and Switzerland with a share of one third each.

3 Transnational education projects of German universities

3.1 Locations and forms

Transnational education (TNE) is the name given to a sub-area of internationalisation in which universities from one country bear academic responsibility for study programmes offered in another country that are aimed at prospective students from that country. Thus, TNE primarily refers to the transnational mobility of content, structures and institutions. This distinguishes TNE from the primarily individual, international mobility of students, academics and researchers. In 2022[1], German universities are represented worldwide with transnational education projects at 44 locations in 31 countries and with 317 study programmes.[2]

Between 2015 and 2019, the number of students enrolled in German TNE projects rose steadily from around 26,000 to 33,000. In 2020, there was a slight temporary decline in the number of students (of around 400 students or 1.2%). It has picked up again since then, despite the pandemic, currently amounting to 36,441.[3, 4, 5]

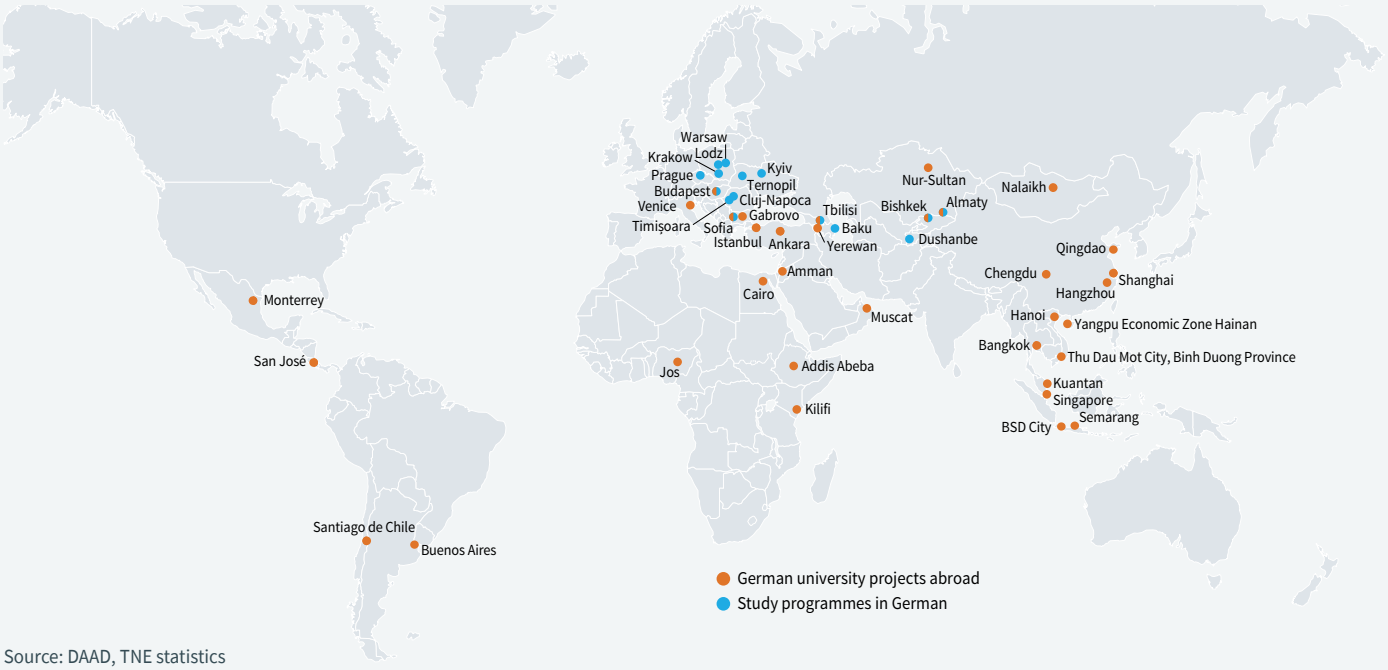
> “Although Russia’s war of aggression against Ukraine meant that projects had to be suspended, the total number of TNE students is unchanged compared to the previous year.

The regional focus of the German TNE projects is on North Africa and the Middle East (Egypt, Jordan, Oman) and the Asia and Pacific region (China, Vietnam, Singapore). Binational higher education projects are of particular importance here: 42% of the students in German TNE projects alone are at the German University in Cairo (GUC). In addition, a further 19% of TNE students are in the North Africa and Middle East region, with 13% alone at the German-Jordanian University (DJU) in Amman and 6% at the German University of Technology (GUtech) in Oman at the Muscat site. The projects in China – including the Sino-German School for Postgraduate Studies (CDHK) and the Sino-German College of Applied Sciences (CDHAW) in Shanghai – together account for around 8% of the students enrolled in German TNE projects.

Methodology

The data presented here are based on reports from German universities whose TNE activities are currently being sponsored by the DAAD with funds from the Federal Ministry of Education and Research (BMBF), the Federal Foreign Office (AA) or the Federal Ministry for Economic Cooperation and Development (BMZ), or were funded in a start-up phase. They do not include the overwhelming majority of double (or multiple) degree study programmes between German universities and foreign, particularly European, university partners, which are registered with the German Rectors’ Conference and which are predominantly geared towards the mutual exchange of students (as well as funded by the DAAD from federal funds).[7] Also not included are TNE activities that were established without DAAD funding. It is therefore not possible to present a complete overview of the TNE involvement of German universities here. However, it may be assumed that the data presented here reflect the majority of the overall TNE activities of German universities.

A3.1 Locations of transnational education projects of German universities abroad with current and previous DAAD funding, 2022[1]



Source: DAAD, TNE statistics

Since only a few countries have collected TNE data thus far, and there is a lack of data and consistent terminology relating to TNE activities internationally, meaningful comparisons cannot be made between TNE projects offered by different countries at national and international level. A TNE classification framework for International Programme and Provider Mobility (IPPM), developed on the basis of international consultations and published in 2017, proposes a fundamental distinction between "collaborative" forms of TNEs – in other words, those jointly offered by universities in the country of the provider and the host country – and "independent" TNE formats, for which a foreign university is solely responsible.[6] Within these basic categories, a distinction is made between TNE activities at programme level, the establishment of complete TNE institutions and distance learning programmes. The application of the IPPM classification framework to German TNE data shows a continuing dominance of collaborative formats in TNE projects with the participation of German universities. Of the programmes offered, 96.5% are within the framework of collaborative study programmes or binational universities. They account for 98.5% of the total number of enrolled students.

Footnotes

1 Data are collected annually in January and refer to the status of the data in the previous year. Until the 2022 edition of *Wissenschaft weltoffen,* the year the data were collected was specified. From this edition onwards, the year to which the reported data relate will be indicated.

2 In the previous year, this figure was 349. The drop of 9.5% is due in part to projects in Russia and Belarus being suspended on account of the war. Nonetheless, the total number of students in TNE projects funded by the DAAD is virtually unchanged compared to the previous year.

3 As the data from the German University in Cairo were not available in full at the time of going to press, conservative estimates were made for the missing figures, assuming that they would remain at the level of the previous year. In all probability, the actual total figures are slightly higher than the values assumed here.

4 An academic year begins in the winter semester and ends in the summer semester of the following year (academic year 2022 = WS 2021/22 and SS 2022).

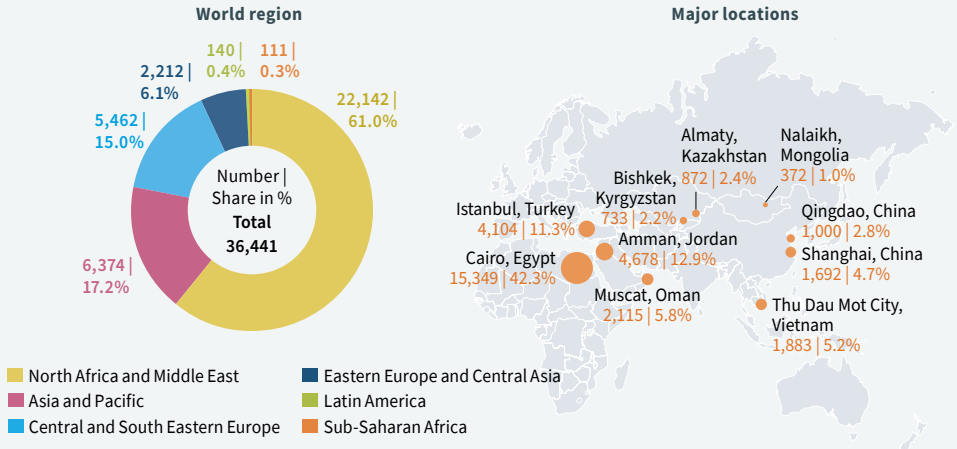
5 This represents a year-on-year decrease of 0.2%, see footnote 2.

6 See Knight/McNamara (2017).

7 Thus, several hundred partnerships with universities in other countries for the award of double or joint degrees are not covered. This category includes the study programmes offered by the Franco-German University (DFH) and around 100 DAAD-funded study programmes with international double (or multiple) degrees. Also not accounted for is a growing number of around 200 doctorates currently being supervised at binational universities, often with co-supervision in Germany.

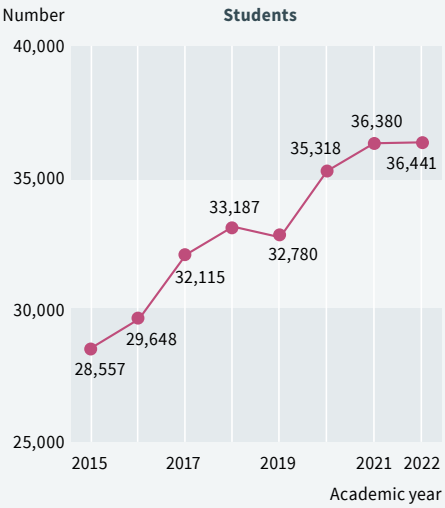
8 IPPM = International Programme and Provider Mobility.

A3.2 Students in German TNE projects with current or previous DAAD funding, by world region and major locations, 2022[1]



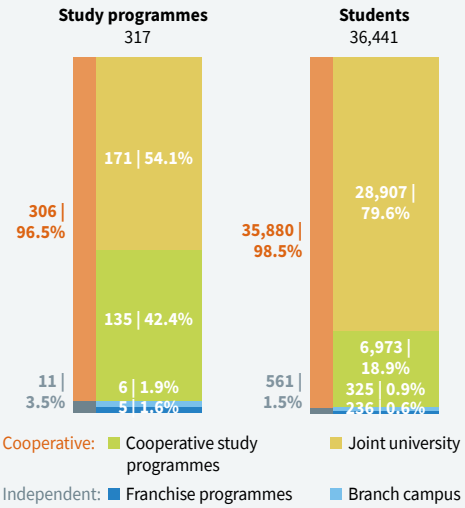
Source: DAAD, TNE statistics

A3.3 Students in German TNE projects with current or previous DAAD funding since 2015[1, 3, 4]



Source: DAAD, TNE statistics

A3.4 German TNE projects according to the joint IPPM classification framework, 2022[1, 8]



Source: DAAD, TNE statistics

3.2 Features of German TNE projects

Although it is difficult to formulate a clear definition of the German approach to transnational education (TNE) due to the fluid transitions, a number of characteristics can be identified that are generally typical of German TNE projects. In contrast to commercial programmes, such as those developed by universities in Australia, the United Kingdom and the US, German TNE projects are characterised by the partnership-based pursuit of political objectives and interaction between the following actors:

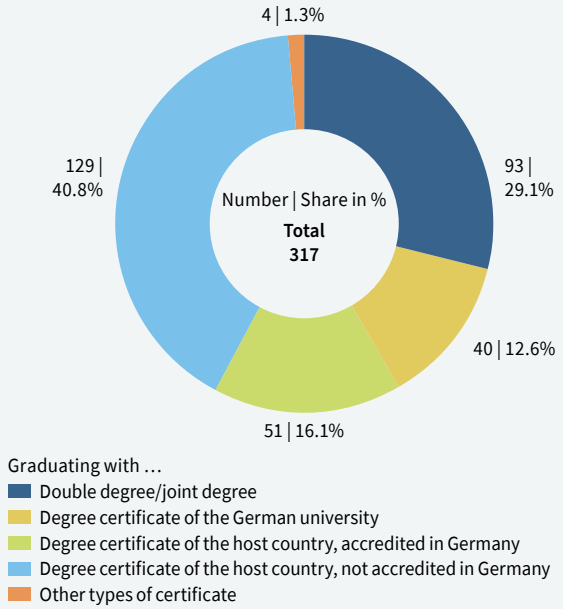
- German universities, whose commitment and assumption of academic responsibility are instrumental in shaping the field of German TNE;
- the universities and university policy players in the respective host country, whose regional competence is pivotal to successfully structuring the TNE projects to meet the needs of the target groups;
- the financing ministries (Federal Ministry of Education and Research, Federal Foreign Office, Federal Ministry for Economic Cooperation and Development), whose TNE funding addresses issues of foreign science policy, university internationalisation and research and development in equal measure;
- the DAAD, which acts as mediator and coordinator to ensure that TNE projects are implemented in a way that accommodates the interests of all parties.

> “ 74% of TNE students are enrolled in study programmes that include compulsory German language instruction, while a further 20% can take advantage of optional German language instruction.

Other important features of the German TNE approach are the academic responsibility of the participating German universities (usually through the application or transfer of quality-checked curricula), the flexible, demand-oriented and partnership-based structure of the projects, and the strengthening of references to Germany within the curricula. For German universities, the DAAD and funding bodies, the TNE activities are an important instrument for strengthening the ties between TNE students and Germany. In this context, the political objectives of foreign science policy, research and development funding (focusing on foreign institutions) and the internationalisation of German universities (focusing on German institutions) are complementary.

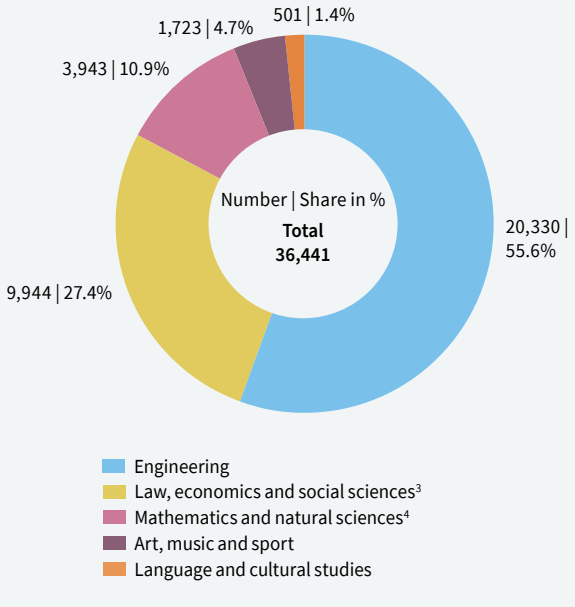
The TNE study programmes support the connection to Germany in various ways. First and foremost is the curricular responsibility borne by German universities, which leads to the award of German degrees or a combination of German and foreign degrees. In almost half of the TNE study programmes considered (42%), a German university degree is awarded as the sole degree or in combination with a foreign degree as a double or joint degree.[1] In addition, in some TNE projects, the degree is awarded by a university in the host country, while the programme in question is accredited in Germany. This applies to 16% of the study programmes covered here.

A3.5 TNE study programmes with current or previous DAAD funding, by accreditation of the degree in Germany, 2022[2, 5]



Source: DAAD, TNE statistics

A3.6 Students in German TNE projects with current or previous DAAD funding, by subject group, 2022[2]

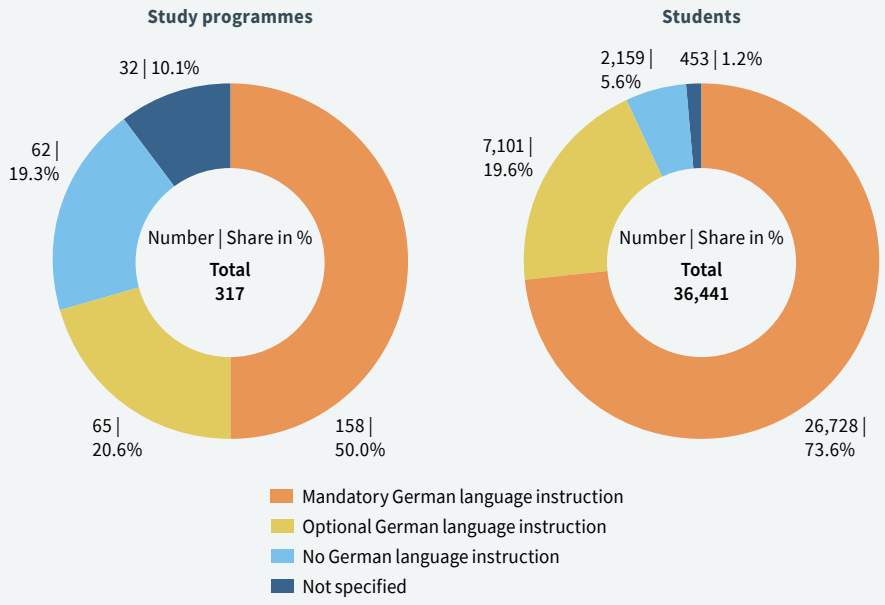


Source: DAAD, TNE statistics

Moreover, the clear majority of TNE students (74%) are enrolled in study programmes that include compulsory German language instruction, while a further 20% can take advantage of optional German language instruction. Spending time in Germany is another compulsory requirement of the curricula for a quarter of TNE students (24%). A further almost two thirds of TNE students (63%) may complete an optional period in Germany as part of their studies, which is fully integrated into the curriculum.

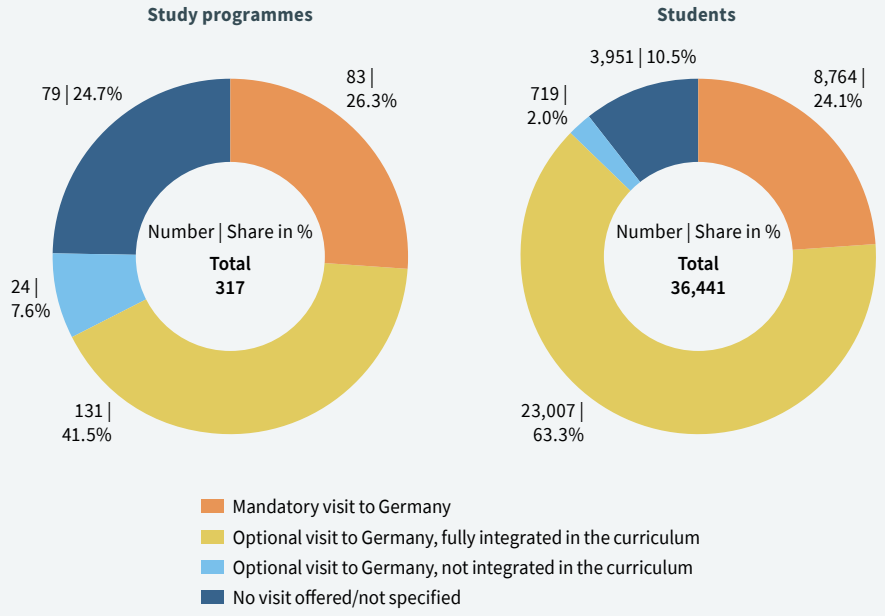
As in previous years, more than half (56%) of TNE students are enrolled in engineering study programmes. This predominance can be viewed as a further characteristic of German TNE projects. Law, economics and social sciences (27%) and mathematics and natural sciences (11%) lag considerably further behind. Other subject groups only play a subordinate role. The overwhelming majority of students in the TNE projects surveyed are aiming for an undergraduate degree, that is, a bachelor's or comparable first degree, and a smaller group for a master's degree. Doctorates are only offered at a small number of the registered TNE institutions and are not fully recorded statistically.

A3.7 TNE study programmes and students in TNE study programmes with current or previous DAAD funding, by German language instruction options, 2022[2]



Source: DAAD, TNE statistics

A3.8 TNE study programmes and students in TNE study programmes with current or previous DAAD funding, by integration of periods in Germany in the curricula, 2022[2, 5]



Source: DAAD, TNE statistics

Footnotes

1 In the case of a double degree, each partner university awards its own degree, documented either by two separate certificates or by a joint certificate listing both degrees. In the case of a joint degree, the partner universities award a joint degree, documented by a joint certificate.

2 Data are collected annually in January and refer to the status of the data in the previous year. Until the 2022 edition of *Wissenschaft weltoffen,* the year the data were collected was specified. From this edition onwards, the year to which the reported data relate will be indicated.

3 Including veterinary/agricultural/forestry/environmental sciences.

4 Including pharmacy.

5 Deviations from 100% are due to rounding.

1.1 Mobility trends, first-year students and federal states

In the 2021/22 winter semester, approximately 440,800 students with foreign citizenship were studying in Germany. Around 349,400 or 79% of these foreign students were international students[1] who obtained their university entrance certificate abroad and came to Germany afterwards to study. Their number continued to rise in the second pandemic year, up by as many as 24,700 or 8% compared to the 2020/21 winter semester and by 9% compared to the 2019/20 winter semester. While the hike between 2020 and 2021 was chiefly due to international students extending their period of study, the uptick in the 2021/22 winter semester is the result of increased immigration. However, to some extent, this could be deferred mobility, in other words, realising study objectives that had been postponed due to the pandemic. This growth is evidence that the positive trend seen among international students for over ten years is continuing; compared to the 2011/12 winter semester, their number has shot up by 81%. This development also persisted in the 2022 summer semester as the number of international students went up by 20,300 to 339,800[2], or 6% higher than in 2021. According to the preliminary data of the Federal Statistical Office, there was a further significant rise in the 2022/23 winter semester. The number of international students increased by roughly 18,100 or 5.2% to 367,600, compared to the 2021/22 winter semester.

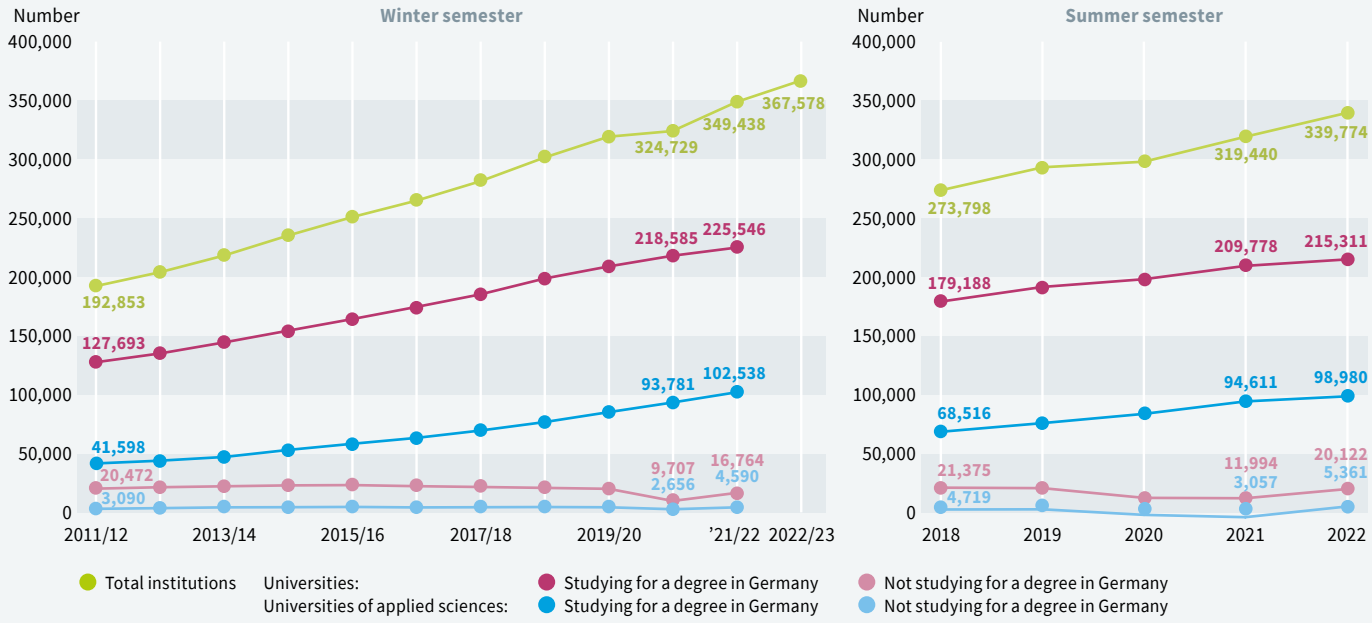
In the 2021/22 winter semester, the overwhelming majority of 94% of international students were intending to graduate from a German university; just 21,400, or 6%, were visiting students on a temporary study visit. Although this figure was some 9,000 above that of the previous winter semester, it was still 14% below pre-pandemic levels in the 2019/20 winter semester. This is mainly the result of university developments; at universities of applied sciences (UAS), temporary mobility was almost back to pre-pandemic status. Furthermore, the figures observed at universities for the 2022 summer semester are such that there is virtually no difference between the summer semesters of 2022 and 2019 in terms of international visiting students.

The majority of international students in Germany, namely 242,300 or 69%[3], were enrolled at a university in the 2021/22 winter semester. By contrast, the proportion of German students was 60%. Whilst the number of international students at universities only increased by 6% over one year, it went up by 11% at UAS. Although only about 35,100 or 10% of international students were enrolled at private universities, their number has shot up by 24% in one year and by 436% since the 2011/12 winter semester.[4]

In the 2021 academic year[5], roughly 117,900 international first-year students[6, 7] embarked on their studies, 17% more than the previous year, but still 6% less than in the 2019 academic year. After the drop in 2020, this marks a return to a positive trend. Nonetheless, while pre-pandemic figures were recorded at universities of applied sciences, facilitated by the slight decline in 2020 and 10% growth in 2021, there is still a difference of 9% at universities compared to 2019, despite the 20% rise. This may be primarily attributed to the low number of first-year students on temporary study visits, 26% fewer than in 2019. By contrast, the number of first-year students intending to graduate is almost unchanged.

The positive development in international students, paired with a decrease in German students, drove the share of international students among all students to a new all-time high of 11.9% in the 2021/22 winter semester.

B1.1 International students by intention to graduate and type of university, since winter semester 2011/12 and summer semester 2018[2, 3]



Source: Federal Statistical Office, student statistics

This figure was 13.5% at universities and 9.3% at UAS. Even at private universities, the percentage rose to 9.4%, for the first time above that at UAS. The highest rates were reported by public colleges of art and music at 28.6% and private universities at 24.6%.

Differences – some of them considerable – can be observed between the various federal states. Measured in absolute numbers, around half of all international students were studying in the three federal states of North Rhine-Westphalia, Bavaria and Baden-Wuerttemberg alone. However, in terms of their shares of all students, Berlin (19%), Brandenburg, Saxony and Saxony-Anhalt (16% each) are top of the league. The greatest increases over five years were registered by the universities in Thuringia (+178%)[8] and Bavaria (+61%). The number of international students has only fallen in Baden-Wuerttemberg (–9%).

Footnotes

1 This designation follows the standard international use of terms.

2 The student numbers for the summer and winter semesters cannot be compared directly. Variations in the figures for first-year and formerly enrolled students lead to systematic differences. Higher figures can be observed for all student groups in the winter semester than in the summer semester.

3 Figures for universities, including colleges of art, music, education and theology.

4 Figures for private universities, including church-run universities.

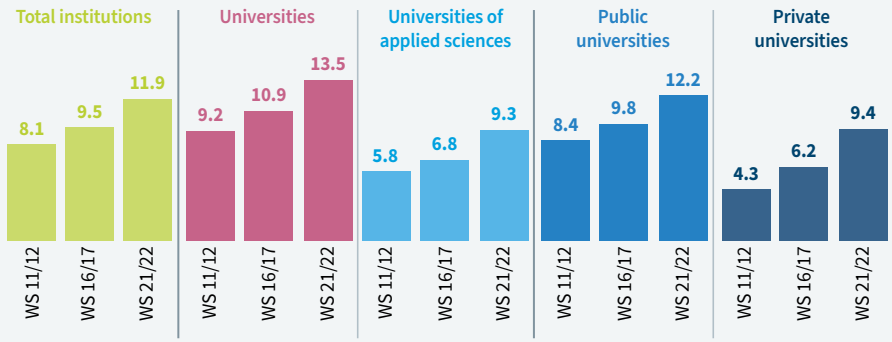
5 The information for international first-year students refers to one academic year and includes the corresponding summer semester and the following winter semester. 2021 academic year = summer semester 2021 + winter semester 2021/22.

6 Including doctoral students in their first study programme.

7 First-year students in bachelor's and other programmes are students in their first university semester; in master's and doctoral studies, they are students in their first subject-related semester or new doctoral entrants.

8 The strong growth in the number of international students at Thuringian universities is due to the registered office of the private International University of Applied Sciences moving to Erfurt in 2019.

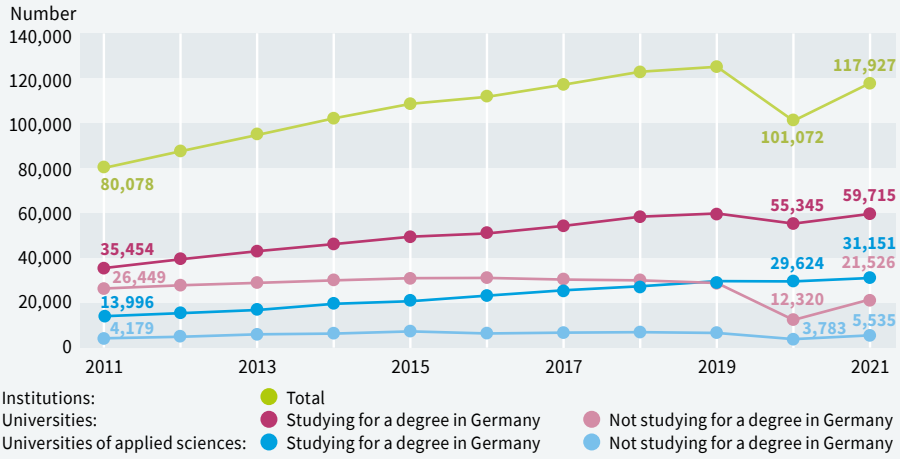
B1.2 Share of international students of all students, by type of university and funding body, in the winter semesters 2011/12, 2016/17 and 2021/22[3, 4]



Share in % of all students

Source: Federal Statistical Office, student statistics; DZHW calculations

B1.3 International first-year students in Germany by type of university since 2009[3, 5, 6, 7]



Source: Federal Statistical Office, student statistics

B1.4 International students by federal state in the winter semester 2021/22, plus the development from the 2016/17 to the 2021/22 winter semester

	WS 2021/22		Development WS 2016/17–WS 2021/22
Federal states	**Number**	**Share in %**	**Share in %**
Baden-Wuerttemberg	34,375	9.6	–9
Bavaria	55,291	13.7	+61
Berlin	39,595	19.4	+45
Brandenburg	8,245	16.3	+28
Bremen	5,485	14.7	+33
Hamburg	12,208	10.2	+41
Hesse	28,280	10.8	+26
Mecklenburg-Western Pomerania	3,667	9.4	+37
Lower Saxony	20,996	10.6	+31
North Rhine-Westphalia	77,199	10.1	+33
Rhineland-Palatinate	13,642	11.3	+47
Saarland	4,195	13.2	+16
Saxony	16,878	15.9	+11
Saxony-Anhalt	8,532	15.6	+40
Schleswig-Holstein	4,513	6.7	+19
Thuringia[8]	16,337	13.1	+178
States total (D)	**349,438**	**11.9**	**+32**

Number and share in % of all students

Source: Federal Statistical Office, student statistics; DZHW calculations

1.2 Regions and countries of origin

According to the preliminary data of the Federal Statistical Office for the 2022/23 winter semester, Asia and Pacific is the key region of origin for international students at German universities by a clear margin, representing 32% of all international students. Since the 2017/18 winter semester, the number of students originating from this region has seen above-average growth of 42%. With a share of 19%, students from North Africa and Middle East are in second place. They show the strongest upturn of the last five years, namely 58%. Compared to the 2021/22 winter semester, however, their number only climbed by 5%. Students from Western Europe are in third place. Following prolonged stagnation, their number has gone up by 12% within two years to a share of 17%. A similar development can also be observed for students from Central and South Eastern Europe. Following consistent enrolment figures, their number rose by 14% compared to the 2020/21 winter semester and they represent 11% of all international students. Rising numbers of students from Eastern Europe and Central Asia have also been observed over the last year, up by 11%, with a share of 8%. Lastly, Sub-Saharan Africa and Latin America account for shares of 6% and 5% respectively. In the last five years, the number of students from these regions has risen steeply by 36% and 21% respectively. Students from North America are the smallest group, at 2%. After a sharp decline in the 2020/21 winter semester, their numbers have climbed back up by 21% but are still below pre-pandemic levels.

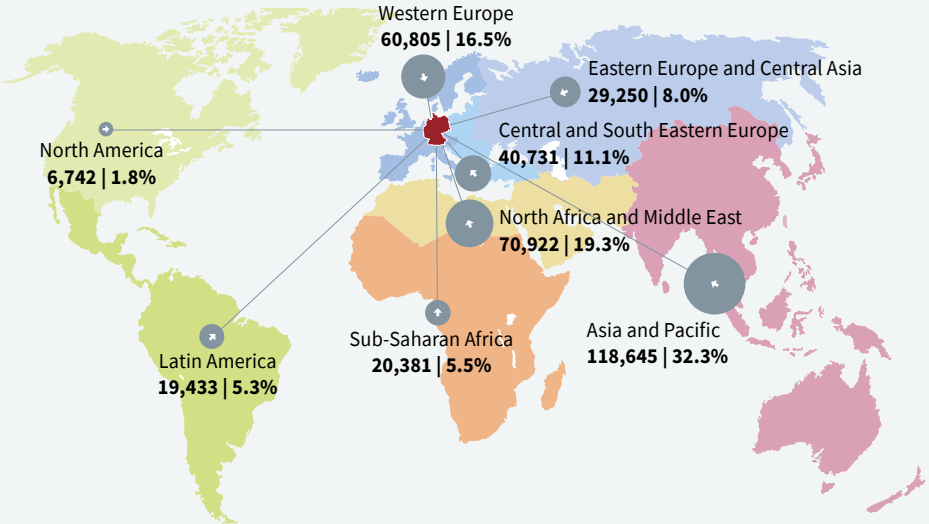
As before, the enormous relevance of students from Asian-Pacific countries of origin coincides with corresponding developments in global student mobility (see pp. 12/13). Students from this region constitute 43% of all internationally mobile students. This can be explained firstly by demographic factors: 51% of the world's population live in these countries, while a mere 6% live in Western Europe.[1] Secondly, many countries in this region, such as China, India, Vietnam, South Korea and Indonesia, are emerging economies in transition. Their economic development means that well-educated academic staff are in great demand, yet relatively few universities in these countries enjoy international renown. This situation continues to lead to a keen interest in studying abroad.

> "With 42,600 students, India tops the list of countries of origin for the first time.

The large number of Western, Central and South Eastern European students at German universities compared to other countries is not just an indication of German universities' attractiveness in Europe but also a result of the intensified student exchange between the countries in a specific region. The common denominator for all regions of the world is that an above-average share of mobility takes place within students' region of origin. Meanwhile, the merely below-average increase in the number of internationally mobile students from North Africa and Middle East is due to the fact that many prospective students who came to Germany from this region between 2014 and 2016 have since embarked on their studies.

Regional developments in international student mobility are also reflected in the ranking of countries of origin. Students from India are in first place in the 2022/23 winter semester, knocking students from China off the top spot for the first time in over 20 years. With a share of approximately

B1.5 International students by region of origin in the 2022/23 winter semester[2]



Total international students at German universities 367,578
(including 669 students who cannot be allocated to a country of origin).

Number and share in % of all international students at German universities

Source: Federal Statistical Office, student statistics; DZHW calculations

Footnotes

1 Data on the world population are taken from the Federal Statistical Office.

2 Deviations from 100% are due to rounding.

3 Including Hong Kong and Macao.

4 Only countries with at least 100 international students in winter semester 2022/23 (increase) and/or winter semester 2019/20 (decrease).

12%, they account for more than one in ten international students. Their number has risen by roughly 146% to some 42,600 in the last five years, up 26% year-on-year alone. Students from China are now in second place. Since the 2017/18 winter semester, their number has only grown by 6% to around 39,100, 3% less than last year. Furthermore, compared to the previous year, lower enrolment figures for students from Syria put them in third place. Here again, although there has been an uptick of 81% to 15,600 students or thereabouts over the past five years, this growth has not continued over the last two years.

The key Western European countries of origin are Austria (around 14,800 students), Italy (around 10,200 students) and France (around 7,000 students). While Austria and Italy have seen hikes of 33% and 15% respectively in the last five years, the number of French students has decreased by 3%. In the Eastern Europe and Central Asia region, Russia is out in front (around 10,500 students), although the number of students from Russia has dropped by 3% over the last five years. By contrast, the number of students from Ukraine (approximately 9,100) has jumped by 43% over the last year. Turkey is the most important country in Central and South Eastern Europe with some 14,700 students; this figure has soared by 93% since the 2017/18 winter semester, up by 17% year-on-year alone. Finally, in the two regions of North Africa and Middle East, and Sub-Saharan Africa, apart from Syria, most students come from Iran (roughly 13,300 students) and Cameroon (roughly 7,300 students).

Nevertheless, the greatest surge between the winter semesters 2019/20 and 2021/22, and thus during the pandemic, can be observed for students from Myanmar (+174%), with Honduras (+87%), Sri Lanka (+75%), India (+71%) and Uganda (70%) trailing far behind. On the other hand, the largest decreases in these two years are found in Australia (–24%), Cyprus (–21%) and Senegal (–19%).

B1.6 Key countries of origin by share of international students in the 2022/23 winter semester and the development from the 2017/18 to the 2022/23 winter semester

Countries of origin	Number	Share in %	Development WS 2016/17–WS 2021/22
India	42,578	11.6	+146
China[3]	39,137	10.6	+6
Syria	15,563	4.2	+81
Austria	14,762	4.0	+33
Turkey	14,732	4.0	+93
Iran	13,279	3.6	+76
Russia	10,490	2.9	–3
Italy	10,247	2.8	+15
Ukraine	9,069	2.5	+29
Pakistan	8,208	2.2	+67
Egypt	7,777	2.1	+104
Cameroon	7,345	2.0	0
Morocco	7,045	1.9	+33
France	6,997	1.9	–3
Spain	6,876	1.9	+11

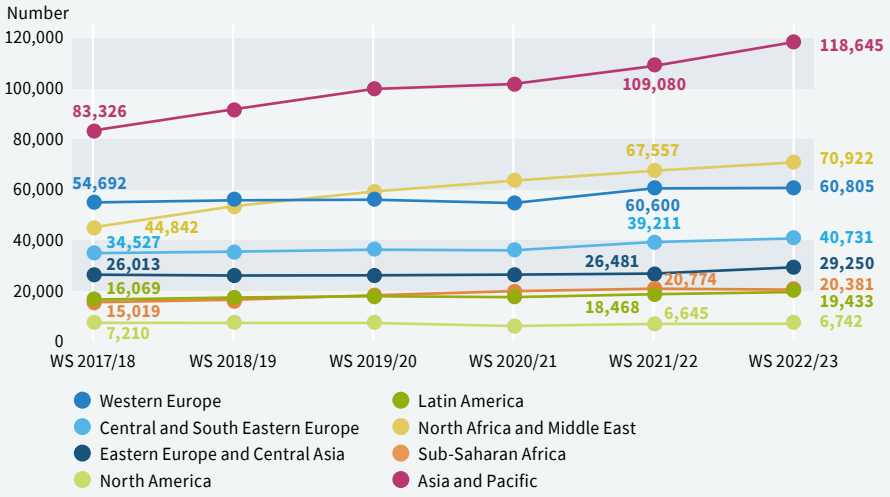
Source: Federal Statistical Office, student statistics; DZHW calculations

B1.7 Countries of origin with the greatest increase and decrease in percentages of international students, winter semester 2019/20 – winter semester 2022/23[4]

Countries of origin	Number WS 2022/23	Development WS 2019/20–WS 2022/23 in %
Myanmar	241	+174
Honduras	252	+87
Sri Lanka	733	+75
India	42,578	+71
Uganda	381	+70
Saudi Arabia	353	–15
Estonia	324	–16
Senegal	125	–19
Cyprus	627	–21
Australia	544	–24

Source: Federal Statistical Office, student statistics; DZHW calculations

B1.8 International students by region of origin since the 2017/18 winter semester



Source: Federal Statistical Office, student statistics

2.1 Mobility trends and types of degree

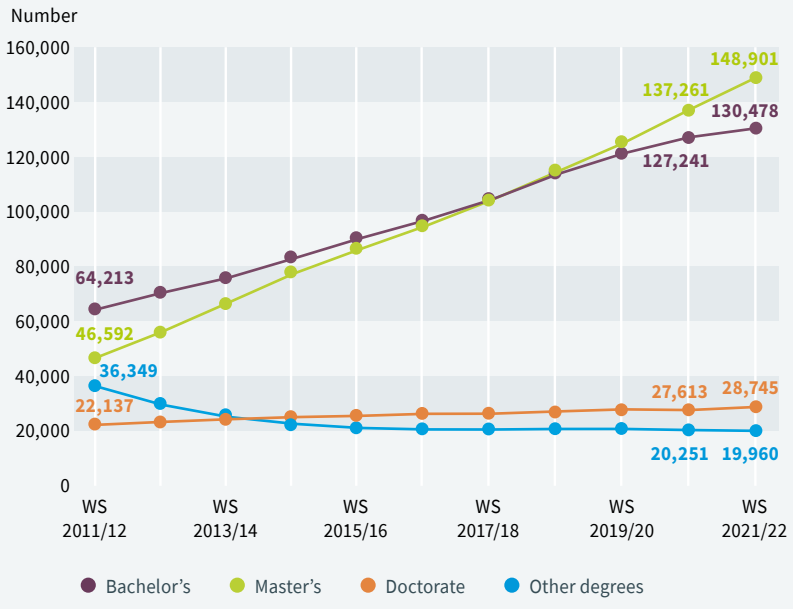
Approximately 328,100 international students were aiming to graduate from German universities in the 2021/22 winter semester. Their number has skyrocketed by 94% over the past ten years, and by 5% since the 2020/21 winter semester alone. Unlike temporary study-related mobility (see pp. 56/57), degree-related mobility thus continued to rise without any slowdown during the pandemic. Universities of applied sciences (UAS) have seen particularly strong growth, where the number of international students intending to graduate has shot up by 146% since the 2011/12 winter semester. The rate at universities is only about half that figure, namely 77%. Nevertheless, the vast majority (69%) of international students seeking a degree are still enrolled at universities. As a consequence of these developments, 11.2% of all students at German universities are now international students intending to graduate. This share is 12.7% at universities and 9.0% at UAS.

At the same time, interest in master's degrees is booming, up by 57% in five years. This is significantly higher than the figure for bachelor's degrees: the number of international students intending to complete their studies with a bachelor's degree has jumped by 35%. Some 28,700 international students are aiming for a doctorate,[1] an increase of 10% over the 2016/17 winter semester. The lower growth rates in doctoral studies can be explained by the limited number of available doctoral positions, the admission requirements for a doctorate and the strong global competition for particularly well-qualified applicants. However, the fact that the share of international students in doctoral studies is higher than that of other types of study should not be overlooked.

Moreover, the uptick in the number of international first-year students reflects the appeal of master's programmes for international students intending to graduate from German universities. In the 2021[2] academic year, following a slight drop in 2020, the first year of Covid-19 (–2%), master's programmes recorded a new peak of no less than 51,900 international first-year students, approximately 10% more than in 2019.[3, 4] This represents an increase of 46% over 2016. Doctoral studies also show a similar development. Again, 2021 saw a new high of roughly 6,000 international first-year students, 1% above the 2019 figure, admittedly after a more noticeable drop in 2020 (–19%). Conversely, there was a further fall in the number of international first-year students in bachelor's programmes, not just in 2020 but also in 2021, with the result that their 2021 figure is around 13% below that of 2019. However, owing to the large influx in master's programmes, the total number of international first-year students has developed favourably and, in 2021, is approximately 1% or 1,200 first-year students above the 2019 figure. There was a spike of 22% compared to 2016. Given the substantially differing developments in students embarking on bachelor's and master's programmes, it may be assumed that, in particular, the number of international students in master's programmes will continue to rise.

Of the international students intending to graduate in Germany in the 2021/22 winter semester, a total of 45% were aiming for a master's degree, 40% for a bachelor's degree and 9% for a doctorate, while 6% planned to complete their studies with a state examination or other type of degree. By comparison, the relations between bachelor's and master's programmes are reversed among German students, with 64% intending

B2.1 International students intending to graduate, by type of degree, since winter semester 2011/12[1]



Source: Federal Statistical Office, student statistics

Footnotes

1 The figures for international students and/or international first-year students seeking a doctorate refer exclusively to international doctoral students who are enrolled at a university. As it may be assumed that – like German doctoral students – some international doctoral candidates are not enrolled at a university, the figure of around 28,700 underestimates the actual total of international doctoral students. In total, the doctoral statistics published by the Federal Statistical Office for 2021 indicate 43,230 foreign doctoral students, in other words international doctoral students and *Bildungsinlaender*. Basing this number on the ratio between international students and *Bildungsinlaender*, the total number of international doctoral candidates in Germany, both enrolled and not enrolled, is 34,300.

2 The information for international first-year students refers to one academic year and includes the corresponding summer semester and the following winter semester. 2021 academic year = summer semester 2021 + winter semester 2021/22.

3 Including doctoral students in their first study programme.

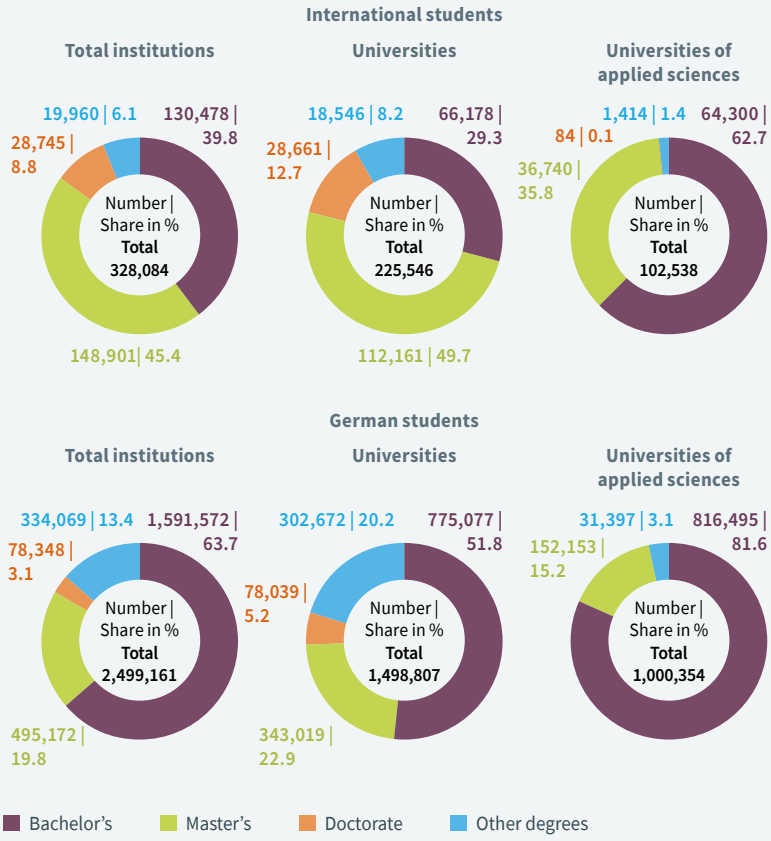
4 First-year students in bachelor's and other programmes are students in their first university semester; in master's and doctoral studies, they are students in their first subject-related semester or new doctoral entrants.

5 Deviations from 100% are due to rounding.

to gain a bachelor's degree and 20% a master's degree. Doctoral students accounted for 3%. At universities, the predominance of the master's degree among international students is even more marked: 50% of the students concerned are enrolled in master's and 29% in bachelor's programmes, while 13% aim to achieve a doctorate. By contrast, 50% of their German fellow students are enrolled in a bachelor's programme, just 23% in a master's programme, while 5% intend to obtain a doctorate. At UAS, bachelor's degrees also predominate among international students: 63% are aiming for a bachelor's degree and 36% for a master's degree. Among German students, these percentages are 82% and 15% respectively. While 49% of all international students hoping to achieve a bachelor's degree are studying at UAS, this is only true for 25% of those working towards a master's degree. The figures are similar for German students, where 51% of bachelor's and 31% of master's students are enrolled at universities of applied sciences.

International students' keen interest in master's degrees is also reflected in the fact that they account for almost a quarter (23%) of those enrolled in a master's programme. This figure is 24% at universities and 19% at UAS. The share of international doctoral students is even higher, at approximately 27%. In addition, with a share of 21%, international students are well represented among the doctoral students now becoming established at UAS. By contrast, international students with the intention of obtaining bachelor's degrees account for roughly 7% (universities 8%, UAS 7%).

B2.2 International and German students intending to graduate, by type of university and degree, in the 2021/22 winter semester[5]



Source: Federal Statistical Office, student statistics; DZHW calculations

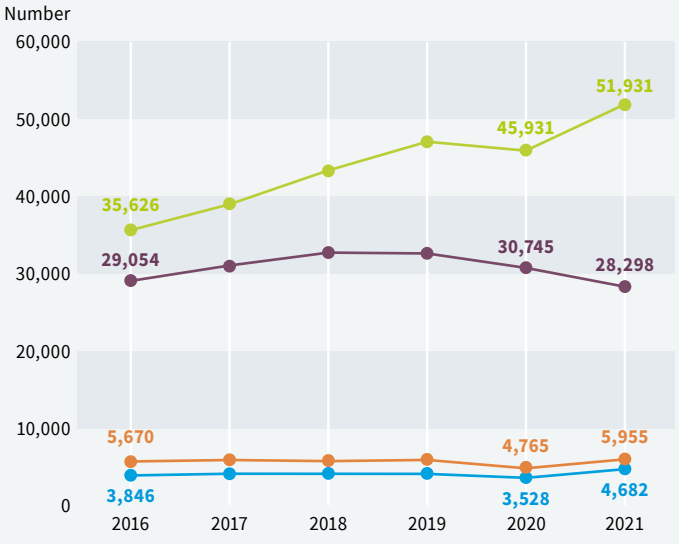
B2.3 Share of international students intending to graduate of all students, by type of university and degree, in the 2021/22 winter semester

Type of degree	Share of all students in %
Total institutions	7.3
	22.6
	26.5
	5.5
	11.2
Universities	7.6
	24.1
	26.6
	5.6
	12.7
Universities of applied sciences	7.0
	19.0
	21.1
	4.3
	9.0

Bachelor's · Master's · Doctorate · Other degrees · Total

Source: Federal Statistical Office, student statistics; DZHW calculations

B2.4 International first-year students intending to graduate, by type of degree, since the 2016 academic year[1, 2, 3, 4]



Source: Federal Statistical Office, student statistics

2.2 Regions and countries of origin

Most international students seeking a degree in Germany come from the Asia and Pacific region, with a share of 32%. Students from North Africa and Middle East come second with 20%, followed by Western Europe (16%), Central and South Eastern Europe (11%) and Eastern Europe and Central Asia (8%). Sub-Saharan Africa and Latin America account for 6% and 5% respectively of international students intending to achieve a degree, and North America for 2%.

Depending on their region of origin, international students prefer different types of degrees. Approximately half of all students from European regions and North Africa and Middle East aim to obtain a bachelor's and about one third a master's degree. This ratio is reversed in the case of North and Latin America, and Asia and Pacific, whereby more than half of students want to complete their studies with a master's and only about one third with a bachelor's degree. Equal shares of students from Sub-Saharan Africa intend to graduate with a bachelor's or master's degree. A relatively high proportion of doctoral students (13%) are from Latin America.

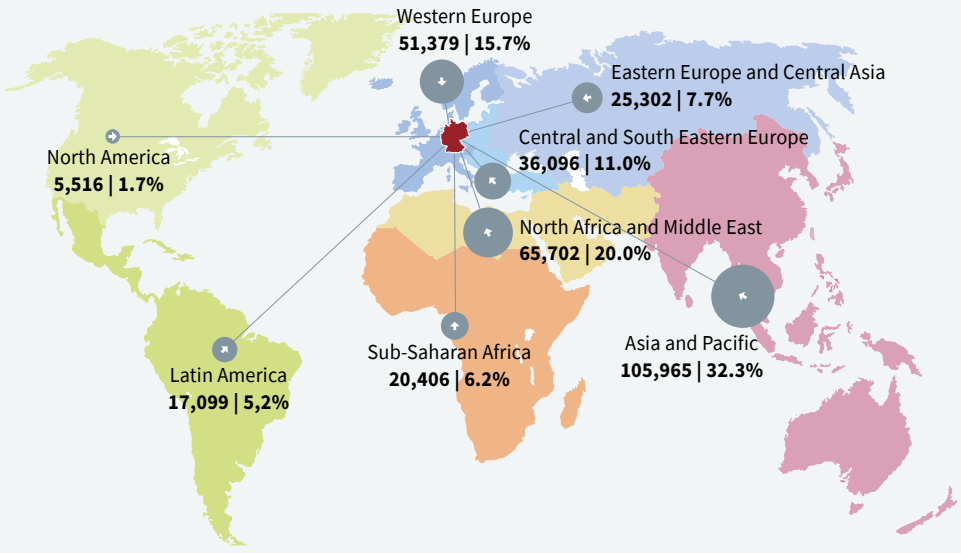
> "The number of Indian students intending to graduate has shot up by 125% in the last five years.

Since the 2016/17 winter semester, three regions in particular report above-average growth in their student numbers: North Africa and Middle East (+80%), Asia and Pacific (+48%) and Sub-Saharan Africa (+47%). Below-average increases in student numbers can be seen in Central and South Eastern Europe (+19%) and Eastern Europe and Central Asia (+1%.) The reasons for only slightly rising student numbers from Eastern, Central and South Eastern European countries are due to demographic developments in some of these countries rather than to dwindling interest in Germany as a country of study. Population figures in the age cohorts relevant for a degree programme have dropped significantly in these areas. As a result of this development, the significance of Central and South Eastern Europe, as well as Eastern Europe and Central Asia has declined over the last five years. While, in the 2016/17 winter semester, together they accounted for 23% of students intending to graduate, this figure has since fallen to just 19%.

The countries of origin of most international students with the intention of obtaining a degree are still the three Asian countries of China, India and Syria. China has topped the ranking by a clear margin since the early 2000s. With 39,000[2] students or thereabouts, 12% of students intending to graduate come from this country. Although their number has increased by 20% since the 2016/17 winter semester, it is 1% below the level of the previous year. The number of students from Syria (+250%) and India (+125%) has seen a much sharper rise. These countries of origin are followed in the ranking by Austria, Turkey and Iran, with the two latter countries listed in tenth and sixth place respectively five years ago. Since the 2016/17 winter semester, the number of Austrian students has jumped by 39%, with Turkish students up by 93% and Iranian students by 65%. Other major countries of origin are Russia, Italy, Cameroon and Pakistan.

During the pandemic, between the winter semesters 2019/20 and 2021/22, the number of students from Myanmar (+79%) South Africa (+78%) and Uganda (+74%) skyrocketed in particular. Furthermore,

B2.5 International students intending to graduate, by region of origin, in winter semester 2021/22[1]



Total international students intending to graduate at German universities: 328,084 (including 619 students who cannot be allocated to a region of origin).

Number and share in % of all International students intending to graduate at German universities

Source: Federal Statistical Office, student statistics; DZHW calculations

Footnotes

1 Deviations from 100% are due to rounding.

2 Including Hong Kong and Macao.

3 Only countries with at least 100 international students intending to graduate, in winter semester 2021/22 (increase) and/or winter semester 2019/20 (decrease).

B2.6 International students intending to graduate, by key countries of origin, in the winter semesters 2016/17 and 2021/22

	WS 2016/17		WS 2021/22	
Countries of origin	Number	Share in %	Number	Share in %
China[2]	32,618	13.7	39,005	11.9
India	14,877	6.2	33,417	10.2
Russia	10,531	4.4	16,651	5.1
Austria	10,414	4.4	14,472	4.4
Cameroon	7,367	3.1	11,419	3.5
Iran	6,939	2.9	11,417	3.5
Ukraine	6,696	2.8	10,121	3.1
Bulgaria	6,649	2.8	7,854	2.4
Italy	6,293	2.6	7,641	2.3
Turkey	5,927	2.5	7,053	2.1
France	5,507	2.3	6,660	2.0
Morocco	4,912	2.1	6,558	2.0
Syria	4,751	2.0	6,475	2.0
Indonesia	4,601	1.9	6,140	1.9
Poland	4,566	1.9	5,978	1.8
South Korea	4,550	1.9	5,870	1.8
Tunisia	4,420	1.9	5,487	1.7
Pakistan	4,354	1.8	5,470	1.7
Spain	4,089	1.7	5,385	1.6
Luxembourg	4,032	1.7	5,210	1.6

Source: Federal Statistical Office, student statistics; DZHW calculations

countries of origin such as Mauritania, Mauritius, Bangladesh (+49% each), along with the Democratic Republic of the Congo and Algeria (+46% each) have recorded growth in recent years. In contrast, student numbers have fallen off over the same period for Singapore (–19%), Cyprus, Saudi Arabia (–16% each), Senegal and Estonia (–12% each).[2]

Although specific reasons can be given for the development of student numbers in each country, certain overarching regional trends are striking: in particular, the number of internationally mobile students from North Africa and Middle East, and Asia and Pacific is on the rise, while the number of internationally mobile students from European, especially Eastern European regions, is increasing less steeply, even stagnating or declining. In addition to political, humanitarian, economic and demographic issues in these countries of origin, the respective levels of development of the higher education and science systems in both the countries of origin and the host countries also influence international mobility.

B2.7 Countries of origin with the greatest increase and decrease in percentages of international students intending to graduate, winter semester 2019/20–winter semester 2021/22[3]

Countries of origin	WS 2021/22 Number	Development WS 2019/20–WS 2021/22 in %
Myanmar	131	+79
South Africa	601	+78
Uganda	382	+74
Mauritania	136	+49
Mauritius	448	+49
Bangladesh	5,978	+49
Dem. Republic of the Congo	212	+46
Algeria	488	+46
Ghana	1,837	+42
Sri Lanka	574	+40
Georgia	1,887	–6
Montenegro	109	–6
Bulgaria	5,470	–7
Ethiopia	426	–8
Australia	440	–9
Estonia	303	–12
Senegal	131	–12
Saudi Arabia	342	–16
Cyprus	654	–16
Singapore	243	–19

Source: Federal Statistical Office, student statistics; DZHW calculations

2.3 Subject groups

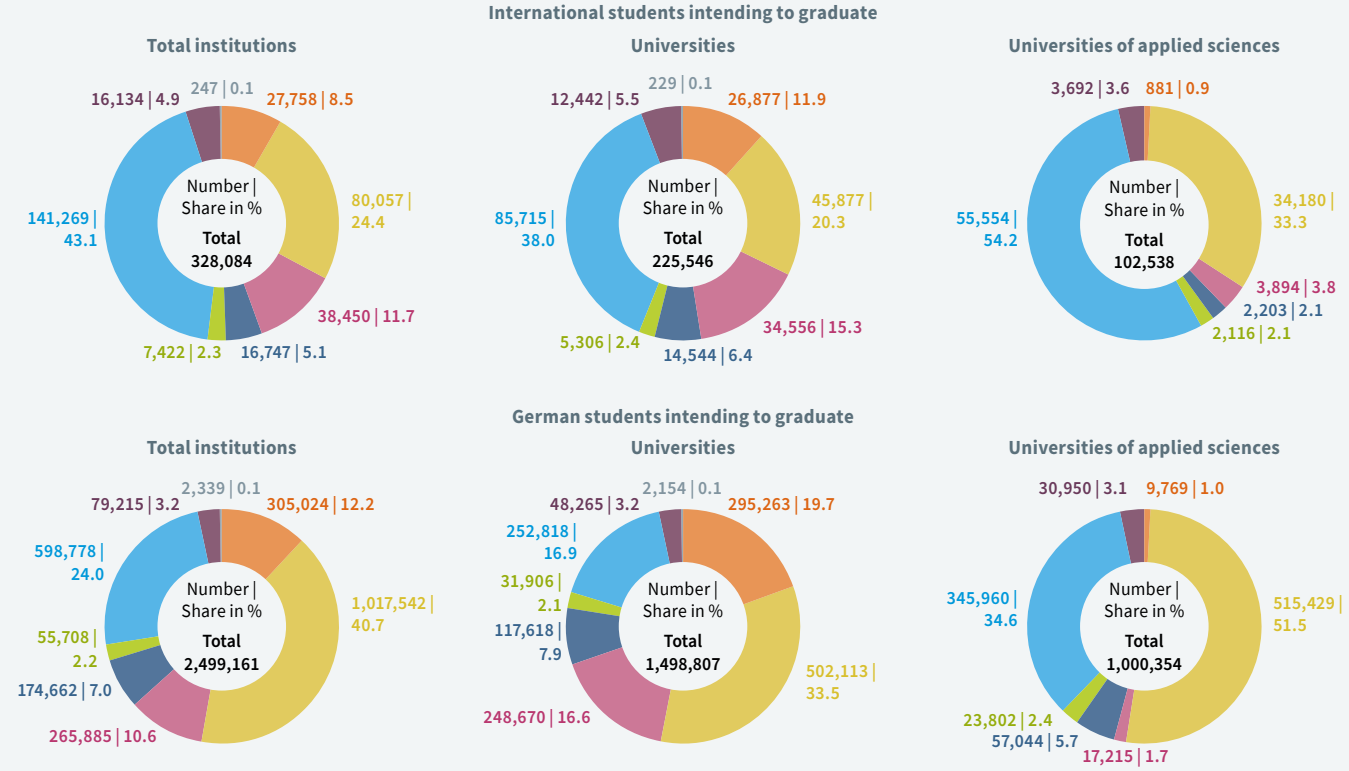
In the 2021/22 winter semester, the majority of international students intending to graduate are enrolled in engineering (43%) and in law, economics and social sciences (24%). This applies to both universities and universities of applied sciences (UAS); however, the shares of international students in these two subject groups at UAS (54% and 33% respectively) are considerably larger than at universities (38% and 20% respectively). On the other hand, the humanities (universities 12%, UAS 1%) and mathematics and natural sciences (universities 15%, UAS 4%) figure much more prominently at universities. In addition, 5% each of international students are studying for a degree in medicine and health sciences or art and art history, with another 2% in agricultural, forestry and food sciences, and veterinary medicine. The differences between types of university are relatively minor in these subject groups. Engineering and law, economics and social sciences are also the most important subjects for German students, although the ratio here is reversed compared to their international fellow students: law, economics and social sciences are in first place with 41%, followed by engineering with 24%.

> “55% of international students intending to graduate are enrolled in a STEM subject.

Moreover, engineering has shown the biggest growth in the number of international students intending to graduate, up by 52% since the 2016/17 winter semester. By contrast, a downturn of 5% can be observed among German students in the same period. With an increase of 48% in enrolment figures, mathematics and natural sciences show a similarly robust rise in interest among international students. The corresponding number of students in law, economics and social sciences has risen by 32% and in agricultural, forestry and food sciences, and veterinary medicine by 31%. Meanwhile, the growth rate in the humanities is below average, at just 8%. Student numbers have stagnated in this subject group over the last two years.

The above-average upswing in the number of international students intending to graduate in engineering and in mathematics and natural sciences may also be attributed to the increased immigration of students from Asia and Pacific, North Africa and Middle East, and their preference for engineering degree programmes. More than half of the students

B2.8 International and German students intending to graduate, by type of university and subject group, in the 2021/22 winter semester[1]



Source: Federal Statistical Office, student statistics; DZHW calculations

in question opt to study one of these subjects. On the other hand, students from European regions, whose number has only increased to a lesser extent in the last five years, are more likely than average to be interested in law, economics and social sciences. About one third each decide to study subjects in this group.

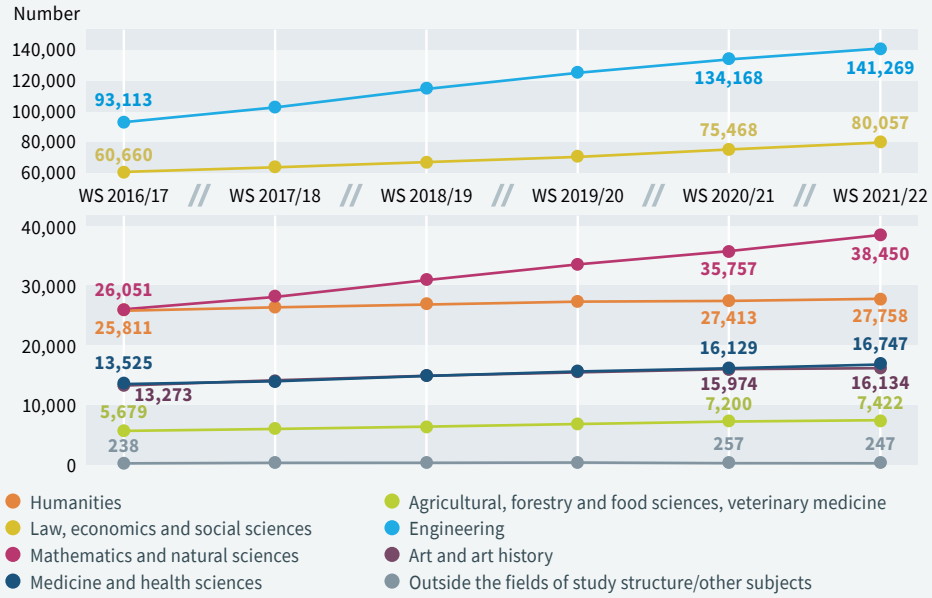
> “ The share of international students intending to graduate in art and art history at universities is 19%.

The differing growth rates, depending on the subject group, in international students' interest in graduating from German universities has meant that, with a share of 18% in engineering, almost one in five students hoping to obtain a degree now comes from abroad. In art and art history programmes, international students represent 16% of all students. In mathematics and natural sciences, agricultural, forestry and food sciences, and veterinary medicine, they make up a quota of 12% in each group. By contrast, the lowest percentages of international students can be observed in medicine and health sciences (9%), the humanities (8%) and in law, economics and social sciences (7%). At universities, particularly high rates can be observed in engineering subjects with 24%, as well as in art and art history with 19%. At universities of applied sciences, the largest shares are found in mathematics and natural sciences (18%) and engineering (13%). On the other hand, medicine and health sciences (4%) and law, economics and social sciences (6%) report lower percentages.

Footnote

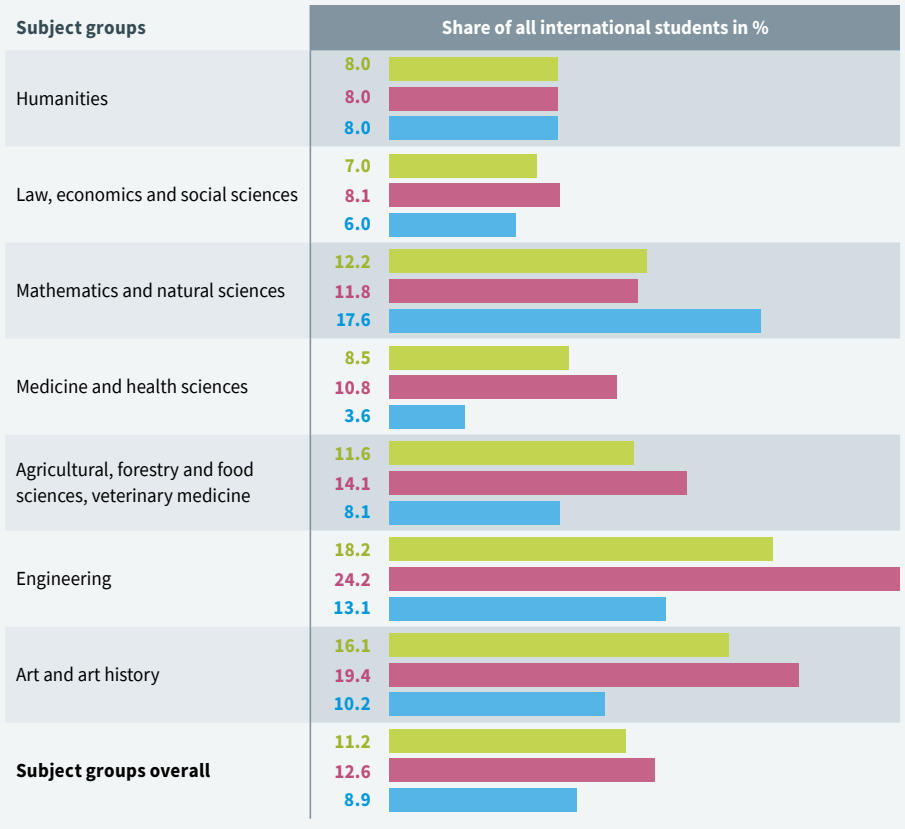
1 Deviations from 100% are due to rounding.

B2.9 International students intending to graduate, by subject group, since winter semester 2016/17



Source: Federal Statistical Office, student statistics

B2.10 Share of international students intending to graduate of all students, by type of university and subject group, winter semester 2021/22



Source: Federal Statistical Office, student statistics; DZHW calculations

2.4 Applicants

Around two thirds of all international students in Germany are enrolled at universities that are members of uni-assist. Data on international applicants can be collated for these universities. In 2022, approximately 10,000 more candidates than the previous year applied via uni-assist for admission to a university in Germany. After the beginning of the pandemic in 2020, the number of applicants recovered by 13% in 2022.[1] Compared to 2020, the 20 key countries of origin have remained largely unchanged, except that Lebanon has since replaced Colombia. Again in 2022, most applicants came from India (22%), followed by Turkey (8%), Iran (6%), Pakistan and China (5% each). In eight of the 20 key countries of origin, the number of applicants has fallen off compared to 2020: they are Vietnam and Cameroon (-17% each), South Korea (-18%), the US (-20%), Indonesia (-24%), China (-30%), Syria (-40%) and Nigeria (-41%). Particularly striking here is the marked decline in applicants from China; this figure was down just 7% in the previous year. In other words, even once pandemic-related travel restrictions were lifted, the number of applicants has continued to drop sharply. Meanwhile, in the twelve remaining countries of the 20 key countries of origin, applicant numbers have developed positively, with increases of between 4% (Russia) and 85% (Turkey).

What is uni-assist?

uni-assist is a registered association that all state universities in Germany can join. Currently, 147 universities make use of uni-assist's services. The core task of uni-assist is to evaluate international certificates. On behalf of the member universities and according to the guidelines of the Central Office for Foreign Education (ZAB), uni-assist checks whether the certificates submitted are equivalent to German school-leaving certificates or university degrees and are sufficient to qualify students to study in Germany. If the check is positive, uni-assist forwards the application electronically to the respective universities.

There are also clear differences between the key countries of origin of applicants in terms of their success rates in the formal application process through uni-assist. Only applications that meet all formal criteria are forwarded by uni-assist to the university in question for the final (and, above all, subject-based) decision on student admission. On average, 86% of applications were forwarded in 2022. Among the countries with the highest forwarding rates were Bangladesh (93%), India (91%) and Turkey (90%), while the lowest forwarding rates were found in applicants from the Philippines (49%), France (65%) and Ethiopia (68%).

The main reasons for uni-assist rejecting an application are incomplete documents (18%), insufficient German language proficiency (15%), falling below a specified minimum grade (9%) and exceeding deadlines (8%). However, the significance of the reasons for

B2.11 Key countries of origin of international applicants via uni-assist in 2020, 2021 and 2022, plus development from 2020 to 2022[1]

Country of origin	Number			Development in %, 2020–2022
	2020	2021	2022	
India	11,731	13,689	18,979	+61.8
Turkey	3,501	4,934	6,475	+84.9
Iran	3,687	3,429	5,140	+39.4
Pakistan	2,767	2,694	4,179	+51.0
China	5,872	5,489	4,129	–29.7
Bangladesh	2,808	2,763	2,966	+5.6
Morocco	1,697	1,861	2,389	+40.8
Syria	3,931	2,990	2,368	–39.8
Russia	2,207	2,363	2,296	+4.0
Egypt	2,063	1,899	2,255	+9.3
Ukraine	1,086	1,126	1,891	+74.1
Nigeria	3,076	1,745	1,822	–40.8
Cameroon	1,771	1,317	1,464	–17.3
Tunisia	1,268	1,150	1,320	+4.1
Ghana	859	797	1,109	+29.1
US	1,340	1,276	1,067	–20.4
Indonesia	1,384	1,154	1,046	–24.4
South Korea	1,128	938	923	–18.2
Vietnam	1,086	832	904	–16.8
Lebanon	601	738	859	+42.9
Other countries	**21,788**	**22,527**	**22,234**	**+2.0**
All countries	**75,651**	**75,711**	**85,815**	**+13.4**

Source: uni-assist; DAAD calculations

Footnotes

1 An academic year always includes the summer semester and the following winter semester. Accordingly, the 2022 academic year includes applications for summer semester 2022 and winter semester 2022/23.

2 Countries of origin with at least 100 applicants in the 2022 academic year.

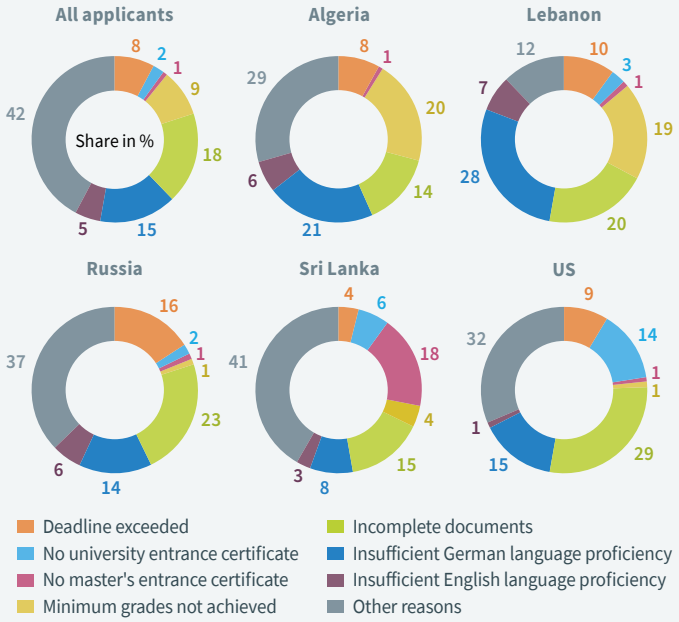
3 Deviations from 100% are due to rounding.

B2.12 Forwarding rate of international applications via uni-assist, by selected countries of origin, in 2022[1, 2]

Country of origin	Forwarding rate in %
Bangladesh	93
India	91
Turkey	90
Russia	89
Iran	88
China	86
Lebanon	85
Egypt	84
Syria	83
Colombia	82
Ukraine	77
United Kingdom	76
Ghana	74
US	72
Cameroon	71
Nigeria	70
Uganda	69
Ethiopia	68
France	65
Philippines	49

Source: uni-assist; DAAD calculations

B2.13 Major formal reasons for rejection of international applications via uni-assist overall and by selected countries of origin, in 2022[1, 3]

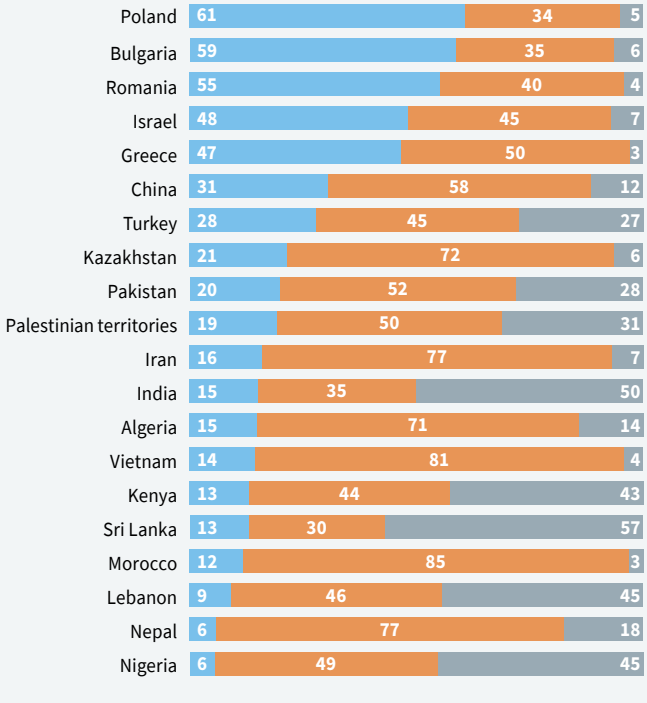


Source: uni-assist; DAAD calculations

rejection varies somewhat, depending on the country of origin. In 2022, incomplete documents are more likely than average to lead to the rejection of applications from the US (29%), Russia (23%) and Lebanon (20%). The same applies to insufficient German language skills in the case of applicants from Lebanon (28%) and Algeria (21%). Applications from Algeria (20%) and Lebanon (19%) are more likely than average to be rejected for not having achieved the minimum grade, whereas applications from Lebanon (7%), Algeria and Russia (6% each) tended to be rejected due to candidates' inadequate command of English. Other frequent reasons for rejection in the key countries of origin are not holding a university entrance certificate, especially true of applicants from the US (14%) and Sri Lanka (6%), and lacking a master's entrance certificate in the case of Sri Lanka (18%).

Pronounced differences between the countries of origin can also be observed with regard to the German language skills verified in the uni-assist application process, which must be supported by appropriate certificates. The highest shares of applicants who are proficient users of the language, (C1/C2) according to the Common European Framework of Reference for Languages (CEFR), in the 2022 academic year are found in Poland (61%), Bulgaria (59%) and Romania (55%). High percentages of applicants who are independent users (B1/B2) come mainly from Morocco (85%), Vietnam (81%) and Iran (77%). Finally, the highest proportion of applicants from Sri Lanka (57%), India (50%) and Nigeria (45%) only have a basic command of the language (A1/A2).

B2.14 German language proficiency of international applicants via uni-assist by selected countries of origin, in 2022[1, 2, 3]



Proficiency level according to the Common European Framework of Reference for Languages (CEFR):
A1/A2: Basic user
B1/B2: Independent user
C1/C2: Proficient user

Source: uni-assist; DAAD calculations

2.5 Graduates

The number of international graduates at German universities shot up by 39% between 2016 and 2021[1]. After the fall of 2% in the 2020 graduation year due to Covid-19, 2021 saw an all-time high of 53,600 international graduates, 14% more than in the previous year and 11% more than in 2019. At the same time, the number of international graduates has risen dramatically in both bachelor's and master's programmes. The growth rate is 51% for bachelor's degrees and 47% for master's programmes. In line with the sluggish development in the number of students engaging in doctoral studies, the number of doctorates awarded to international students has increased by a mere 11%.

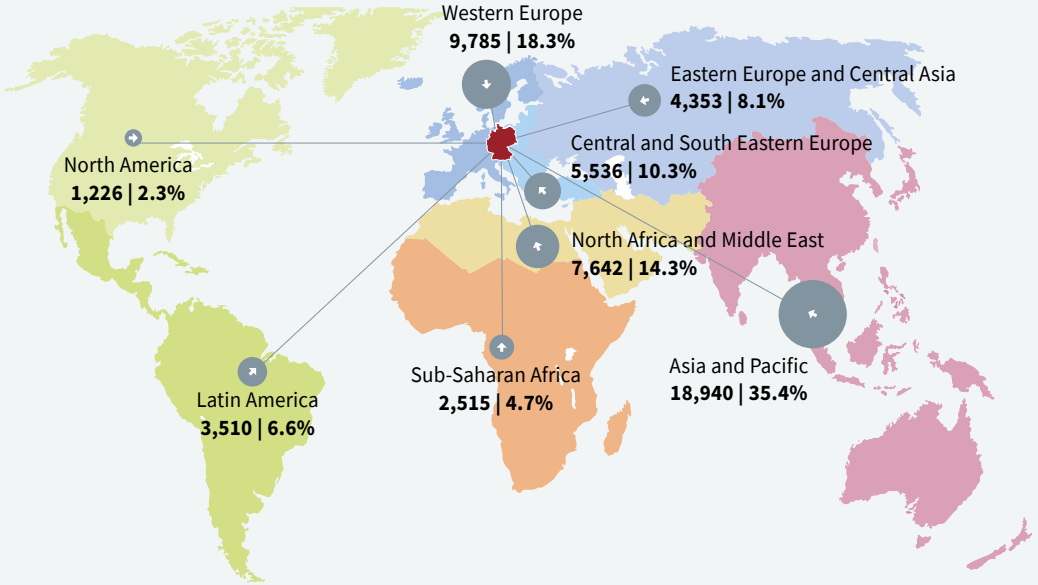
Among graduates, master's degrees predominate to a similar extent as in international first-year students seeking a degree (see p. 42/43). 56% of international students who were awarded a degree in 2021 graduated with a master's degree. The share of bachelor's degrees is 29% and that of doctoral studies 10%. The situation is reversed for German graduates in the same graduation year, with the share of master's degrees at 28%, while bachelor's degrees make up 56%. 5% of German graduates completed their studies with a doctorate.

> "On average, international graduates complete master's programmes in 5.8 subject-related semesters.

At 10.3%, the share of international graduates of all graduates is 0.4 percentage points above that of 2020. This means that one in ten graduates comes from abroad. This applies to a particularly large share, namely 19.5%, of students who were awarded a doctorate. The percentage of international graduates of master's programmes was comparable at 18.4%. For bachelor's degrees, this figure is 5.6%.

With a share of roughly 39%, most international graduates completed an engineering degree. Law, economics and social sciences are in second place with 27%, followed by mathematics and natural sciences at 12%. All other subject groups – art and art history (7%), medicine and health sciences (5%) plus agricultural, forestry and food sciences, and veterinary medicine (2%) – have single-digit shares. Over the last five years, the number of international graduates in engineering (+51%), medicine and health sciences (+49%) as well as mathematics and natural sciences (+46%) has seen above-average growth. This is in contrast to the humanities, which register a rise of just 22%. The situation is somewhat different with regard to the proportion of international graduates of all graduates in the various subject groups. The highest percentage can be observed in art and art

B2.15 International graduates by region of origin, in 2021[1]



Total international graduates by region of origin: 53,570 (including 63 international graduates who cannot be allocated to a region of origin).

Number and share in % of all international graduates

Source: Federal Statistical Office, examination statistics; DZHW calculations

Footnote

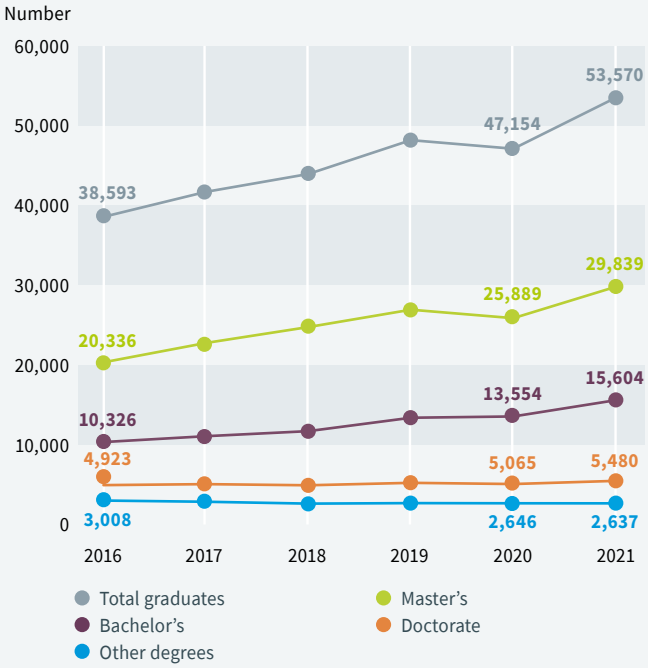
1 A graduation year includes the graduates in the winter semester and the following summer semester. Graduation year 2021 = winter semester 2020/21 + summer semester 2021.

history with 20%, followed by 16% in engineering. By contrast, below-average shares are found in law, economics and social sciences, medicine and health sciences (7% each) and the humanities (8%).

The majority of international graduates by far come from the Asia and Pacific region of origin, with a share of approximately 35%. In second and third place are the regions of Western Europe and North Africa and Middle East at 18% and 14% respectively, followed by Central and South Eastern Europe with 10%. Eastern Europe and Central Asia and Latin America score 8% and 7% respectively, while Sub-Saharan Africa and North America bring up the rear with 5% and 2% respectively. Thus, the distribution of international graduates over the different regions of origin largely corresponds to the proportions of international students and first-year students.

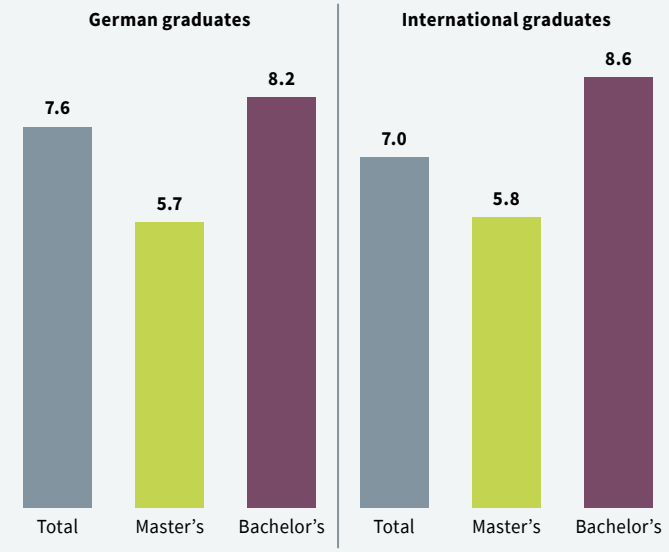
There are no significant differences between international and German graduates in terms of the duration of their studies until they graduate. The mean duration of all international graduates in the 2021 graduation year is 7.0 subject-related semesters, even shorter than that of German graduates who study for an average of 7.6 subject-related semesters. Nonetheless, this is due to the substantially higher proportion of formerly enrolled students with a master's degree among international graduates than among German graduates. A comparison between the study duration of master's programmes shows that international graduates take an average of 5.8 subject-related semesters and German graduates 5.7 subject-related semesters before being awarded a degree. In bachelor's programmes, the average is 8.6 subject-related semesters for international graduates and 8.2 subject-related semesters for German graduates.

B2.16 International graduates by type of degree since 2016[1]



Source: Federal Statistical Office, examination statistics

B2.17 Mean study duration of international and German graduates, by type of degree, in 2021[1]



No. of study programme semesters

Source: Federal Statistical Office, examination statistics; DZHW calculations

B2.18 International graduates by subject group, in 2021

Subject group	Share of all graduates in %		
	Total institutions	Universities	Universities of applied sciences
Humanities	7.9	7.9	8.8
Law, economics and social sciences	6.8	8.9	4.9
Mathematics and natural sciences	11.4	11.3	12.6
Medicine and health sciences	7.3	9.2	2.6
Agricultural, forestry and food sciences, veterinary medicine	10.8	13.7	5.9
Engineering	16.2	22.9	10.5
Art and art history	20.3	25.6	10.3
Subject groups overall	10.3	12.6	7.0

Share in %: Total institutions Universities Universities of applied sciences

Source: Federal Statistical Office, examination statistics; DZHW calculations

SPOTLIGHT

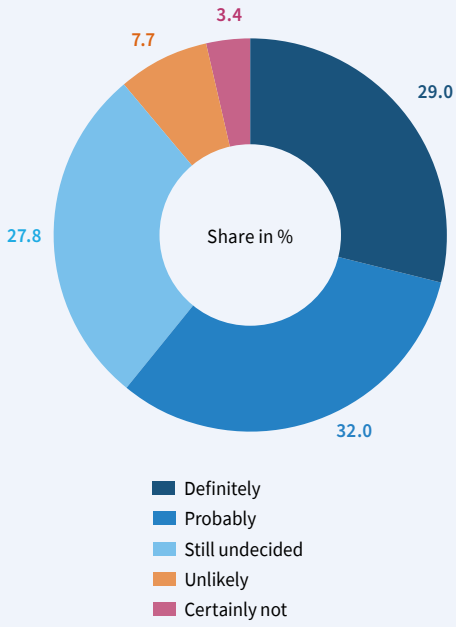
Intent to remain and retention rates of international students in Germany

How many international students stay in Germany for longer periods? In recent years, this question has increasingly come to the fore, particularly in light of the growing demand for skilled labour. Two main data sources, both with different strengths and weaknesses, will help answer this question (see also the info box on the database and method of calculation). The first source, the DAAD's BintHo (International University Benchmark) study, is a survey of students all over Germany. The advantage of these student surveys is that they include all groups of international students and their *intent* to remain, with the result that the findings can be differentiated according to various attributes of the respondents. Nonetheless, only data referring to students' intent to remain (while studying) can be retrieved and not their actual decision (after graduating). The second important source are data on residence permits, which are recorded in the Central Register of Foreigners (Ausländerzentralregister, AZR).[1] They provide insight into students' actual decision to stay in the country after completing their course, with one major caveat, however: only students from non-EU countries are included, as EU students do not require a residence permit in Germany due to the freedom of movement prevailing within the EU. As a result, around 20% of international students seeking a degree in Germany are not recorded in these statistics.[2] Accordingly, to take full advantage of these data sources and compensate, to some extent at least, for their respective disadvantages, a useful approach is to carry out a combined analysis of both sources.

Database and method of calculation

In the 2020/21 winter semester, under the BintHo project, the DAAD surveyed a total of some 115,000 students at 74 participating universities in 14 federal states throughout Germany, including approximately 14,000 international students (for further information, refer to the project website, in German only, at www.daad.de/bintho). The Federal Statistical Office and OECD analyses presented here on the retention of international students in Germany are based on data from the Central Register of Foreigners (AZR) regarding study-related residence permits issued to students.[5] These data reveal in what year a certain person was first granted a residence permit for the purpose of studying in a federal state. To calculate the retention rates, all students who were first issued a study-related residence permit in a specific year (OECD analysis) or over several years (Federal Statistical Office analysis) were defined as the initial group. The second step was to check how many members of this initial group were still resident in Germany after five or ten years and what their residence status was. Consequently, the retention rates refer to first-year students, not to graduates, as the AZR data do not document whether a course of study was successfully completed.

BS1.1 International students' intent to remain in Germany in the 2020/21 winter semester[3]



Source: DAAD, BintHo survey

The DAAD's BintHo survey in the 2020/21 winter semester asked roughly 14,000 international students about their intent to remain in the country after graduating. 61% indicated that they would "definitely" or "probably" stay in Germany. Only about 11% were unlikely to stay or certainly did not plan to do so. The other respondents, approximately 28%, were undecided on the matter.

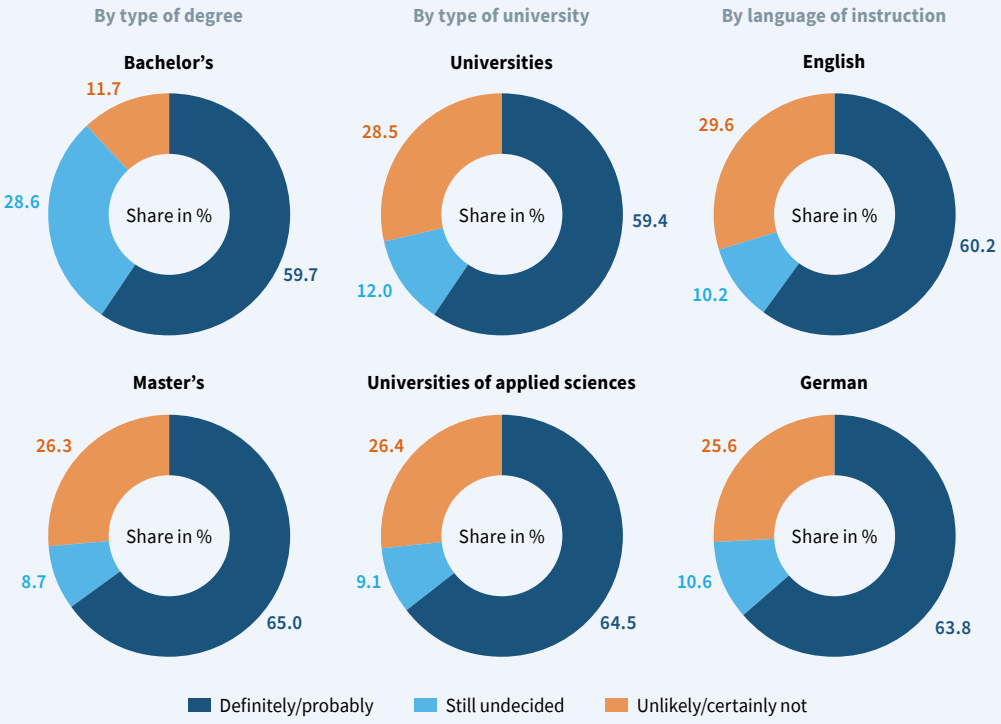
The findings of the BintHo survey also differentiate between respondents' intent to remain according to a variety of attributes. However, breaking down the results by type of university, type of degree and language of instruction only leads to minor differences. Master's students are somewhat more inclined than bachelor's students (65% vs. 60%) to declare their (definite or probable) intent to remain after obtaining their degree. By the same token, students at universities of applied sciences (UAS) want to stay more often than university students (65% vs. 59%) and students in German-language degree programmes are more likely to remain than students in English-language programmes (64% vs. 60%).

By contrast, a breakdown by subject groups produces a slightly greater range of answers. In this case, international students of engineering tended most often to indicate that they definitely or probably intended to remain in Germany (67%), followed by students of art and art history (65%). The lowest corresponding share was found among students of medicine and health sciences (53%). Moreover, it was comparatively rare for students of the humanities, agricultural, forestry and food sciences, and veterinary medicine to state that they wished to stay (56% each).

The responses of international students vary considerably between the different regions of origin regarding their intent to remain. Students from the regions of North Africa and Middle East (70%), Eastern Europe and Central Asia (68%), Central and South Eastern Europe, Asia and Pacific (66% each), and Latin America (65%) were most inclined to express a definite or probable intent to remain. Meanwhile, this was less often the case among students from North America (56%), Sub-Saharan Africa (50%) and Western Europe in particular (41%).

Lastly, a comparison of students' plans to stay by individual countries of origin reveals especially striking differences. More than three quarters of students from Syria (83%), Afghanistan (79%), Albania (78%) and Azerbaijan (76%) indicated that they definitely or probably wish to stay in Germany. Students from Kazakhstan (75%), Tunisia, Jordan (74% each), India (73%), Colombia and Egypt (72% each) also admitted to having a similar intent to remain. Conversely, it was exceptionally rare for students from Luxembourg (19%) and Switzerland (26%) to plan to stay in Germany – definitely or probably – after obtaining their degree. Students from Ghana, France (38% each), Austria (39%) and Spain (45%) were somewhat more likely to indicate their intent to remain but this was still the case for less than half of respondents. In conclusion, a closer look at the composition of those countries with the highest and lowest shares of students indicating definite plans to stay reveals a relatively strong correlation between the economic development and political stability of these countries of origin and the respective students' intent to remain.

BS1.2 International students' intent to remain in Germany, by type of degree, type of university and language of instruction, in winter semester 2020/21[3]



Source: DAAD, BintHo survey

BS1.3 International students' intent to remain in Germany, by subject group, in winter semester 2020/21[3]

Subject group	Share in %		
Engineering	66.9	26.2	7.0
Art, art history	64.5	23.5	11.9
Sports	59.6	27.3	13.1
Law, economics and social sciences	57.5	28.7	13.8
Mathematics, natural sciences	57.5	30.4	12.2
Humanities	55.7	27.6	16.7
Agricultural, forestry and food sciences, veterinary medicine	55.7	31.2	13.1
Medicine, health sciences	53.3	32.0	14.7

Definitely/probably | Still undecided | Unlikely/certainly not

Source: DAAD, BintHo survey

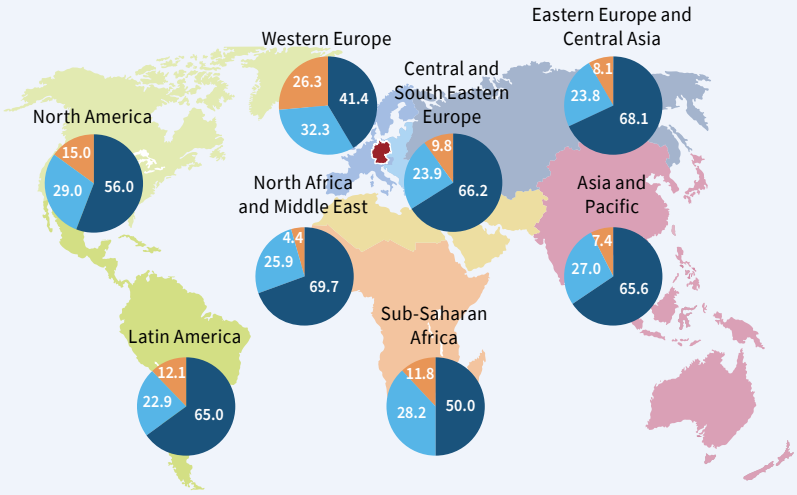
SPOTLIGHT

Intent to remain and retention rates of international students in Germany

Both the OECD and the Federal Statistical Office analyses recently drew on residence permit data documented in the Central Register of Foreigners as a basis for evaluating the retention of international students in Germany (see also the spotlight in Chapter A on pp. 20–23). However, slightly different calculation methods and varying observation periods were taken into account when calculating the retention rates (see also the info box on the database and method of calculation). The OECD analysis calculated three separate retention rates: the percentage of international students from non-EU countries who were first issued a study-related residence permit in 2010 and were still in Germany in 2015 and 2020 respectively, plus the corresponding share of students who were first granted a residence permit in 2015 for the purpose of studying and were still in Germany in 2020. This established a ten-year retention rate of 45% (first-year cohort 2010, retention in 2020). As expected, the two five-year retention rates are significantly higher by comparison, namely 54% for the first-year cohort of 2010 and 63% for the first-year cohort of 2015, in other words, the retention rate among international students in Germany rose appreciably during the period under review. Nonetheless, it should be noted that, five years after embarking on their studies, almost half of the international students documented had not yet completed their course and/or had been granted a study-related residence permit.

The analysis carried out by the Federal Statistical Office only calculated one retention rate. With reference to the first-year cohorts of 2006 to 2011, it traces their retention ten years after commencing their programmes or first being granted a residence permit for the purpose of studying, producing a retention rate

BS1.4 International students' intent to remain in Germany, by regions of origin and selected countries of origin, in winter semester 2020/21[3]



Share in % Definitely/probably Still undecided Unlikely/certainly not

Countries with the highest shares of students intending to remain	Share in %		
Syria	83.4	13.7	2.9
Afghanistan	78.8	21.2	0.0
Albania	77.9	19.4	2.7
Azerbaijan	75.6	19.4	5.0
Kazakhstan	74.8	19.3	5.9
Tunisia	74.1	20.7	5.1
Jordan	73.6	22.1	4.3
India	72.9	23.6	3.5
Colombia	72.0	17.8	10.2
Egypt	71.6	25.0	3.5

Countries with the lowest shares of students intending to remain	Share in %		
Luxembourg	18.6	28.1	53.4
Switzerland	25.9	30.3	43.9
Ghana	37.7	46.2	16.1
France	38.1	32.9	29.0
Austria	39.3	33.7	27.0
Spain	45.3	35.3	19.4
Hungary	49.7	41.1	9.2
Italy	50.3	29.1	20.6
Chile	53.9	32.4	13.7
Cameroon	54.1	41.4	4.5

Definitely/probably Still undecided Unlikely/certainly not

Source: DAAD, BintHo survey

Footnotes

1 To enter and reside in Germany for longer than 90 days, international students from non-EU and non-EEA countries require a residence permit (for the purpose of studying), issued by the immigration office. Although it entitles the holder to remain in Germany for an extended stay, it is only issued for a limited period.

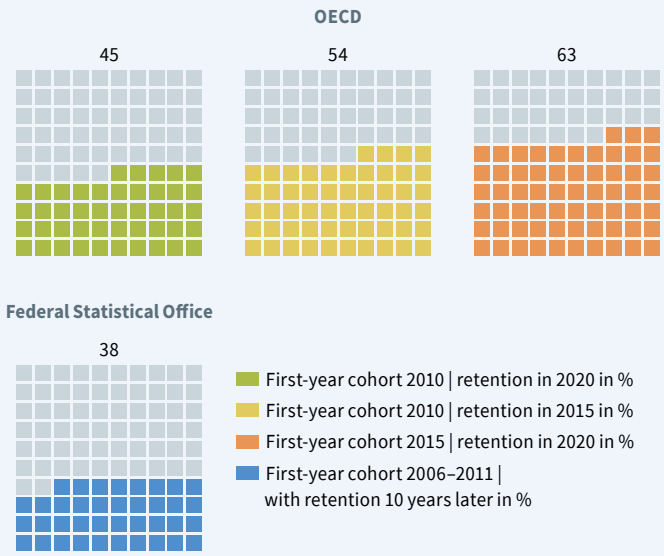
2 In the 2021/22 winter semester, approximately 65,000 international students intending to graduate in Germany were from an EU or EEA country, representing just under 20% of the approximately 328,000 international students in the same semester who were seeking a degree.

3 Deviations from 100% are due to rounding.

4 Only students from non-EU/EEA countries of origin.

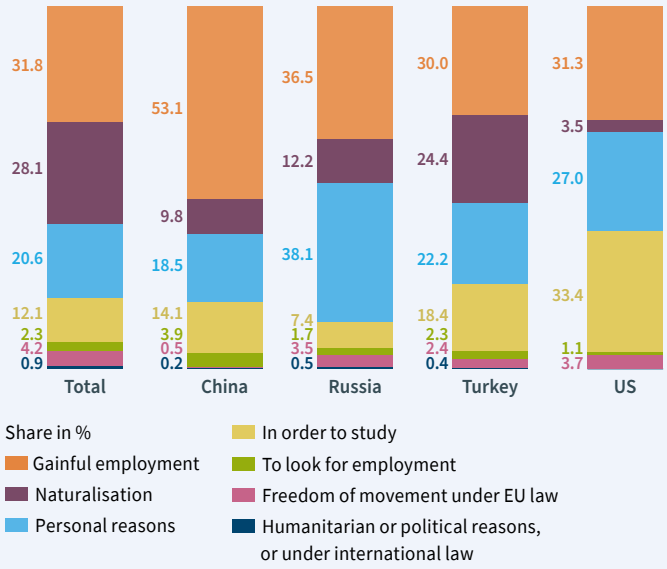
5 See OECD (2022), Federal Statistical Office (2022e).

BS1.5 Retention rates for international first-year students in selected cohorts, five and ten years after starting their studies[4]



Sources: Federal Office for Migration and Refugees (BAMF), Central Register of Foreigners (data); OECD, International Migration Outlook 2022 (analysis); Federal Statistical Office (analysis)

BS1.6 Reasons for retention for international first-year students in cohorts 2006–2011, ten years after starting their studies, overall and by selected countries of origin[3, 4]



Sources: Federal Office for Migration and Refugees (BAMF), Central Register of Foreigners (data); Federal Statistical Office (analysis)

of 38%. The fact that this rate is seven percentage points below the quota calculated by the OECD for the first-year cohort of 2010 shows that retention rates may fluctuate considerably from one first-year cohort to another. The retention rates in the cohorts reviewed by the Federal Statistical Office were noticeably lower in some cases than the 2010 cohort, thus the average retention rate across all cohorts under consideration is substantially less than the retention rate for the 2010 cohort. The Federal Statistical Office's analysis also examined the 2020 residence status of the first-year students of the 2010 cohort who were still in Germany in 2020. Residence permits for the purpose of gainful employment accounted for the largest share, roughly 32%, followed by naturalisation (28%), personal reasons (21%) and study purposes (12%). However, these percentages vary considerably from one country of origin to another, as the analysis of the Federal Statistical Office also shows: in 2020, the proportion of persons holding a residence permit for the purpose of gainful employment is much greater among former students from China (53%) than in the three other countries of origin reviewed: Russia (37%), Turkey (30%) and the US (31%). Nonetheless, it is important to bear in mind that these three countries report significantly higher shares of naturalisation and stays for personal reasons, and that, in all likelihood, many people in these categories are also wage earners.

Lastly, the OECD and Federal Statistical Office analyses both corroborate the findings of the BintHo student survey presented at the beginning, namely that general retention rates vary, in some cases considerably, between the countries of origin. The OECD analysis compared the five-year retention rates (first-year cohort 2015, retention in 2020) of the two key countries of origin China (52%) and India (76%), while the analysis of the Federal Statistical Office focused on ten-year retention rates (first-year cohorts 2006–2011, each with retention ten years later) for students from Russia (47%), China (29%), Turkey (28%) and the US (14%).

3.1 Mobility trends and subject groups

In the 2021/22 winter semester, approximately 21,400 international students were enrolled at a German university for a temporary visit, representing roughly 6% of all international students. However, this figure underestimates the total number of students who came to Germany for a temporary study visit in the 2021 academic year. It does not include those students who enrol for a visit of this kind in the summer semester and stay at the university for one semester only, which is the case for many visiting and exchange students. Around 8,700 attended the 2021 summer semester, which means that the total number of temporary visiting and exchange students enrolled at German universities during the 2021 academic year was back to 30,000 or thereabouts. This equates to around 71% more than in the 2020 academic year and only about 18% below the figure for 2019, the academic year before the pandemic.

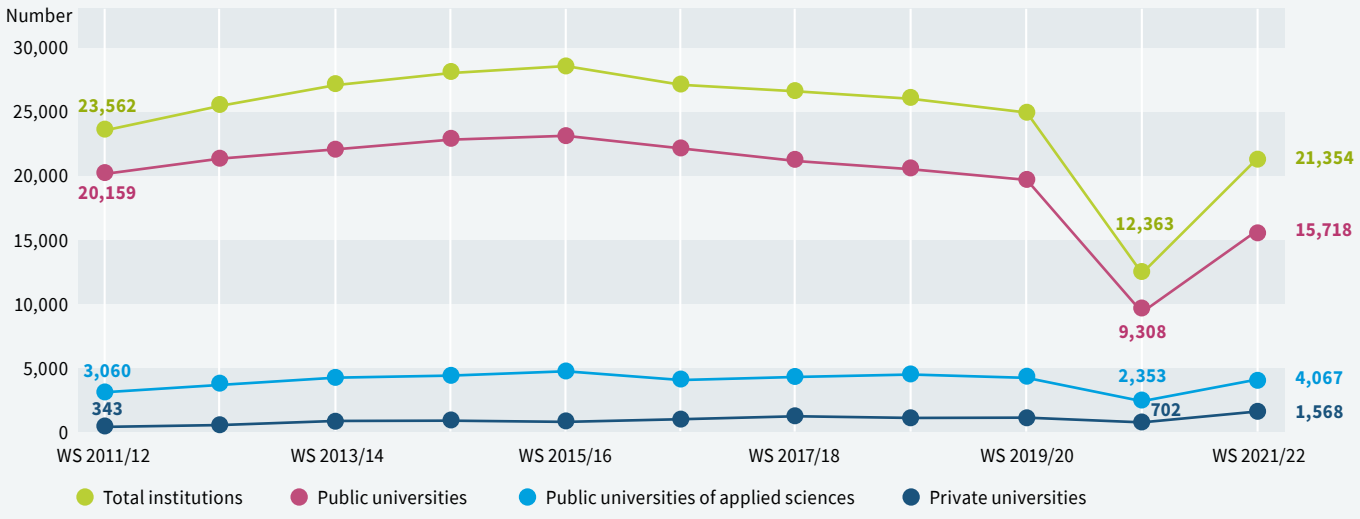
> “The number of international visiting and exchange students in engineering is back to pre-pandemic levels.

After the 50% drop in the 2020 academic year, this constituted a steep rise in the number of international students undertaking a temporary study visit in Germany. Universities and students have obviously found adequate ways of realising study-related guest visits in Germany, despite the mobility restrictions that are more or less still in place. At 86%, the overwhelming majority of international visiting and exchange students in the 2021/22 winter semester were enrolled in their first university semester. A mere 8% were in their second semester, 4% in their third or fourth and 2% in a later semester.

These percentages have remained constant for several years. It is therefore safe to assume that, for the vast majority of these students, their temporary study visit is only for one semester. Nearly three quarters of international students (74%) were enrolled at a public university[1] during their temporary visit. 19% of these students spent their temporary stay abroad at a public university of applied sciences and 7% at a private university[2]. However, while public universities reported a 20% dip in visiting and exchange students in the 2021/22 winter semester compared to the 2019/20 winter semester, public UAS had almost regained pre-pandemic levels. Private universities even set a new record of approximately 1,600 international visiting and exchange students, some 45% above that in the 2019/20 winter semester.

International students undertaking a brief study visit at a German university were particularly likely to enrol in law, economics and social sciences (34%) and the humanities (24%). By contrast, 21% opted for engineering, while 7% studied mathematics and natural sciences; art and art history accounted for 4%, followed by medicine and health sciences with 3%. It is interesting to note that, just one year after the dramatic fall in the 2020/21 winter semester, the number of international visiting students had virtually returned to normal levels, particularly in engineering, but also in law, economics and social sciences as well as in medicine and health sciences. Only the

B3.1 International students on temporary study-related visits, by type of university and funding body, since winter semester 2011/12[1,2]

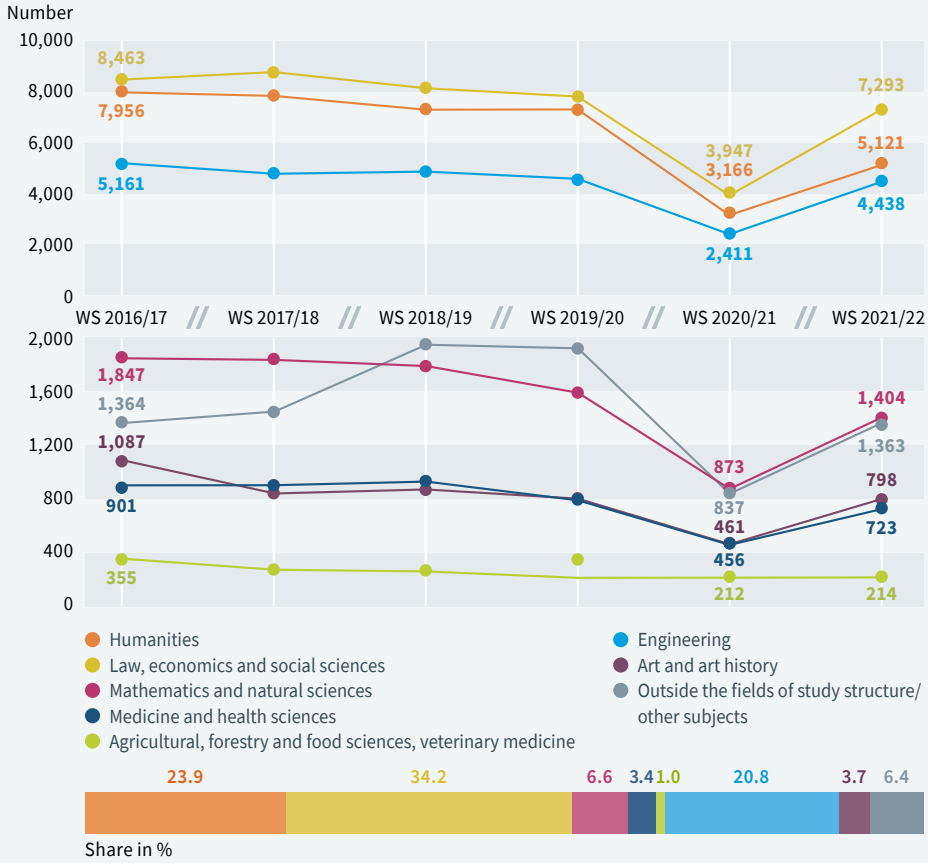


Source: Federal Statistical Office, student statistics

humanities still indicate an above-average difference of –30%. Despite this trend, the high proportion of temporary visits in the humanities and the low proportion in engineering are particularly striking when compared to international students pursuing a degree a Germany. The same state of affairs applies to German students. International students evidently associate temporary study visits with different subject-related intentions to those for a full course of study. The high share of temporary enrolments in the humanities can be primarily explained by the keen interest of international students of German in a visit to a German university. They regard it as a way of improving their German language skills, conducting research on specific subject areas and experiencing the culture and language of a German-speaking country. On the other hand, international engineering students appear to be much less interested in a temporary visit of this kind to a German university than in a full course of study.

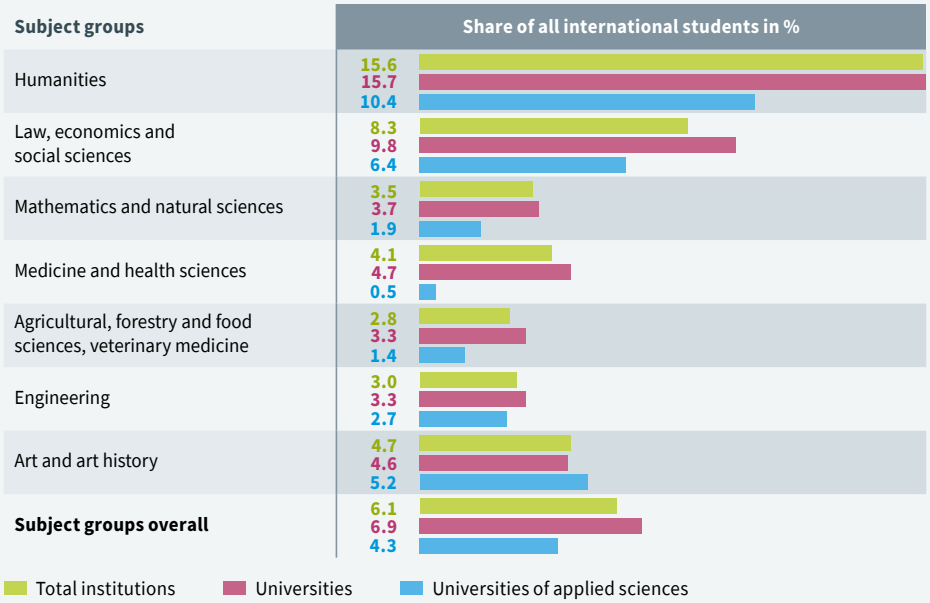
In line with the relatively high intake for German and cultural studies, students on temporary visits also represented the largest share of all international students in the humanities. One in six or 16% of international students in this subject group thus only remains at the university for a limited period. A comparatively high share (8%) is also found in law, economics and social sciences. This figure was below average in all other subject groups, dropping to just 3% each in engineering, agricultural, forestry and food sciences, and veterinary medicine.

B3.2 Number and share of international students on temporary study-related visits, by subject group, since winter semester 2016/17



Source: Federal Statistical Office, student statistics

B3.3 Share of international students on temporary study-related visits of all international students, by subject group and type of university, in winter semester 2021/22



Source: Federal Statistical Office, student statistics; DZHW calculations

Footnotes

1 Figures for public universities, including colleges of art, music and education.

2 Figures for private universities, including church-run universities.

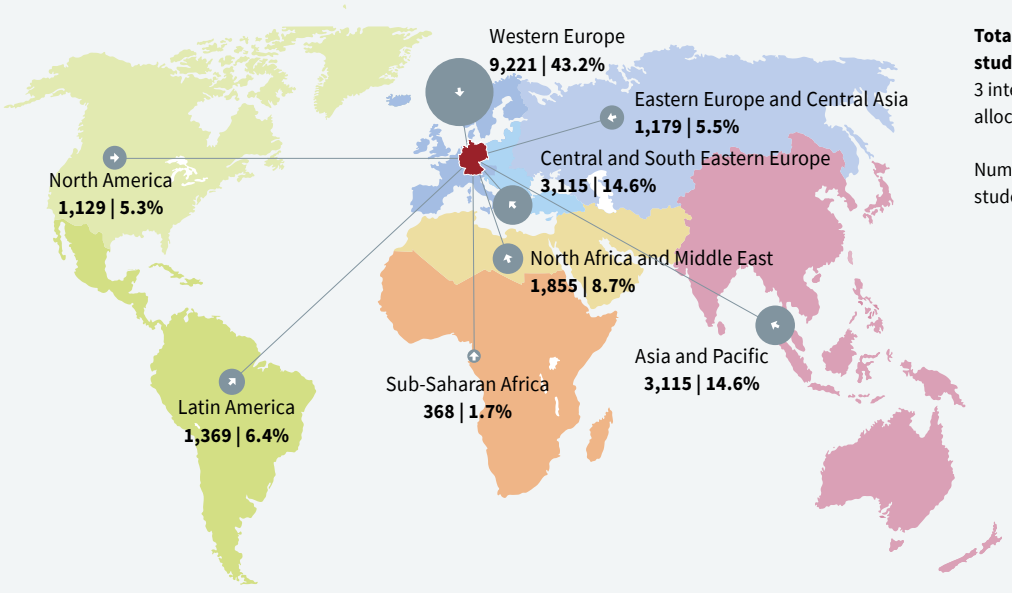
3.2 Regions and countries of origin

In the 2021/22 winter semester, most international students on temporary study visits at German universities came from Western Europe, accounting for a total of 43% of these students. 15% of temporary visits were each undertaken by students from Central and South Eastern Europe and the Asia and Pacific region. This means that more than half of the mobile students who did not pursue a degree in Germany come from one of these two European regions. By comparison, the other regions of origin played a much less significant role: 9% of international students on temporary study visits in Germany came from North Africa and Middle East. 6% each were from Latin America and Eastern Europe and Central Asia, 5% from North America and a mere 2% from Sub-Saharan Africa. Compared to the 2019/20 winter semester, the number of visiting and exchange students from Western Europe, Sub-Saharan Africa and North Africa and Middle East had returned to pre-pandemic levels, even considerably exceeding them in the case of North Africa and Middle East (+53%). However, the numbers of students first and foremost from the regions of origin Asia and Pacific (–49%), North America (–39%) and Latin America (–25%) lag noticeably behind figures reported in the 2019/20 winter semester. The reasons for this development are linked to the differing mobility restrictions in the various regions of origin in the 2021 academic year due to Covid-19.

> “Compared to the 2019/21 winter semester, the number of students from North Africa and Middle East on temporary study visits soared by 53% in the 2021/22 winter semester.

Compared to international students seeking a German university degree, it is striking that a higher percentage of visiting and exchange students come from Western, Central and South Eastern Europe. At the same time, they are much less likely to come from the regions of Asia and Pacific, North Africa and Middle East or Sub-Saharan Africa. Even when allowing for the developments brought about by the pandemic, the findings attest to the success of European higher education policy in fostering the European Higher Education Area and the Erasmus programme. The associated funding and support structures have been instrumental, not just in generating a keen interest in temporary mobility in Europe, but also in ensuring that students were able to take advantage of it, even during the pandemic. Given the regional background of the students involved, however, it is more difficult, especially for students from countries with lower average incomes, to undertake temporary study visits in Germany without this support and aid in the form of well-funded programmes. Naturally, this applies above all to temporary visits during the pandemic. Apart from the time-consuming organisational challenges of arranging a visit with no structural framework, the greatest challenge generally faced by these students is affording the costs of living and studying without financial support. Their comparatively brief visits, lasting just a few months, and often weaker German language skills

B3.4 International students on temporary study-related visits, by region of origin, in winter semester 2021/22



Total international students on temporary study-related visits: 21,354 (including 3 international graduates who cannot be allocated to a region of origin)

Number and share in % of all iInternational students on temporary study-related visits

Footnotes

1 Including Hong Kong and Macao.

2 Only countries with at least 50 international students on temporary visits in winter semester 2021/22 (increase) and/or winter semester 2019/20 (decrease).

Source: Federal Statistical Office, student statistics; DZHW calculations

mean they do not have the same opportunities of earning sufficient additional income in Germany through gainful employment as their fellow students who complete all their studies in Germany.

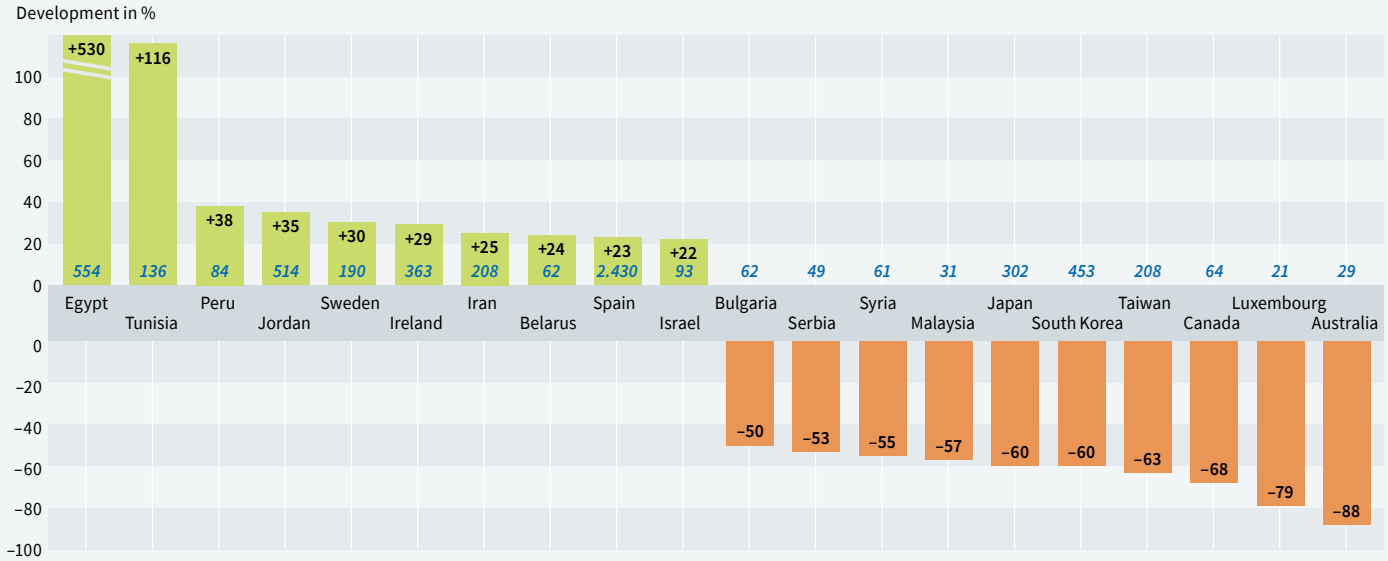
Topping the ranking of the countries of origin are the Erasmus countries Spain, with a share of 11%, Italy with 10% and France with 8% of the temporarily mobile students in the 2021/22 winter semester. Lower-placed countries include China, Turkey and the US with percentages of between 6% and 5%. Five years ago, they were also among the key countries of origin for international students on temporary study visits in Germany. Nonetheless, to some extent in the wake of the Covid-19 crisis, all of these countries have seen shifts with regard to the specific number of temporary students and their position in the ranking of the key countries of origin. Compared to the 2019/20 winter semester, visiting students from Egypt (+530%) and Tunisia (+116%) showed particularly strong growth. Conversely, the sharpest downturns during this period can be seen in students from Australia (–88%), Luxembourg (–79%), Canada (–68%), Taiwan (–63%) as well as South Korea and Japan (–60% each).[2]

B3.5 International students on temporary study-related visits, by key countries of origin, in winter semesters 2016/17 and 2021/22

	WS 2016/17			WS 2021/22	
Countries of origin	Number	in %	Countries of origin	Number	in %
China[1]	2,498	9.2	Spain	2,430	11.4
Italy	2,257	8.3	Italy	2,033	9.5
Spain	2,131	7.9	France	1,669	7.8
US	1,922	7.1	China[1]	1,417	6.6
France	1,828	6.7	Turkey	1,197	5.6
Turkey	1,026	3.8	US	1,065	5.0
South Korea	1,025	3.8	Russia	618	2.9
Poland	773	2.8	United Kingdom	566	2.7
Russia	764	2.8	Egypt	554	2.6
Japan	735	2.7	Jordan	514	2.4
United Kingdom	723	2.7	Poland	490	2.3
Mexico	545	2.0	South Korea	453	2.1
Brazil	527	1.9	Brazil	452	2.1
India	431	1.6	Ireland	363	1.7
Switzerland	430	1.6	Mexico	345	1.6
Taiwan	426	1.6	India	336	1.6
Czech Republic	404	1.5	Switzerland	314	1.5
Netherlands	378	1.4	Belgium	307	1.4
Jordan	366	1.3	Japan	302	1.4
Finland	360	1.3	Portugal	292	1.4

Source: Federal Statistical Office, student statistics; DZHW calculations

B3.6 Countries of origin with the greatest increase and decrease in percentages of international students on temporary study-related visits, winter semester 2019/20–winter semester 2021/22[2]



XXX Number of international students on temporary study-related visits from the respective country of origin

Source: Federal Statistical Office, student statistics; DZHW calculations

3.3 Erasmus visits

Despite ongoing mobility restrictions in the 2021 academic year, the number of international students on temporary study-related visits in Germany showed positive development, soaring by 73% year-on-year (see p. 56/57). This also resulted in greater numbers of students from other countries coming to Germany for an Erasmus study visit. In the 2021 Erasmus year[1], roughly 27,200 Erasmus students took part in a study-related visit in Germany. Although this equates to approximately 5% or 1,400 students more than in 2020, it still represents an 18% reduction in Erasmus students over 2019. Compared to the trends in all students undertaking a temporary visit at German universities, this upswing is considerably less pronounced. All the same, it should be noted that this was preceded by a smaller decline in Erasmus students from 2019 to 2020 (–22%). At the same time, the quantitative increase in Erasmus visits may be attributed exclusively to those students coming to Germany for a placement. Although their numbers have increased by 17% compared to 2020, they are still 20% below the pre-pandemic levels of 2019. By contrast, the number of study visits did not change between 2020 and 2021, yet is still 17% lower than in 2019. In total, roughly 35% of all Erasmus students completed a placement and 65% a study visit in Germany in 2021.

Once again, France, Italy and Spain were the key countries of origin in the 2021 Erasmus year, jointly accounting for 43% of all Erasmus students in Germany alone. Other major countries are Turkey, Poland, the United Kingdom, Austria and the Netherlands, which together represented a further 29% of Erasmus participants. Compared to 2020, different developments can be observed in the individual countries.

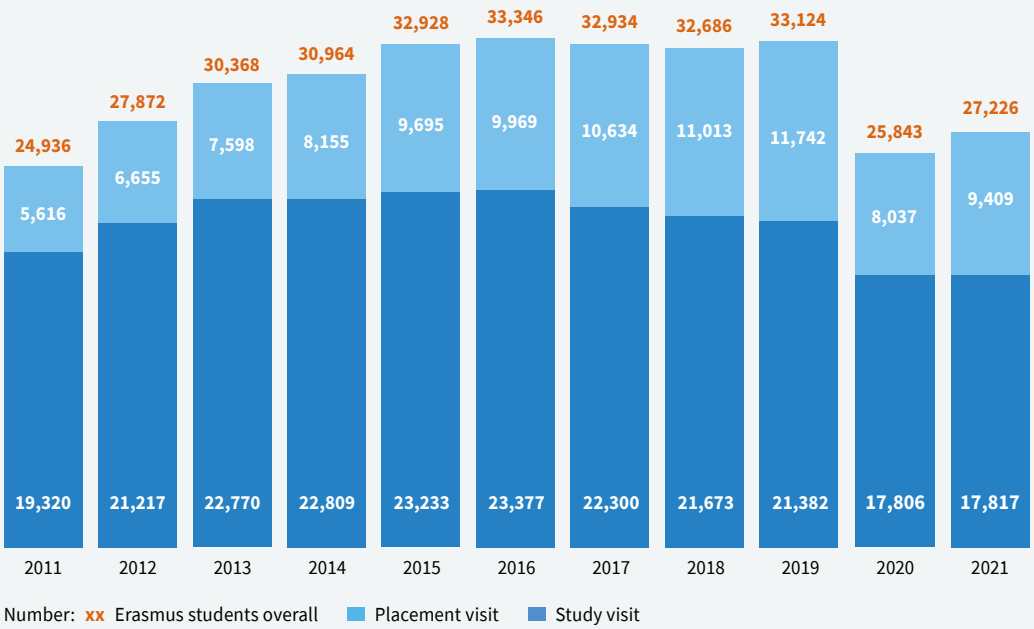
Database

The data illustrated here refer exclusively to study visits and placements undertaken as part of the EU's Erasmus+ mobility programme. The basis for these data are the Erasmus statistics prepared by the DAAD. 35 European countries participate in Erasmus+. International students wishing to be considered for an Erasmus placement in Germany must be enrolled at a university in their home country and have completed the first year of their studies. Their university must participate in Erasmus+ and have concluded an Erasmus cooperation agreement with the German host university. Therefore, Erasmus students coming to Germany from other countries may hold a citizenship other than that of their actual country of study.

While the number of Erasmus students from Turkey (+52%), Greece (+33%), France and Poland (+12% each), Belgium (+11%) and Italy (+6%) has gone up, a further decrease is evident in Erasmus students from the United Kingdom (–27%), the Netherlands (–16%), Spain and Austria (–6% each). These variations are primarily due to regional travel regulations during the pandemic.

Three subject groups figured prominently for Erasmus students in Germany in 2021: arts and humanities alone accounted for 23% of all participants, with business, administration and law at 22% and

B3.7 Erasmus students from other countries in Germany, by type of visit, since 2011[1]



Number: xx Erasmus students overall Placement visit Study visit

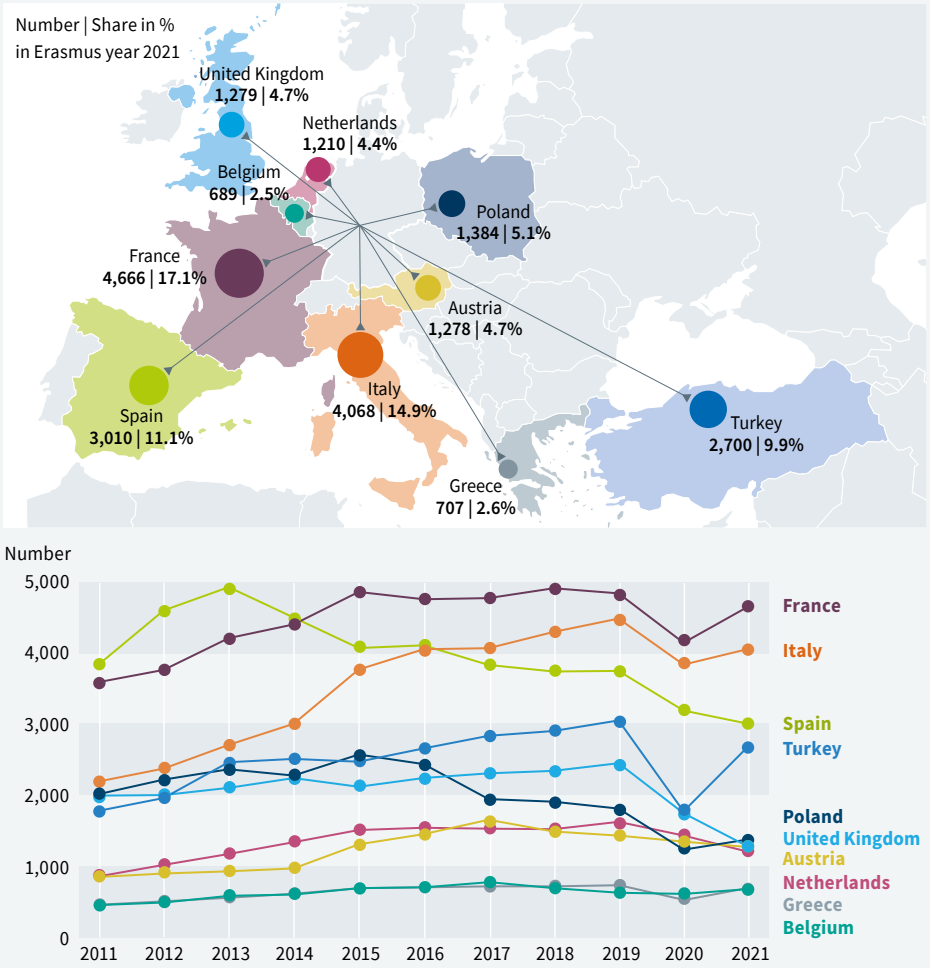
Source: DAAD, Erasmus statistics

Footnote

1 Erasmus statistics until 2014: the Erasmus year starts in the winter semester and endsin the summer semester of the following year. 2014 = WS 2013/14 + SS 2014. New Erasmus statistics since 2015: the Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2021 = 1 June 2020 to 31 May 2022. Due to the pandemic, however, the 2021 Erasmus year was extended until 31 March 2023. To ensure a meaningful comparison with previous years, only activities undertaken during the usual period, in other words, from 1 June 2020 to 31 May 2022, were included when calculating the numbers for the 2021 Erasmus year.

engineering, manufacturing and construction at 17%. A comparison with all international students at German universities reveals that Erasmus students are particularly over-represented in the subject groups of arts and humanities as well as business, administration and law. On the other hand, they are especially under-represented in engineering, manufacturing and construction, natural sciences, mathematics and statistics, and information and communication technologies. To some extent, the different subject preferences can be attributed to the regional background of Erasmus students by contrast with all international students. It turns out that Asian students, who represent a high proportion of international students in Germany, tend to favour engineering subjects. On the other hand, Erasmus students come exclusively from European countries; typically, European internationally mobile students are also more likely than average to be interested in the humanities and social sciences and in business, administration and law when seeking a university degree in Germany.

B3.8 Erasmus students from other countries in Germany, by key countries of origin, since 2011



Source: DAAD, Erasmus statistics; DZHW calculations

B3.9 Erasmus students from other countries in Germany and all international students in Germany, by subject group, in 2021

Share of International students in Germany in %	Subject groups	Share of Erasmus students in Germany in %
1.1	Education	2.1
13.9	Arts and humanities	22.5
19.9	Social sciences, journalism and information	12.0
4.0	Business, administration and law	22.2
10.9	Natural sciences, mathematics and statistics	7.4
11.8	Information and communication technologies	3.3
28.9	Engineering, manufacturing and construction	17.1
1.6	Agriculture, forestry, fisheries and veterinary	1.5
5.7	Health and welfare	9.1
2.2	Services	2.9

Sources: DAAD, Erasmus statistics; Federal Statistical Office, student statistics; DZHW calculations

SPOTLIGHT

Preparatory courses for international students at international preparatory and language centres (*Studienkollegs*) in Germany

International applicants wishing to be admitted to undergraduate studies in Germany, usually a bachelor's degree or state examination programme, require a university entrance certificate (*Hochschulzugangsberechtigung* or HZB) that is considered equivalent to a German HZB.[1] As a rule, applicants from countries of the European Economic Area (EEA) have obtained an equivalent qualification to the HZB. However, this is not true of applicants from many other countries.[2] Regardless, a (small) number of candidates who are nationals of an EEA country or Germany also do not have a university entrance certificate considered equivalent to the HZB as they obtained their school-leaving qualification in a country of which they do not hold citizenship, for example. These applicants have the option of attending a preparatory course at an international preparatory and language centre (*Studienkolleg*) and passing an assessment test *(Feststellungsprüfung)*. Generally speaking, passing the assessment test is regarded as a (subject-specific) university entrance certificate.

Given the growing interest among international applicants in studying for an undergraduate degree in Germany, different types of international preparatory and language centres (*Studienkollegs*) or preparatory courses offered by various organisations have emerged in recent years.[3]

- General state-run *Studienkollegs*: free of charge and either affiliated to a public university and a ministry or directly subordinate to a science ministry. The assessment test *(Feststellungsprüfung)* is carried out by the *Studienkollegs*; on passing the test, applicants are awarded an HZB that is valid throughout Germany.
- State-run *Studienkollegs* for specific federal states: they are also state-run *Studienkollegs* at public universities with free courses.[4] However, the HZB thereby awarded is only valid for applications to universities in the respective federal state.
- Church-run *Studienkollegs*: independent *Studienkollegs* sponsored by the church, whose final examination is state accredited and results in an HZB that is valid throughout Germany. The courses are free of charge.
- Private *Studienkollegs*: they offer fee-based preparation for the assessment test. Some are state accredited, meaning that participants can take the assessment test *(Feststellungsprüfung)* directly at the centre. In the case of other private *Studienkollegs,* the assessment test must be taken on request at state-run *Studienkollegs* or as part of examinations held by the official educational administration. Several private *Studienkollegs* are affiliated to certain private or state universities and, in some cases, only prepare candidates for admittance to a particular university.[5]

Besides these forms of *Studienkolleg,* other developments can be seen in terms of preparatory courses for international applicants. Preparatory courses have been established in applicants' home countries in cooperation with both state and private *Studienkollegs*.[6] Moreover, options for online courses are being explored, not merely to prepare candidates for their studies but also to enable them to take the assessment test in their home country.[7]

At all *Studienkollegs,* preparation takes place in the form of core courses that are geared towards participants' intended study programmes. However, not all *Studienkollegs* offer all core courses. In essence, the following courses are available:

- M course: for medicine, biology and pharmaceutical programmes
- T course: for mathematics, science or technical programmes
- W course: for economics or social science programmes
- G course: for the humanities or German studies
- S course: for language studies or law

In 2022, there were a total of 22 general, state-run *Studienkollegs*. All federal states operate state-run *Studienkollegs* apart from Brandenburg, Bremen, North Rhine-Westphalia and Saarland. Instead, special *Studienkollegs* have been set up in Brandenburg, Bremen and Saarland, which prepare candidates to study at universities in the respective federal state. North Rhine-Westphalia has two church-run *Studienkollegs* as well as private *Studienkollegs,* like other federal states. It is not possible to calculate the exact number of private *Studienkollegs* in operation as there is no supporting verification or exhaustive lists. Following extensive online research for *Wissenschaft*

Footnotes

1 If a candidate can demonstrate adequate study experience in their homeland or another country, an equivalent HZB may be waived as an admission requirement. However, they will be required to provide formal proof of their proficiency in German and/or English.

2 The Central Office for Foreign Education (ZAB) of the Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder is responsible for assessing foreign qualifications in Germany on a regular basis, also with regard to the equivalence of a foreign university entrance certificate.

3 See also Ramirez, R., Laska, O. & Korthase, S. (2023). Studienvorbereitung internationaler Studieninteressierter an staatlichen Studienkollegs. Angebot, Nachfrage und Bedarf. DAAD Forschung kompakt, May 2023. Bonn.

4 The *Studienkolleg* :prime at the Academy for Higher Education Access Development (HERE HEAD) in Bremen plays a special role in this regard. It is a cooperation of the state universities in the federal state of Bremen. After successfully graduating from :prime, participants can apply to all state universities in Bremen. However, the two-semester programme is fee-based (in addition to the mandatory semester fees).

5 Fee-based, private preparatory courses also include the *Studienkollegs* at state universities in Dresden, Jena, Mittweida and Paderborn, whose assessment tests are state accredited.

6 There are various different forms of preparatory courses, e.g. in Morocco, in cooperation with the Studienkolleg at TU Berlin, and in Indonesia, in cooperation with the Privates Studienkolleg Leipzig.

7 These digital formats are currently being trialled in selected destination countries as part of an initial pilot phase, e.g. for the DAAD project VORsprung. See https://www.daad.de/en/the-daad/what-we-do/digitalisation/vorsprung/.

BS2.1 Preparatory courses for university admission (*Studienkollegs*) in Germany by federal state, funding body and state accreditation, in 2022

Source: DZHW research

SPOTLIGHT

Preparatory courses for international students at international preparatory and language centres (*Studienkollegs*) in Germany

weltoffen, a total of 35 active private *Studienkollegs* or independent facilities of private *Studienkollegs* can be documented in 2022, each offering the complete range of preparation courses.[8] 17 of them are state accredited, meaning that they are permitted to carry out the assessment test autonomously.

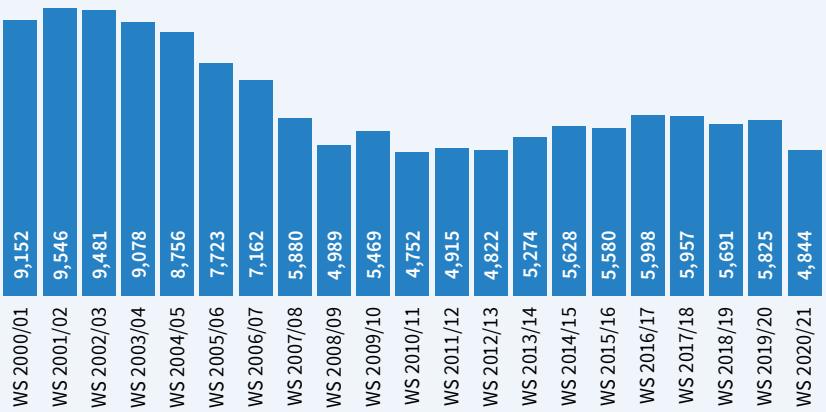
At present, there is no central register of the number of participants nor that of graduates at *Studienkollegs*. From the mid-1980s to the 2020/21 winter semester, the Federal Statistical Office calculated the number of attendees at *Studienkollegs* for a nationwide survey. Accordingly, in the winter semester 2000/01, some 9,500 participants were enrolled in the *Studienkollegs* under review. Numbers remained at this level until 2004, before falling to 5,000 participants over the next five years. This decrease was chiefly due to the closure of all state-run *Studienkollegs* in North Rhine-Westphalia. In the 2019/20 winter semester, 5,800 participants were attending preparatory courses. One year later, the Federal Statistical Office registered just 4,800 attendees.[9] Nonetheless, this significant reduction and previous fluctuations are not always based on actual developments. On the contrary, these figures also reflect further closures and opening of new facilities as well as difficulties in maintaining consistent statistical records of the *Studienkollegs*.

> “In 2022, a total of 3,500 participants were enrolled at general, state-run *Studienkollegs*.

Overall, in the 2022/23 winter semester, some 3,500 candidates had signed up for preparatory courses at the 22 state-run *Studienkollegs*.[10] With a share of 46%, almost half were attending T courses, preparing for a mathematics, science or engineering degree. M courses and W courses accounted for 19% each, while another 17% were registered in G/S courses.[11, 12] The attendees' key regions of origin were primarily Eastern Europe and Central Asia (31%), Asia and Pacific (27%) plus North Africa and Middle East (24%). 10% were from Latin America and 5% from Western Europe. Surprisingly, participants from Sub-Saharan Africa played a subordinate role (2%). Central and South Eastern Europe and North America were likewise of minor importance as regions of origin (approximately 1% each).[13, 14] In terms of regional origin, Iran, Ukraine and Russia were the key countries of origin, with roughly 11% of participants each. As a result, these three countries, which are also key countries of origin for international students in Germany (see pp. 40/41), made up one third of all attendees at state *Studienkollegs* alone. Other major countries of origin were Vietnam (9%), Indonesia and China (5% each). With a share of 4%, Germany was also among the front-runners. *Studienkollegs* are thus not to be underestimated as an option for prospective German students to obtain the German HZB.

As regards state-run *Studienkollegs* for specific federal states, data are only available for the network of colleges and universities in Brandenburg known as “ESiSt” (Erfolgreicher Studieneinstieg für Internationale Studierende im Bundesland Brandenburg). In the 2022/23 winter semester, approximately 60 participants were preparing for their studies at a Brandenburg university. They were fairly evenly distributed across G/S courses (39%), T courses (31%) and W courses (30%). The key regions of origin were Eastern Europe and Central Asia

BS2.2 Participants in preparatory courses for university admission (*Studienkollegs*) in Germany between the winter semesters 2000/01 and 2020/21



Number of Participants

Source: Federal Statistical Office, student statistics

Footnotes (continued)

8 Owing to the pandemic, several private *Studienkollegs* ceased operations between 2020 and 2022. At this point in time, it is too early to say whether and in what form they will continue to offer preparatory courses for prospective international students.

9 Federal Statistical Office (2021). Students at universities. Winter semester 2020/21. Fachserie 11, Reihe 4.1. Wiesbaden.

10 Including participants at the state-run *Studienkolleg* in Kaiserslautern, whose number for the 2022/23 winter semester was estimated on the basis of previous cohorts.

11 G and S courses are taught jointly at several *Studienkollegs;* it is therefore not always possible to differentiate between them.

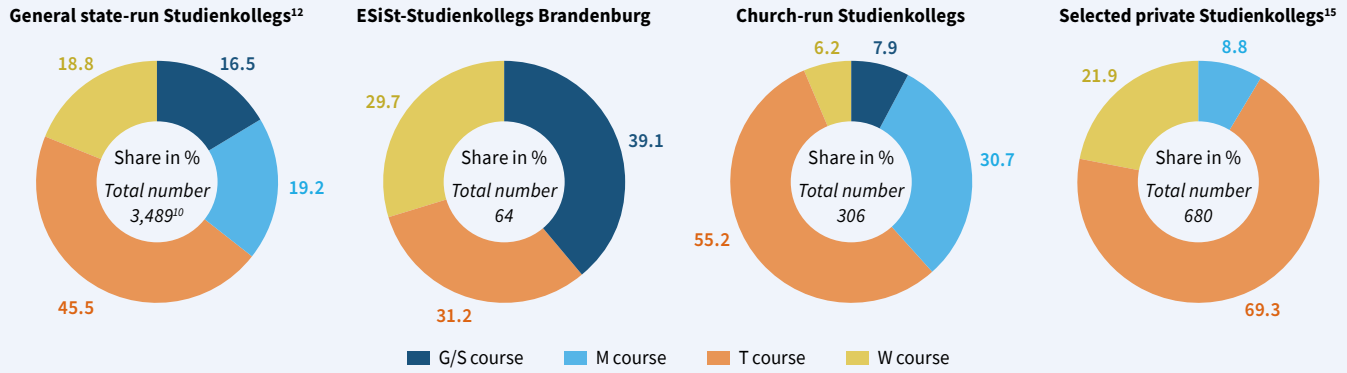
12 Attendance figures excluding data for the state-run *Studienkollegs* in Kaiserslautern and Mainz.

13 Figures on regions of origin excluding data for the state-run *Studienkolleg* in Kaiserslautern.

14 Deviations from 100% are due to rounding.

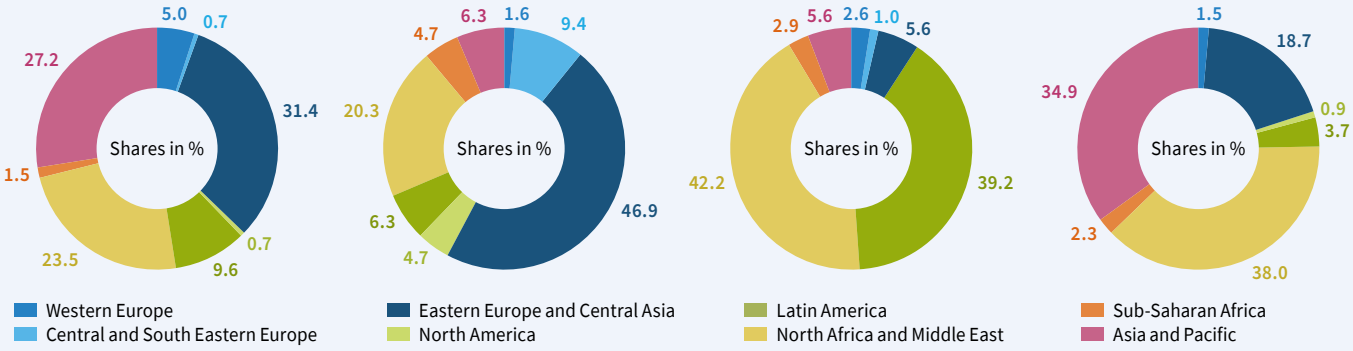
15 Non-representative sample at private *Studienkollegs.*

BS2.3 Participants by type of preparatory course for university admission (*Studienkollegs*) and core course, winter semester 2022/23



Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

BS2.4 Participants by type of *Studienkolleg*, region of origin and key countries of origin, in winter semester 2022/23[14]



Key countries of origin	Shares in %
1. Iran	10.8
2. Ukraine	10.7
3. Russia	10.5
4. Vietnam	8.5
5. Indonesia	5.5
6. China	5.1
7. Germany	4.1
8. Morocco	4.1
9. India	3.4
10. Kazakhstan	2.6

Key countries of origin	Shares in %
1. Ukraine	31.3
2. Russia	9.4
3. Poland	7.8
4. Syria	7.8

Key countries of origin	Shares in %
1. Iran	14.7
2. Yemen	10.1
3. Mexico	9.2
4. Brazil	6.7
5. Morocco	6.5
6. Ecuador	4.9
7. Syria	4.9
8. Bolivia	4.2
9. Colombia	3.9
10. Honduras	3.3

Key countries of origin	Shares in %
1. China	17.1
2. Morocco	15.9
3. Ukraine	8.0
4. Iran	6.1
5. India	5.7
6. Yemen	4.2
7. Russia	3.9
8. Vietnam	3.8
9. Indonesia	3.7
10. Jordan	3.1

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

(47%) and North Africa and Middle East (20%). Ukraine (31%) led the field of countries of origin by a clear margin.

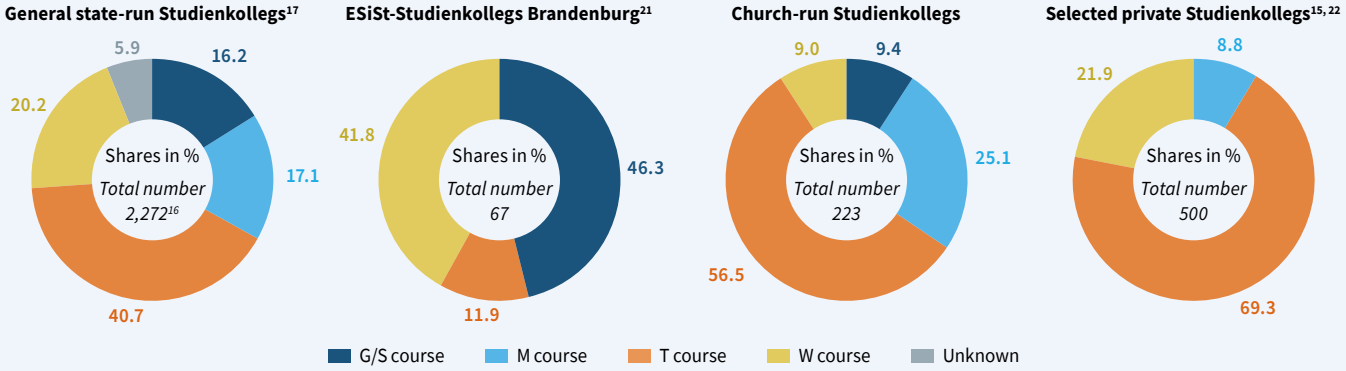
Overall, roughly 300 participants were enrolled at the two church-run *Studienkollegs* in the 2022/23 winter semester, 55% in T courses, 31% in M courses, 8% in G/S courses and 6% in W courses. North Africa and Middle East (42%) and Latin America (39%) were the predominant regions of origin, while the key countries of origin were Iran (15%), Yemen (10%), Mexico (9%), Brazil and Morocco (7% each).

As valid data have only been supplied for eight of the private *Studienkollegs,* this sample is in no way representative. The results

SPOTLIGHT

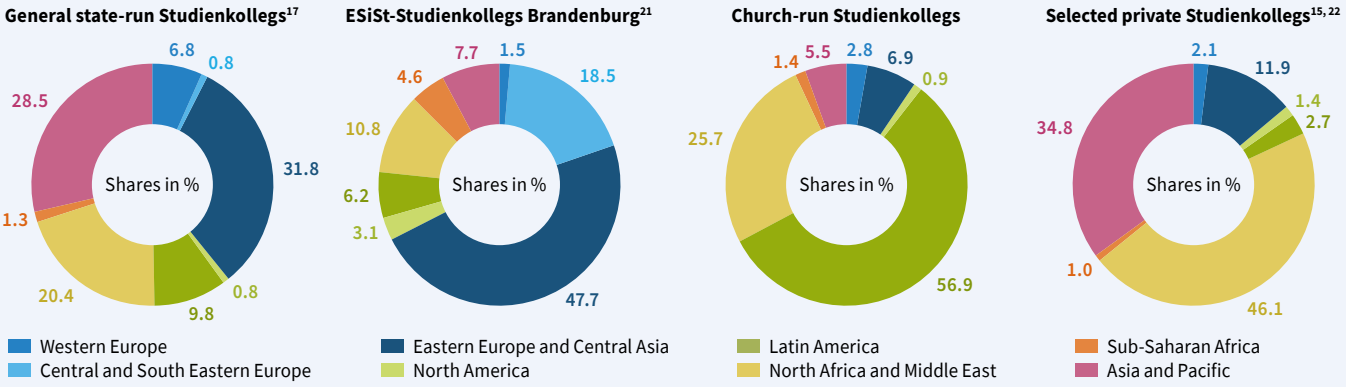
Preparatory courses for international students at international preparatory and language centres (*Studienkollegs*) in Germany

BS2.5 *Studienkolleg* graduates, by type of *Studienkolleg* and core course, in the 2022 graduation year[14]



Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

BS2.6 *Studienkolleg* graduates, by type of *Studienkolleg*, region of origin and key countries of origin, in the 2022 graduation year[14]



Key countries of origin	Shares in %
1. Russia	14.7
2. Vietnam	8.3
3. Indonesia	7.2
4. Ukraine	7.1
5. Iran	6.6
6. Germany	5.5
7. China	5.1
8. Morocco	4.0
9. India	3.2
10. Syria	2.9

Key countries of origin	Shares in %
1. Ukraine	18.5
2. Poland	18.5
3. Russia	12.3
4. Uzbekistan	9.2

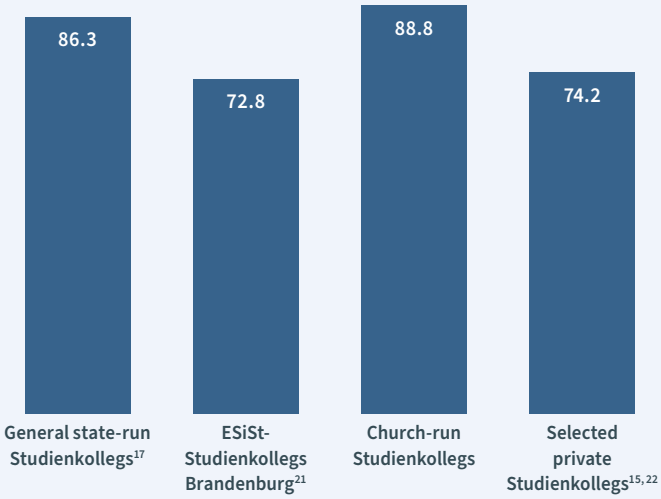
Key countries of origin	Shares in %
1. Brazil	12.4
2. Mexico	9.2
3. Yemen	6.9
4. Bolivia	6.4
5. Morocco	6.4
6. Ecuador	6.0
7. Colombia	6.0
8. Peru	5.5
9. Iran	5.0
10. Russia	3.7

Key countries of origin	Shares in %
1. Morocco	27.3
2. China	17.8
3. India	5.3
4. Indonesia	4.9
5. Iran	4.3
6. Syria	3.9
7. Vietnam	3.5
8. Kazakhstan	3.1
9. Ukraine	2.9
10. Jordan	2.7

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

are being presented nevertheless in order to highlight the special nature of preparatory courses at private *Studienkollegs*. In the 2022/23 winter semester, the eight *Studienkollegs* were preparing a total of 680 candidates for the assessment test. Given this statistic, it may be assumed that the 35 private *Studienkollegs* operational in 2022 were instrumental in helping prepare prospective international students for their undergraduate studies in Germany. Most participants, namely 69%, opted for T courses, with 22% favouring W courses and 9% M courses. The key regions of origin were North Africa and Middle East (38%), Asia and Pacific (35%) plus Eastern Europe and Central Asia

BS2.7 Pass rate in the assessment test (*Feststellungsprüfung*), by type of *Studienkolleg*, in the 2022 graduation year[19]



Shares of successful examinees in %

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

BS2.8 Pass rates of examinees in assessment tests (*Feststellungsprüfung*), by type of *Studienkolleg*, core course and selected regions of origin, in the 2022 graduation year[19]

Core course	General state-run Studienkollegs[17]	Church-run Studienkollegs	Selected private Studienkollegs[15, 22]
	Shares in %		
G/S course	89.8	–	–
M course	79.1	81.2	–
T course	85.5	90.0	74.4
W course	92.5	–	74.2
Region of origin			
Western Europe	88.9	–	–
Eastern Europe and Central Asia	90.6	–	85.3
Latin America	91.2	91.2	–
North Africa and Middle East	78.5	83.6	73.1
Asia and Pacific	86.3	–	74.2

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

(19%). Unlike at state-run *Studienkollegs,* China (17%), Morocco (16%), Ukraine (8%), Iran and India (6% each) topped the league of countries of origin.[15]

> In 2022, 86% of participants at general, state-run *Studienkollegs* passed the assessment test.

Data on successful graduates are also available for 19 state-run *Studienkollegs,* with about 2,300 passing the 2022 graduation year.[16] Estimates of graduates from the missing *Studienkollegs,* based on the number of students, suggest that state-run *Studienkollegs* produce as many as 2,700 successful candidates. 41% of these graduates completed a T course, 20% a W course, 17% an M course and 16% a G/S course.[17] This corresponds largely to the course distribution among attendees enrolled in the 2022/23 winter semester. Moreover, there are no significant differences with respect to the regions of origin. Variations are only found among the key countries of origin. In 2022, Russia (15%) headed the list, followed by Vietnam (8%), Indonesia, Ukraine and Iran (7% each).[17]

Approximately 3,000 candidates took the assessment test in the 2022 graduation year at state-run *Studienkollegs,* considerably more than the number of successful graduates.[18] Roughly 86% of those taking the assessment test went on to pass.[19] However, there are differences between the various core courses: W courses (93%) and G/S courses (90%) ended with above-average pass rates, while the rate was below average in M courses (79%) in particular. Similar contrasts can also be observed between the various regions of origin. Participants from Latin America, Eastern Europe and Central Asia (91% each), Central and South Eastern Europe (90%) and Western Europe (89%) achieved

Footnotes (continued)

16 Excluding data for the state-run *Studienkollegs* in Frankfurt am Main, Kaiserslautern and Mainz.

17 Excluding data for the state-run *Studienkollegs* in Darmstadt, Frankfurt am Main, Kaiserslautern and Mainz.

18 Including estimated figures for the state-run *Studienkollegs* in Frankfurt am Main, Kaiserslautern and Mainz.

19 Unsuccessful participants include those who did not pass their assessment test or – if retaking it – finally failed it, as well as those who were certified unable to take the test, e.g. due to sickness. Some *Studienkollegs* also included the number of those who did not (re)take the assessment test here.

20 Only countries of origin with at least 50 examinees taking the assessment test.

21 Including examinees with an equivalent university entrance certificate, who completed a linguistic and methodological preparatory course at the *Studienkolleg* Frankfurt (Oder).

22 Excluding figures for the *Studienkolleg* of the Alpha Aktiv Language School Heidelberg.

SPOTLIGHT

Preparatory courses for international students at international preparatory and language centres (*Studienkollegs*) in Germany

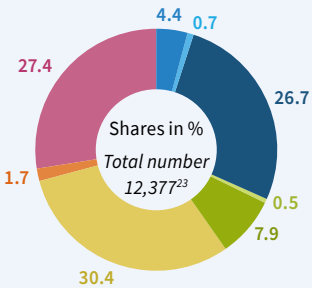
BS2.9 Pass rates of examinees in assessment tests (*Feststellungsprüfung*) at general state-run *Studienkollegs*, by country of origin, in the 2022 graduation year [17, 19, 20]

Country of origin	Pass rate of examinees in %
1. Morocco	98.8
2. Kazakhstan	96.4
3. Russia	93.2
4. Vietnam	92.6
5. Ukraine	92.1
6. Brazil	92.0
7. Indonesia	90.0
8. India	88.3
9. Germany	86.8
10. Nepal	86.5
11. China	78.3
12. Iran	77.0
13. Syria	73.0

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

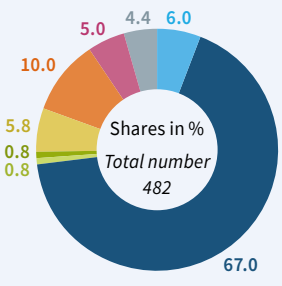
BS2.10 Applicants taking an entrance examination, by type of *Studienkolleg*, region of origin and key countries of origin, in the 2022 academic year[14]

General state-run Studienkollegs[25]



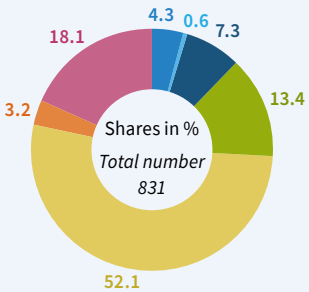
Key countries of origin	Shares in %
1. Iran	14.5
2. Russia	9.3
3. Indonesia	8.0
4. Ukraine	7.9
5. India	7.7
6. Vietnam	6.1
7. Morocco	5.9
8. Germany	3.5
9. Nepal	2.2
10. Syria	1.9

ESiSt-Studienkollegs Brandenburg



Key countries of origin	Shares in %
1. Ukraine	49.8
2. Russia	10.2
3. Nigeria	7.5
4. Poland	5.8

Church-run Studienkollegs



Key countries of origin	Shares in %
1. Morocco	15.2
2. Iran	13.7
3. Yemen	8.1
4. India	7.5
5. Syria	5.9
6. Indonesia	4.8
7. Germany	3.7
8. Mexico	3.6
9. Russia	3.4
10. Vietnam	2.5

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

above-average pass rates; by comparison, those from Sub-Saharan Africa (77%) and North Africa and Middle East (79%) received below-average scores. As regards the countries of origin, state-run *Studienkollegs* reported particularly high pass rates of over 90% for candidates from Morocco, Kazakhstan, Russia, Vietnam, Ukraine, Brazil and Indonesia.[17, 20]

In 2022, some 70 graduates passed the test at organisations in the ESiSt network, specifically for Brandenburg universities, first and foremost in G/S courses (46%) and W courses (42%). The pass rate was 73%.[21] Meanwhile, the church-run *Studienkollegs* indicated that 220 candidates passed the assessment test in the 2022 graduation year. The overwhelming majority had completed T courses (57%) and M courses (25%). The pass rate was 89%. From the non-representative sample of private *Studienkollegs,* only figures provided by state accredited organisations

Footnotes (continued)

23 Estimated figures for the state-run *Studienkollegs* in Kiel, Kaiserslautern and Mainz.

24 The admission process at the *Studienkolleg* in Hamburg does not include an entrance examination.

25 Excluding data for the state-run *Studienkollegs* in Darmstadt, Kiel, Kaiserslautern and Mainz.

26 Only countries of origin with at least 50 applicants.

27 Unlike German first-year students, international first-year students in one academic year include a high percentage of master's students in their first university semester who were admitted to university by virtue of a bachelor's degree obtained abroad and not on the basis of a university entrance certificate. These master's students bias the relevant data on undergraduate studies.

28 The PASCH Initiative is a network of more than 2,000 schools around the world in which German is considered a particularly high priority.

were taken into account.[22] In 2022, they achieved a total of around 500 successful graduates. Once again, candidates from T courses (73%) and W courses (22%) were predominant. The pass rate was 65%.

The number of applicants for the preparatory courses at *Studienkollegs* by far exceeds the number of participants actually offered a place. Overall, no less than 12,400 candidates sat the entrance examinations for state-run *Studienkollegs* in 2022.[23, 24] Like the later participants, most applicants came from North Africa and Middle East (30%), as well as Asia and Pacific, and Eastern Europe and Central Asia (27% each). Key countries of origin were Iran (15%), Russia (9%), Indonesia, Ukraine, India (8% each), plus Vietnam and Morocco (6% each).[25] However, only a limited number of applicants were accepted onto the preparatory courses. Based on the number of attendees in the 2022/23 winter semester, the average proportion of successful applicants was roughly 28% in 2022. This means that, after taking the entrance examination and allowing for other criteria in some cases, fewer than one in three applicants was awarded a place at a state-run *Studienkolleg*. Candidates from North America (39%), Western Europe, and Eastern Europe and Central Asia (33% each) achieved an exceptionally good quota. In comparison, the admission rate for applicants from North Africa and Middle East (21%) was below average. Candidates from China (86%), Mongolia (72%), Brazil (56%) and Georgia (47%) were most likely to be accepted, while admission was relatively rare among those from Yemen (12%), India, Palestinian territories (13% each), Honduras (14%) and Egypt (16%).[26]

> “ In 2022, approximately 12,400 prospective students applied for a place in the core courses at state-run Studienkollegs.

Church-run *Studienkollegs* reported a higher admission rate in 2022. Approximately 300 candidates were accepted from 830 applicants, representing a quota of 37%. By comparison, just 13% of the mostly Eastern European applicants were granted a place at organisations in the ESiSt network specifically for Brandenburg. The admission process is structured very differently at private *Studienkollegs,* very few of which require entrance examinations that can be compared with the aptitude tests at state-run *Kollegs*.

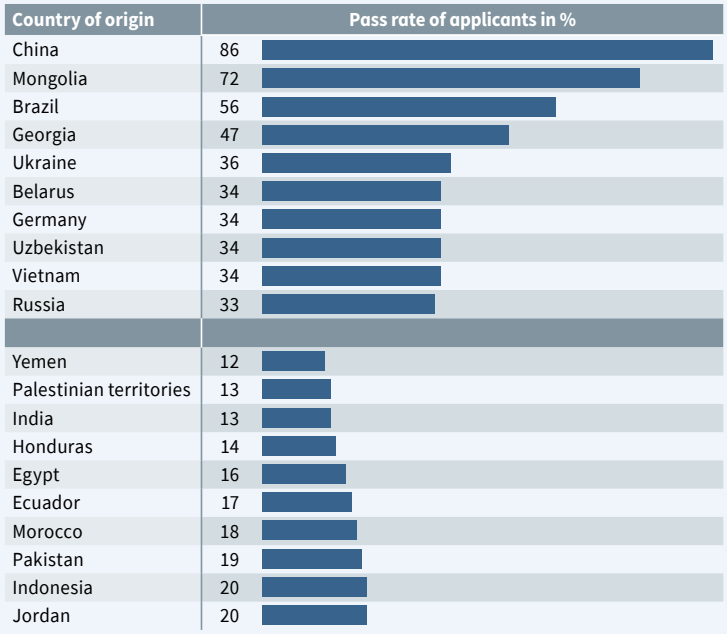
BS2.11 Admission rates of applicants to *Studienkollegs*, by type of *Studienkolleg* and region of origin, in the 2022 academic year

Region of origin	General state-run Studienkollegs[25]	ESiSt-Studienkollegs Brandenburg	Church-run Studienkollegs
	Shares in %		
Western Europe	33	–	22
Central and South Eastern Europe	28	21	60
Eastern Europe and Central Asia	33	9	28
North America	39	75	–
Latin America	29	100	108*
North Africa and Middle East	21	28	30
Sub-Saharan Africa	25	6	33
Asia and Pacific	27	17	11
Total	**28**	**13**	**37**

*Number of *Studienkolleg* participants is higher than the number of applicants.

Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

BS2.12 The ten countries of origin with the highest and lowest admission rates at general state-run *Studienkollegs*, in the 2022 graduation year[25, 26]



Source: data provided by *Studienkollegs*, DZHW survey; DZHW calculations

At present, the question of what percentage of successful attendees go on to study at a German university cannot be answered with any degree of certainty. Official student statistics for the 2022 academic year include 3,100 international first-year students who obtained their university entrance certificate at a *Studienkolleg,* accounting for 3% of all international first-year students. However, the true significance of this figure only becomes apparent when exclusively taking bachelor’s programmes into account.[27] Among first-year students in bachelor’s programmes in 2022, some 2,900 were international graduates from a *Studienkolleg*, thereby representing 10.2% of all international

SPOTLIGHT

Preparatory courses for international students at international preparatory and language centres (*Studienkollegs*) in Germany

BS2.13 Share of *Studienkolleg* participants of international first-year students in bachelor's programmes, by type of university, subject group and region of origin, in 2022

Type of university	Shares of participants in bachelor's programmes in %
Total	10.2
University	11.4
UAS	9.2
Public university	12.0
Public UAS	13.3
Subject groups	
Humanities	5.3
Law, economics and social sciences	6.5
Mathematics and natural sciences	13.1
Medicine and health sciences	4.3
Agricultural, forestry and food sciences, veterinary medicine	5.8
Engineering	14.2
Art and art history	1.7
Region of origin	
Western Europe	0.7
Central and South Eastern Europe	0.9
Eastern Europe and Central Asia	16.1
North America	3.9
Latin America	14.5
North Africa and Middle East	16.5
Sub-Saharan Africa	3.5
Asia and Pacific	20.0

Source: Federal Statistical Office, student statistics

BS2.14 Countries of origin with the highest shares of *Studienkolleg* participants of international first-year students in bachelor's programmes, in 2022

Country of origin	Shares of participants in %
1. Oman	55.6
2. Yemen	54.0
3. Indonesia	51.1
4. Nepal	40.1
5. Morocco	36.7
6. Bahrain	36.4
7. Burkina Faso	36.4
8. Honduras	36.0
9. Nicaragua	35.7
10. Saudi Arabia	35.3
11. Ecuador	33.5
12. Iraq	30.5
13. Taiwan	30.2
14. Tajikistan	29.7
15. Libya	28.6

Source: Federal Statistical Office, student statistics

first-year students. This share was 11.4% at universities and 9.2% at UAS. As *Studienkolleg* graduates tend to enrol in public universities, they make up a considerably higher proportion at these institutions, namely 12% at public universities and 13.3% at public UAS in particular, compared to between 1% and 2% at private universities.

Exceptionally high proportions of *Studienkolleg* attendees can be found among the international first-year students in bachelor's programmes, in line with the differing levels of enrolment in the various core courses: engineering (14%) and mathematics and natural sciences (13%). The percentages are relatively low in bachelor's programmes, primarily in the field of art and art history (2%) and in medicine and health sciences (4%).

There are also marked differences between the various regions of origin. High proportions of *Studienkolleg* graduates are typical of first-year students from Asia and Pacific (20%), North Africa and Middle East (17%), Eastern Europe and Central Asia (16%) as well as Latin America (15%). With regard to individual countries of origin, Oman (56%), Yemen (54%), Indonesia (51%) and Nepal (40%) achieved the highest shares. It is clear that *Studienkollegs* are the only option for many prospective students from these and other countries to embark on a bachelor's programme in Germany.

> "*Studienkollegs* are a convenient way for universities to encourage international students to enrol in bachelor's programmes.

Moreover, the proportion of *Studienkolleg* attendees of all international first-year students varies enormously at different universities. Public universities on campuses with one or even several *Studienkollegs* tend to report above-average percentages of *Studienkolleg* graduates. For example, in Frankfurt am Main, the university has a share of 48% and the UAS 31%, while in Kiel, the university boasts 36% and the UAS 28%. This suggests that many successful *Studienkolleg* graduates pursue a degree within easy reach of the *Studienkolleg* they attended. Consequently, *Studienkollegs* are a convenient way for universities to encourage international students to enrol in bachelor's programmes.

Studienkollegs are sheltered centres of learning that teach the skills required to study for a degree

Gerd Fennefrohn (Studienkolleg Mittelhessen at the Philipps-Universität Marburg), Katja Wagner (Studienkolleg Coburg for Bavarian UAS), Dr. Barbara Hennig (chair of the Management Board, Studienkolleg at TU Darmstadt) and Josef Koller (Munich Studienkolleg for Bavarian universities)

An interview with Gerd Fennefrohn, Dr. Barbara Hennig, Josef Koller and Katja Wagner from the Management Board of the Association of Directors of *Studienkollegs* at German Universities

State-run *Studienkollegs* play a vital role in preparing international students for undergraduate studies at German universities. At the same time, however, given the new preparatory courses currently available, the need for further qualifications and the growing number of international applicants, the *Studienkollegs* are facing enormous challenges. The editorial team of *Wissenschaft weltoffen* discussed these challenges with the Management Board of the Association of Directors of *Studienkollegs* at German Universities.

Numerous preparatory courses aimed at prospective international students have sprung up in recent years. What sets state-run Studienkollegs apart in this regard?

Barbara Hennig: The *Studienkollegs* are unique in that they are closely affiliated to the universities, but also to the respective ministries. As a result, the students are optimally prepared for the demands of a degree programme. First of all, the one-year preparatory course gives the students, most of whom are still very young, time to gradually become accustomed to the culture of teaching and learning in Germany, while adapting to everyday life here. They improve their language skills and build on their knowledge in their field, obtain detailed information on their future degree course and familiarise themselves with the German education system. Essentially, the *Studienkollegs* are sheltered centres of learning in which they can explore their new situation and the different culture, without being exposed to the hectic pace of university life. Generally speaking, as *Studienkolleg* attendees are enrolled at a university, they are part of the student body from the outset and can take advantage of all the respective university has to offer, giving them time to get their bearings and become integrated.

State-run *Studienkollegs* are well placed to meet the challenges they face because in addition to language instruction – a fundamental tool in ensuring academic success – the highly trained staff also teach subject-related skills. For example, in addition to the core courses, the *Studienkollegs* offer bridge courses to improve participants' German language skills and proficiency in mathematics, along with preparatory courses.

Unlike private organisations, the preparatory courses are free of charge and the quality of teaching is ensured thanks to the framework plan of the *Studienkollegs* and regular evaluation by the affiliated universities.

How do prospective students get admitted to a Studienkolleg?

B. H.: Applying to be accepted for a degree or directly for a *Studienkolleg* is invariably a requirement for a place at a *Studienkolleg,* either via uni-assist or to the universities directly, depending on the university. Certain criteria must be met in order to be admitted to the *Studienkolleg*: applicants' German language skills should be at least

Preparatory courses for international students at international preparatory and language centres (*Studienkollegs*) in Germany

B1 level, preferably B2, and they need a university entrance certificate from their home country. Once their certificates and language skills have been verified by the offices responsible, qualified candidates are invited to a selection process at the *Studienkolleg* in question, usually involving a German language test and perhaps an additional, subject-related test (e.g. mathematics or physics). Moreover, in cooperation with the Central Agency for German Schools Abroad, several *Studienkollegs* offer candidates the option of completing the selection process at PASCH schools[28] or German international schools in their home country. The examination process is supervised by specialist consultants at the respective schools.

The numbers of those applying to state-run Studienkollegs currently far exceed the number of study places at the Kollegs. In your opinion, what are the reasons for this?

B. H.: It is true that the number of applications exceeds the available capacities, particularly for certain core courses. However, nowhere near all applicants are actually qualified to study in Germany. Either their language skills are not at the level required or their subject knowledge is inadequate to be able to follow the curriculum at the *Studienkolleg*. In most cases, these two criteria are closely linked. The selection process ensures that *Studienkollegs* admit those candidates who best meet the criteria and basic requirements for obtaining a degree. In fact, demand for places at *Studienkollegs* has surged over the last twelve years. There are various reasons for this. In many countries, a German degree is still regarded as a stepping stone to a successful career. Preparation at a *Studienkolleg* and degree programmes are both free of charge and of a high standard. The first-rate preparatory courses in the core courses at *Studienkollegs* are widely recognised abroad, to the extent that they also appeal to prospective students with a direct HZB, who are also keen to attend a *Studienkolleg*. Not only has the war in Ukraine increased the number of applicants, foreign policy also plays a role, for example, in the form of foreign aid programmes or bilateral education agreements.

> “ According to state-run *Studienkollegs*, given the large numbers of applicants, more places are needed, particularly in preparatory courses for STEM subjects.

As a rule, there are a fixed number of places at Studienkollegs. Given the large numbers of applicants, it is possible for more candidates to pass the entrance examinations for the courses than there are places available. How do Studienkollegs handle such a situation?

Gerd Fennefrohn: Obviously, it would be ideal if more places were available and we could train more qualified applicants. In general, the level of interest in the core courses varies, however the demand is always very high. In any case, the *Studienkollegs* would like to be able to offer more places, particularly for STEM subjects. Many *Studienkollegs* have been trying for years to compensate for the lack of places for qualified applicants by assigning considerably more people to a course than planned in the framework. Furthermore, several *Studienkollegs* hold external examinations, which are ultimately aimed at those individuals who were not granted a place at a *Studienkolleg*.

There are increasing numbers of online preparatory courses for international students. How important are digital formats in terms of the application, entrance examination and teaching at Studienkollegs?

G. F.: The digitalisation strategy of the university or federal state in question is crucial to the success or failure of the digital transformation. Although part of this strategy, the *Studienkolleg* must ensure its implementation autonomously. At the same time, *Studienkollegs* plan their own strategies as the requirements of a *Kolleg* do not always coincide with those of a faculty at a university or school.

Studienkollegs are increasingly taking advantage of the opportunities afforded by digital technology. Wherever possible, the application process is carried out via application portals. Moreover, to a certain extent, classes are also offered as e-learning modules, while digital teaching and learning formats complement the face-to-face teaching. Despite the many benefits of the digital transformation, we regard classroom sessions at the *Studienkolleg* as indispensable, central elements of teaching and the very foundation of successful student outcomes.

Preparatory courses at Studienkollegs involve not just subject-related preparation, they also help participants improve their language skills and develop proactive, independent study techniques that will stand them in good stead in meeting the requirements at German universities. How is it possible to teach such an extensive set of skills?

Josef Koller: For decades, in other words, long before the introduction of skills-based learning, the main feature of teaching at *Studienkollegs* has been a concept of education that keeps track of young people’s personal development as well as their level of knowledge. Although students are guided towards the assessment test over a relatively short period of just two semesters, the idea of “teaching to the test” has never been considered. Classes do not revolve around instructions but encourage independent work while teaching the curriculum. In a nutshell: *Studienkollegs* have never concentrated merely on teaching a foreign language; instead, German has always been a working language for teaching the curriculum, which placed enormous emphasis on participants’ personal and social development.

Do you see the need for changing or re-weighting the curricula?

J. K.: Definitely. Curricular discourse is essential for the simple reason that it encourages a qualitative review of the teaching at *Studienkollegs* by taking stock, as it were, in all federal states and prompting questions that are conducive to improving the quality of the courses: is the preparation at a comparable level in all federal states? Are we making sufficient allowance for what universities expect of our students? Are we up to date in didactical and methodological terms? Therefore, the Association of Directors of Studienkollegs at German *Studienkollegs* launched a nationwide project that describes teaching at *Studienkollegs* for the purpose of changing and re-weighting the curricula. The result is a framework plan for skills-based teaching at *Studienkollegs*.

On a related note, what do you think of one-semester courses to prepare for the assessment test?

J. K.: The cultural sovereignty of the federal states gives individual state governments and certain universities the freedom to agree on their own, non-mainstream provisions. In some ways, the *Studienkolleg* landscape reflects the diversity of federal education.

You talked about harmonising a joint Studienkollegs framework plan. In your view, should these decision-making processes between the various Kollegs be extended?

J. K.: The Association of Directors has worked with the federal states for many years. It meets regularly to discuss legal issues and matters of content. Furthermore, the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder has established a framework; in other words the federal state ministers recommend a course of action that serves as a regulatory and structural point of reference for the Association. To date, the abovementioned skills-based framework is without doubt the most comprehensive, most far-reaching result of the collaboration between the *Studienkollegs*. The framework plan facilitates and encourages their interaction, particularly with regard to improving the quality of teaching and examinations. It has already been revised and an updated strategy adopted.

What are the future tasks of the Studienkollegs?

J. K.: One main, short-term objective is implementing the skills-based framework plan throughout Germany. Obviously, medium-term goals are to step up the digitalisation of the education sector, in both structural and didactical terms (particularly in classes and examinations), as well as dealing with questions that arise from striking the right balance between federal autonomy and raising the individual profiles of the universities on the one hand, while ensuring quality throughout Germany on the other. In the long term, however, the *Studienkollegs* will also help set the course for major socio-political and economic issues: attracting skilled workers, participating in the internationalisation process of education and studies, helping to create an open society. To put it simply, *Studienkollegs* have a tremendous wealth of expertise in this regard.

> “ The state-run *Studienkollegs* are now working to extend the range of courses available online.

With an eye to the successful development of state-run Studienkollegs in the future, what do you think of preparatory courses that are designed for specific universities or even disciplines, and of prospective students taking the assessment test in their home countries?

Katja Wagner: On the one hand, the core courses at *Studienkollegs* pave the way for hand-in-hand linguistic and curricular preparation for specific subject groups, such as STEM programmes in the T course; on the other hand, however, the tremendous variety of focal areas in the core courses mean that students are not limited to individual degree programmes and still have a certain freedom of choice. This is vital, particularly in light of the increasingly diverse study programmes offered by universities. Although universities understandably hope to secure international students' loyalty from an early stage by offering specially adapted preparatory courses, this does not encourage mobility. Preparing for the assessment test in the various home countries is a trend in which channelling immigration probably figures more prominently than timely integration in a German-speaking learning environment that includes day-to-day life – one huge advantage of preparatory courses in Germany from a learning theory perspective.

To what extent do state-run Studienkollegs require greater support to ensure their successful development?

K. W.: *Studienkollegs* will continue to rely on the confidence and interest in their preparatory courses of both universities and education policy. The next important step is implementing new framework plans for skills-based teaching at *Studienkollegs*. They show that *Studienkollegs* are committed to quality-driven preparatory courses. To ensure it stays that way, *Studienkollegs* need not just sufficient financial, personnel and conceptual, non-material support; it is also vital for them to join forces, in a spirit of partnership, with all major decision-makers at universities and those responsible for education policy.

1.1 Mobility trends and major host countries

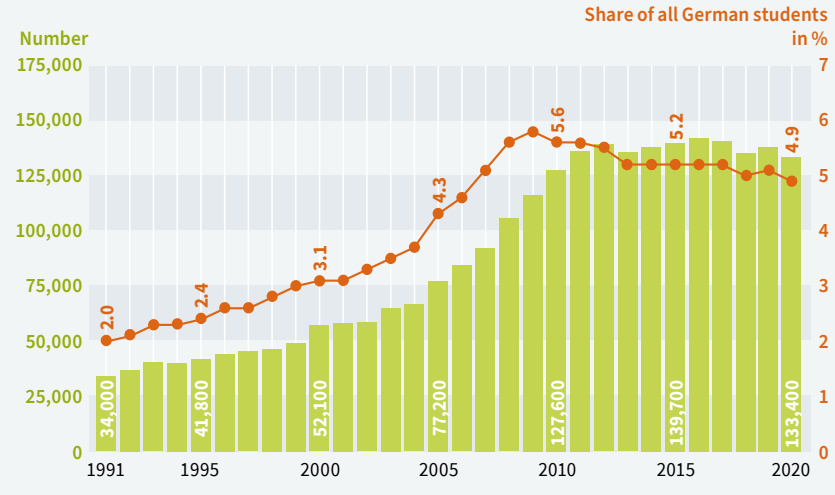
In 2020, around 133,400 German nationals were studying abroad. This number has tumbled year-on-year (approximately 138,000) and especially since 2016 (roughly 142,000). However, from a broader perspective, the number of internationally mobile German students has quadrupled since 1991 and more than doubled since 2000. A closer look at this development shows that, in the period between 2002 and 2010, in other words, during the introduction of the new, tiered study system, above-average growth rates of 10% and more were achieved per year. During this period, the proportion of internationally mobile students in relation to the total number of German students rose from 3.3% to 5.6%. This suggests that the international comparability of degrees that is now in place has given rise to significant momentum in terms of mobility. Above all, the option provided by the new study system of following a bachelor's programme in Germany with a master's programme abroad undoubtedly played an important role here. Nevertheless, since the introduction of the new types of degrees, this expansion in mobility can be regarded as having largely come to an end. Since then, the absolute number of internationally mobile German students has hardly increased at all; meanwhile, due to the strong growth in the number of students in Germany up to 2015, their share of all German students has even fallen slightly since 2011, amounting to 4.9% in 2020. The downturn in student mobility from Germany from 2019 to 2020 is easily explained by the mobility restrictions due to the pandemic, which were more or less draconian depending on the region or country.

The majority of German nationals studying abroad (approx. 90%) recorded by official statistics also aim to obtain a degree abroad (see information regarding the database). The motives for this form of mobility differ fundamentally from those for temporary study-related mobility (see Chapter C2). While degree-related international mobility generally stems from the individual's endeavour to complete specific study programmes abroad or to improve their life and career prospects by graduating from a foreign university, temporary study-related mobility tends to be characterised by motives such as broadening horizons, honing language skills and personal development. The motives for mobility also strongly influence the choice of the respective host country or host university. Over three quarters of all German students abroad are in Western European countries (77%). The regions of Central and South Eastern Europe (12%), North America and Asia and Pacific (5% each) follow at a considerable distance. The other regions of the world are virtually immaterial in the degree-related international mobility of German students, with

Database

The data on German students abroad presented on pages 74–77 were mainly provided by the Federal Statistical Office. The Federal Statistical Office conducts an annual survey of the institutions responsible for education statistics in around 40 major host countries of German students. The Federal Statistical Office also supplements the survey with UNESCO and Eurostat data on other host countries, in which at least 125 German students were registered in the current year. These students are predominantly, but not exclusively, seeking a degree abroad. For some countries, Erasmus students and other students on temporary study visits are also included in the data (see also the corresponding footnotes to the figures). Nonetheless, not all of these countries are able to quantify the exact number or proportion of these temporarily mobile students. The share is below 10% in each of these countries. Therefore, the data presented here can primarily be interpreted as data on degree-related student mobility.

C1.1 German students abroad since 1991[1, 2]



Source: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DAAD calculations

Footnotes

1 From 2010, including results of the Federal Statistical Office's Doctoral Survey; from 2019, including doctoral statistics.

2 2020: 2,608,368 German students in Germany. German students abroad thus account for 4.9% of all German students at home and abroad.

3 In addition to the host countries covered by the Federal Statistical Office, this includes those countries in which, according to UNESCO student statistics, more than ten German students were enrolled in 2019 or 2020.

4 2017: break in the time series due to changes in statistical recording compared to the previous year.

5 Figure from 2016, rather than 2017, as no data are currently available for 2017.

6 Figure from 2019, rather than 2020, as no data are currently available for 2020.

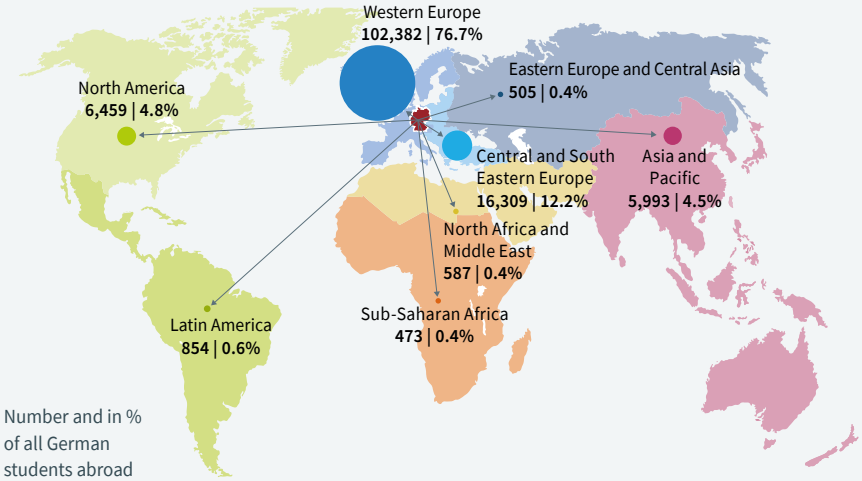
each accounting for less than 1%. By contrast, regions such as Latin America or Sub-Saharan Africa figure somewhat more prominently in temporary study-related international mobility – presumably on account of the different motives for mobility behind these visits (see pp. 86).

The four most popular host countries are still Austria, the Netherlands, the United Kingdom and Switzerland. However, while the numbers of German students in the United Kingdom (–20%) and Switzerland (–18%) have dropped significantly since 2017, an upward trend can be observed for Austria (+18%) and the Netherlands (+12%) over the same period. Among the major host countries reporting an exceptionally noticeable increase in German students between 2017 and 2020, with the exception of Portugal (+22%), Central and Eastern European countries are particularly well represented, such as Romania and Poland (+30% each), Bulgaria (+29%) and Turkey (+20%). Admittedly, with regard to Bulgaria and Portugal, this rise may also be attributed to the countries' change in recording student statistics.

Dramatic declines in the number of German students can be observed from 2017 to 2020 in the major host countries China (–57%), the US (–47%) and France (–41%), which may primarily be attributed to the pandemic. Apart from the United Kingdom (–20%) and Switzerland (–18%), Greece (–16%) also shows a relatively sharp fall.

When reviewing the number of first-year students in the ten key host countries that are able to provide these figures, opposite trends are emerging in the United Kingdom and Austria. While the United Kingdom saw a decrease of 30% in the number of first-year students between 2017 and 2020, the number of first-year students in Austria rose by 38%. There may already be signs of a shift in student mobility from Germany, which can probably be attributed in particular to Brexit, along with the steep rise in tuition fees and the cost of living in the United Kingdom. The significant reduction of 31% in the number of first-year German students in Australia is also striking. This drop may be explained by the fact that Australia's borders were closed during the pandemic, meaning that it was no longer possible to enter the country.

C1.2 German students abroad by host region in 2020[3]



Sources: UNESCO, student statistics; Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DAAD calculations

C1.3 German students abroad by key host countries in 2017 and 2020, plus development 2017–2020

Host country	Number 2017	Number 2020	Development 2017–2020 in %
Austria	28,670	33,836	+18.0
Netherlands	21,858	24,494	+12.1
United Kingdom	15,745	12,670	–19.5
Switzerland	14,558	11,932	–18.0
US	10,042	5,364	–46.6
Turkey	3,561	4,261	+19.7
France	6,432	3,823	–40.6
Hungary	3,257	3,415	+4.9
China	7,814	3,400	–56.5
Denmark	3,018	3,247	+7.6
Spain[4]	1,766	2,067	+17.0
Sweden	1,781	2,037	+14.4
Portugal[4]	1,419	1,732	+22.1
Italy	1,626	1,731	+6.5
Romania	1,296	1,686	+30.1
Bulgaria[4]	1,227	1,585	+29.2
Poland	1,158	1,501	+29.6
Greece	1,402	1,178	–16.0
Canada	1,110	1,095	–1.4
Australia	1,209	1,078	–10.8

Source: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DAAD calculations

C1.4 German first-year students abroad by key host countries in 2017 and 2020, plus development 2017–2020

Host country	Number 2017	Number 2020	Development 2017–2020 in %
Austria	7,886	10,904	+38.3
Netherlands	6,452	7,525	+16.6
United Kingdom	9,330	6,630	–28.9
Switzerland	4,386	3,536	–19.4
Portugal	1,217	1,313	+7.9
Turkey[5]	677	1,026	+51.6
Spain	974	873	–10.4
Denmark[6]	926	809	–12.6
Sweden[6]	524	521	–0.6
Australia	472	325	–31.1

Source: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DAAD calculations

1.2 Subject groups and types of degree

The majority of German students abroad are enrolled in the subject groups of business, administration and law (24%), as well as the social sciences, journalism and information (21%), followed by health and welfare (13%), arts and humanities (12%), natural sciences, mathematics and statistics, as well as engineering, manufacturing and construction (9% each).[1] Compared to German students studying in their homeland, the social sciences, journalism and information are thus clearly over-represented among those enrolled abroad, whereas engineering, manufacturing and construction are noticeably under-represented.

> “ Particularly in Central and South Eastern European countries, such as Bulgaria, Hungary, Latvia, Poland, Romania and Slovakia, more than three quarters of all German students are enrolled in master's programmes.

A comparison between the individual host countries occasionally shows huge variations in the distribution of subject groups. The subject group of business, administration and law is clearly predominant in Australia, Denmark, Finland, Portugal and Spain. The high proportion of health and welfare subjects in the four Eastern European host countries of Bulgaria, the Czech Republic, Hungary and Poland is also striking. This may be a consequence of the admission restrictions for German medical study programmes, which prompt some applicants to look for alternatives abroad. Moreover, countries such as Bulgaria, the Czech Republic, Hungary and Poland also highlight the good reputation

> “ Compared to German students studying in their homeland, the social sciences, journalism and information are clearly over-represented among those enrolled abroad, whereas engineering, manufacturing and construction are noticeably under-represented.

of their medical education specifically to attract international students, with degree programmes in English in Bulgaria, the Czech Republic and Poland, while Hungary even offers programmes in German. In addition, the structure of medical studies in these countries is very similar to that in Germany; in the Czech Republic and Hungary, these study programmes also conclude with a state examination.

Just under half of German students abroad (48%) aim for a bachelor’s degree there, over a third (37%) for a master’s degree.[2] A further 11% complete a doctorate abroad, while other types of degree (including type of degree unknown) account for 4% of students. Compared to German students at German universities, master’s students are thus distinctly over-represented abroad, whereas bachelor’s students are clearly under-represented.

The distribution of the types of degree in the host countries also shows enormous variation. For example, more than 90% of German students in Greece and Turkey, and well over 50% in Canada, Japan and the Netherlands, are pursuing a bachelor's degree. By contrast, in Central and South Eastern European countries, such as Bulgaria, Hungary, Latvia, Poland, Romania and Slovakia, more than three quarters of all German students are enrolled in master’s programmes. Above all, doctoral students in Anglo-Saxon and Scandinavian host countries such as Australia, Canada, Finland, Ireland and Sweden represent a sizable proportion of German students. This also applies to the Czech Republic, Slovakia and Switzerland.

Footnotes

1 Basis: countries that supply the Federal Statistical Office with differentiated data on German students and doctoral students at their universities, broken down by subject group. These countries account for around 94% of German students abroad. With the exception of China, Italy and Romania, these countries also include all 20 key host countries of internationally mobile German students.

2 Basis: countries for which differentiated data on German students by type of degree are available from the Federal Statistical Office or the OECD. These countries account for around 89% of German students abroad and, with the exception of China and Italy, include all 20 key host countries of internationally mobile German students.

3 Since the 2018 issue of “Deutsche Studierende im Ausland”, the subject groups have been categorised according to ISCED standards and therefore deviate from the Federal Statistical Office’s standard classification system.

4 Deviations from 100% are due to rounding.

5 Double counting is possible as students in Sweden can enrol in more than one subject in an academic year.

6 The data on German students at German universities refer to the 2019/20 winter semester.

7 Not including doctoral students or postdocs as they cannot be broken down according to subjects.

8 The distribution of subjects is not known for 142 students.

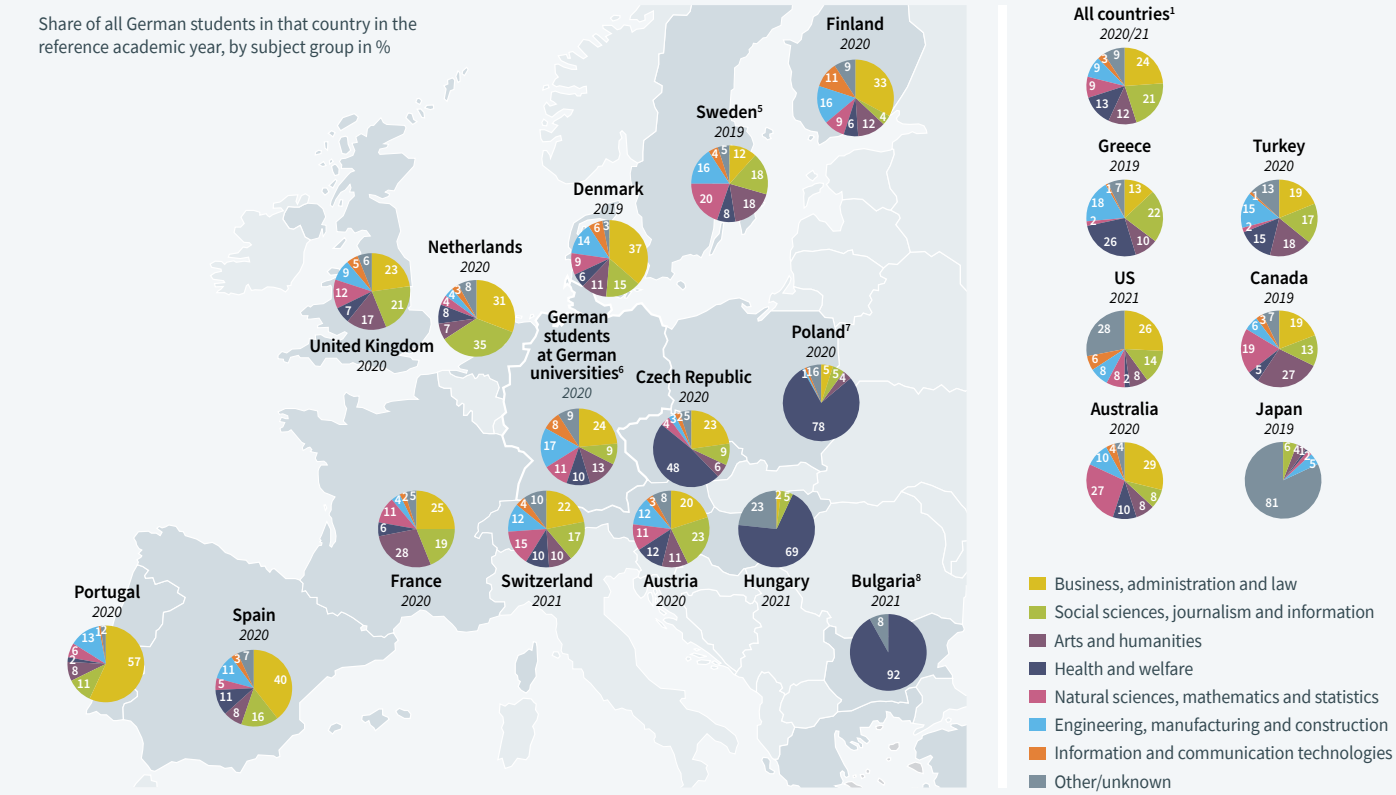
9 OECD data as they are more complete, more up-to-date or more accurate than data from the Federal Statistical Office.

10 OECD data as they are not included in the data from the Federal Statistical Office.

11 Data on doctoral students from the database of the Student and Exchange Visitor Information System (SEVIS) as they are not included in OECD data.

C1.5 German students in selected host countries by subject group[3, 4]

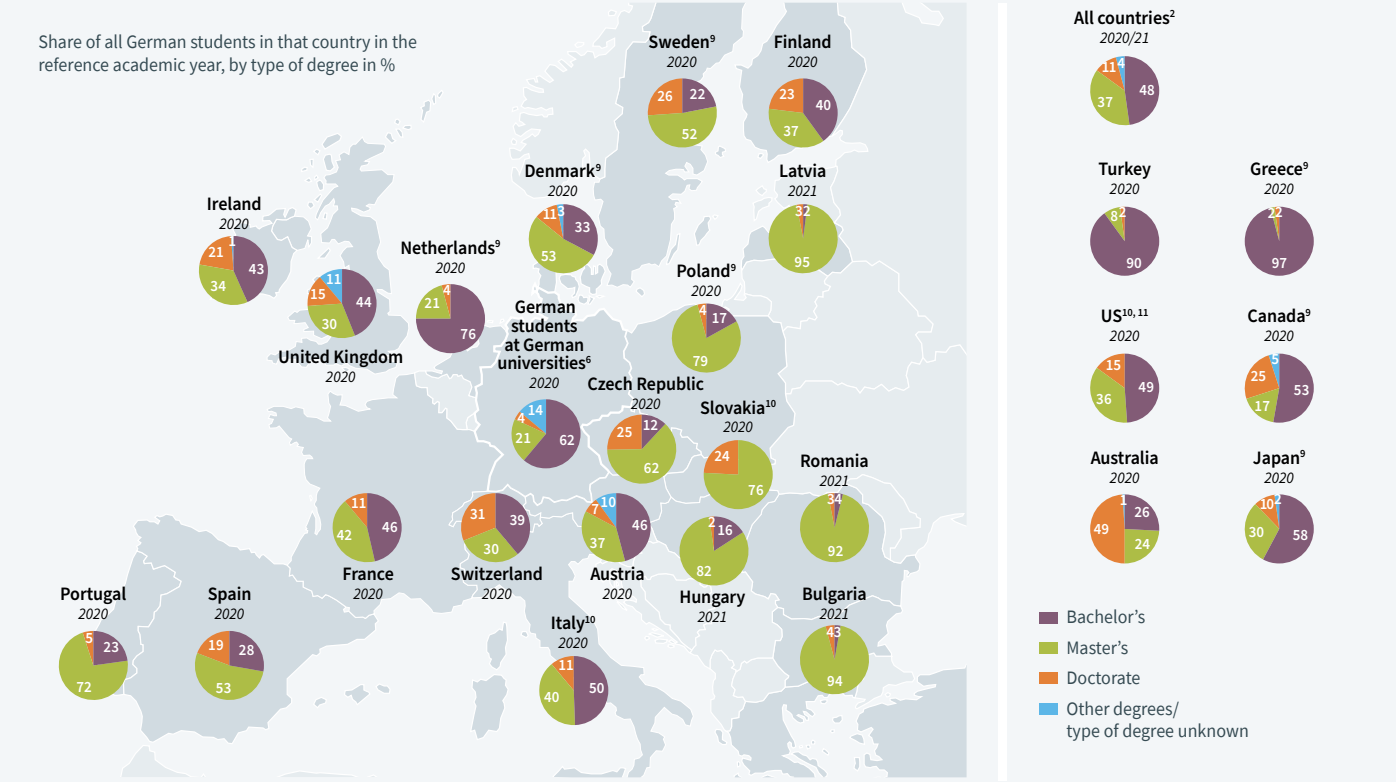
Share of all German students in that country in the reference academic year, by subject group in %



Source: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods

C1.6 German students in selected host countries by type of degree[4]

Share of all German students in that country in the reference academic year, by type of degree in %



Sources: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; OECD, student statistics; country-specific reporting periods

2.1 Status of goal achievement

Targets for international student mobility exist at both European level and the level of individual higher education systems. In 2011, a specific mobility goal was set for all EU countries in the "Council conclusions on a benchmark for learning mobility" and subsequently adopted for all European Higher Education Area (EHEA) countries one year later in the Bucharest Communiqué, as part of the Bologna Process. According to this, by 2020, at least 20% of any cohort of university graduates in the EU or EHEA countries should have obtained a degree abroad or gained some measure of temporary study-related mobility experience. Temporary study-related mobility is defined as recognised study visits and placements abroad of at least three months' duration or with at least 15 ECTS credits. In Germany, the Federal Government and the federal states defined two tiered objectives in the Internationalisation Strategy of the Joint Science Conference of 2013. According to this strategy, by 2020, every second university graduate should have gained study-related experience abroad (50% target) and every third graduate should have completed a study-related visit abroad of at least three months and/or acquired 15 ECTS points (33% target).

> "In 2020, Germany failed to reach the target of the EU benchmark (20%) but, at 17.1%, was well above the EU average of 13.5%.

However, German and European target rates are not directly comparable as they are calculated based on very different definitions of mobility. For example, only study and placement visits credited by the home institution are factored in when calculating the European mobility benchmark. This definition means that part of study-related international mobility (or, to be precise, non-credited visits and visits of less than three months) is disregarded for the calculation of the mobility rate. Moreover, only visits abroad in the corresponding study cycle are taken into account when calculating the European benchmark. This means, for example, that master's graduates who only spent study-related periods abroad during their bachelor's programmes are classified in the calculation as master's graduates without experience abroad. The same principle applies to graduates who have obtained their doctorate.

By contrast, the German mobility targets are based on a broader understanding of mobility. For example, when extrapolating to the German 50% target, the DAAD includes all study-related visits of at least one month abroad in the calculation, regardless of whether they are credited at the home university. In addition, experience gained abroad in previous study cycles is taken into account, in other words, master's students with study-related international mobility only during their bachelor's programmes, for example, are still considered internationally mobile.

As a result, the various mobility definitions of the existing targets lead to different levels of mobility rates that are not directly comparable in terms of content. The lack of comparability of the rates is exacerbated

C2.1 European and German mobility targets by 2020

European mobility targets of EU and EHEA countries	
"Council conclusions on a benchmark for learning mobility" of the EU (in 2011) and the Bucharest Communiqué of the ministers responsible for higher education in all EHEA countries (dated 2012)	By 2020, at least 20% of any cohort of university graduates in the EU or the European Higher Education Area should have obtained a degree abroad or gained temporary study-related mobility experience. Temporary study-related mobility is defined as study visits and placements abroad of at least three months' duration or 15 ECTS credits.
German mobility targets	
Internationalisation Strategy of the Joint Science Conference (of 2013)	**Target A:** By 2020, 50% of all graduates should have gained study-related experience abroad. **Target B:** By 2020, 33 % of all graduates should have completed a visit abroad of at least three months' duration or corresponding to at least 15 ECTS points.

Sources: specified documents

Footnotes

1 Deviations between individual rates and the total figure are due to rounding.

2 Although the Federal Statistical Office now publishes university-specific data on the temporary study-related international mobility of graduates, these figures reveal that a number of universities and universities of applied sciences are not yet in a position to document conclusive mobility data.

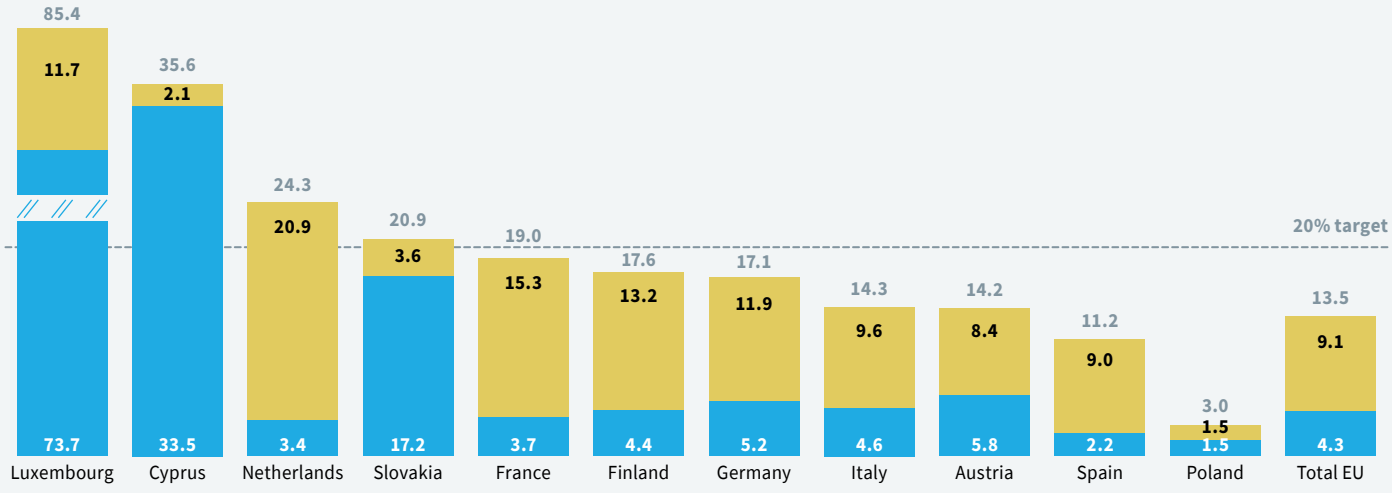
3 Data on temporary study-related international mobility refer to students with a German university entrance certificate in later semesters, i.e. from the sixth university semester. International students and students in distance learning or on-the-job study programmes are excluded. See also p. 82–87.

4 Data on degree-related international mobility refer to 2020. See also Federal Statistical Office (2022d).

5 The drop in Germany's mobility rate from 19.9% (2018) to 17.1% may be explained by a change in reporting statistics. As of reporting year 2019, the Federal Statistical Office also included upgrading training courses in vocational tertiary education in its calculation for Germany. However, as virtually no international mobility takes place in this sector, this addition inevitably led to a significant reduction in the mobility rate.

6 See also Hauschildt (2021), p. 260.

C2.2 Mobility rates of university graduates in Germany and selected other countries in graduation year 2020, according to EU benchmark[1]



Figures in %: XX Total mobility | Temporary study-related mobility | Degree-related international mobility

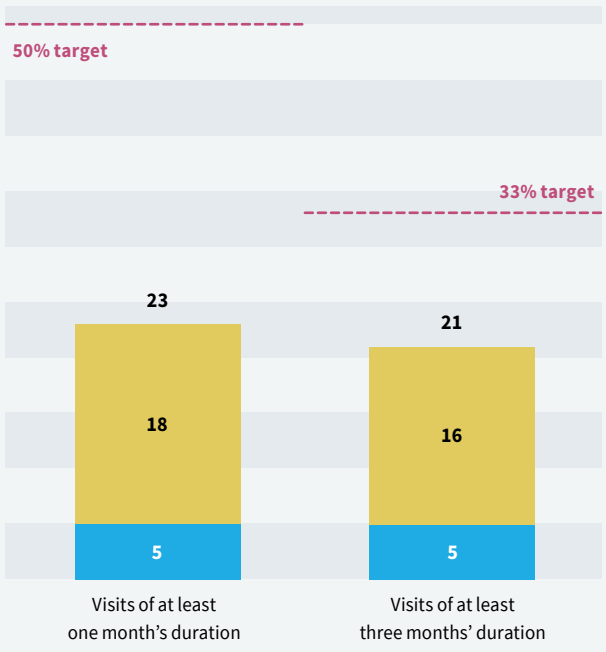
Source: European Commission, Education and Training Monitor 2022

by the fact that the calculation draws on different data sources. In future, the European mobility benchmark will be calculated on the basis of higher education statistics, which is not yet possible in all countries. In Germany, too, such data have only been collected by universities since 2017, following the reformed Higher Education Statistics Act. For this reason, the results of graduate surveys are still being used to calculate the quotas.[2] To date, the DAAD has used the representative data (on students in later semesters) from the Social Survey and, as of this edition, from the "Student Survey in Germany" (SiD), conducted by the DZHW, as a basis for extrapolating the German mobility rates (temporary study-related visits abroad), as well as the findings from the "Deutsche Studierende im Ausland" survey conducted by the Federal Statistical Office Germany (degree-related international mobility).[3, 4]

Based on the mobility definitions described above, the mobility rates reveal that Germany failed to reach the 20% target of the EU benchmark in 2020 but, at 17.1%, is well above the EU average of 13.5%.[5] Just four small countries managed to achieve the 20% target on time: Luxembourg (85%), Cyprus (36%), the Netherlands (24%) and Slovakia (21%). Furthermore, only two other countries report higher mobility rates than Germany: France (19%) and Finland (18%, see also Fig. A1.7 on p. 18). Moreover, it is also important to consider the individual rates that together represent the total figure for international mobility. In this regard, Germany's rate for degree-related international mobility (degree mobility), at 5.2%, is above the EU average of 4.3%, as well as its rate for temporary study-related visits abroad (credit mobility) (11.9% vs. 9.1%).

The German mobility targets for 2020 were also not met. The respective figures are 23% (50% target) and 21% (33% target), in other words, they fall significantly short, both in terms of the 50% target and the 33% target. In retrospect, it becomes clear that, both in Germany and in many other European countries,[6] there has been a steady decline in credit mobility over the last ten to fifteen years, rather than the intended increase. Studies have not yet been conducted into the reasons for this pan-European development.

C2.3 Extrapolation of the mobility rate of German university graduates[3, 4]



Mobility rate according to DAAD calculation in %:
XX Total mobility rate as per extrapolation
Temporary study-related mobility
Degree-related international mobility

Sources: DZHW, the Student Survey in Germany, 2021; Federal Statistical Office, "Deutsche Studierende im Ausland" survey, 2020; DAAD calculations

2.2 Erasmus visits

Since the 2010 Erasmus year, the number of annual Erasmus visits undertaken by students at German universities has increased substantially, from around 28,900 to 42,300 in 2021.[1] Consequently, since 2010, the number of all Erasmus participants from Germany has seen greater exponential growth (+47%) than the number of students in Germany over the same period (+33%). Whilst the 2020 Erasmus year showed a decrease of 3% compared to the previous year, due to the pandemic, numbers recovered in the 2021 Erasmus year, almost returning to pre-pandemic levels, with 42,279 Erasmus participants. Over the last decade, the number of Erasmus participants has risen more rapidly at universities of applied sciences (UAS) (+39%) than at universities (+22%).[3] Nonetheless, a larger upswing can be discerned in the number of participants at universities (+4%) compared to the previous year than at UAS (+3%). UAS now account for 30% of all Erasmus participants.

> “ Of the ten key host countries, a downturn can only be observed in participants from the Netherlands (–8%) since the pandemic year 2020.

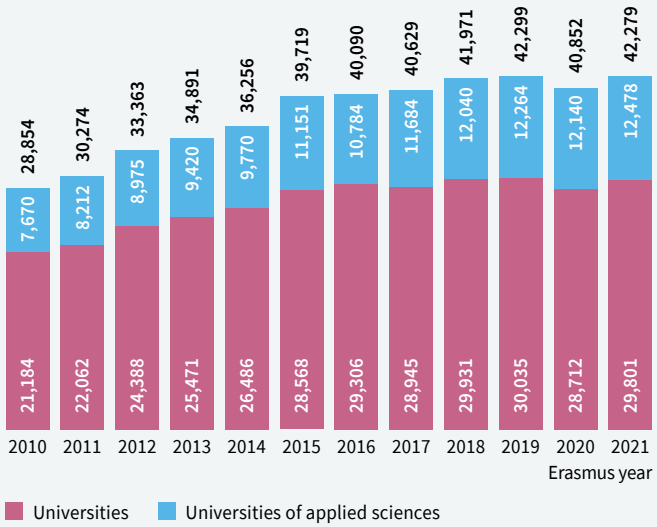
As in recent years, Spain was once again the most popular destination for Erasmus participants from Germany in the 2021 Erasmus year, followed by France and the United Kingdom. Compared to the previous year, the number of Erasmus visits has increased in all three countries – by a mere 1% in the United Kingdom, by 3% in Spain and by a remarkable 18% in France. Of the ten key host countries, a downturn can only be observed in participants in the Netherlands (–8%) since the pandemic year 2020.

Database

The data on temporary international mobility presented on pages 80/81 refer exclusively to visits undertaken as part of the EU's Erasmus+ mobility programme. The basis for these data are the Erasmus statistics prepared by the DAAD. According to the findings of the DAAD's BintHo (International University Benchmark) survey, almost half of all temporary study-related visits abroad by German students are undertaken and funded through Erasmus+. Both German and international students wishing to complete a study or placement visit in one of the 33 participating programme countries are eligible for funding if they are enrolled at a German university, have completed their first academic year, their university participates in Erasmus+ and the home university and the desired host university have concluded an Erasmus cooperation agreement. The present analyses therefore refer to all Erasmus participants from Germany or, to be precise, German universities, and not only to German Erasmus participants.

In six countries, Austria (+25%), Finland (+20%), Sweden (+18%), Portugal and France (+15% each) and Norway (+12%), numbers have gone up compared to 2019, the last year before the pandemic; meanwhile, in Italy (–0.1%), Spain (–1%) and the Netherlands (–7%), numbers are still not back to pre-pandemic levels and have dropped sharply in the United Kingdom in particular (–23%).

C2.4 Erasmus participants from Germany by type of university, since 2010[1, 2, 3, 4]



Source: DAAD, Erasmus statistics

Footnotes

1 Erasmus statistics until 2014: an Erasmus year starts in the winter semester and ends in the summer semester of the following year. 2014 = WS 2013/14 + SS 2014. New Erasmus statistics since 2015: the Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2021 = 1 June 2020 to 31 May 2022.

2 Colleges of art and music and other higher education institutions were added to the universities. These institutions account for less than 2% of all Erasmus visits.

3 Since June 2020, Erasmus mobility statistics have included hybrid visits, in other words, a combination of physical and virtual visits. Visits that were purely virtual or not actually undertaken were not included.

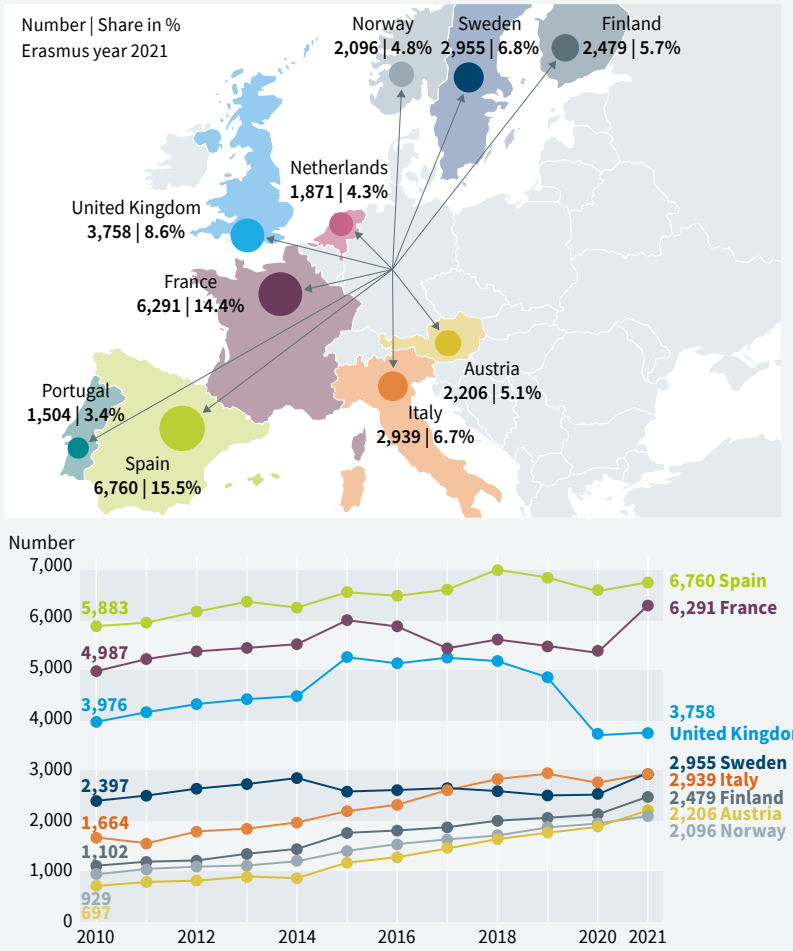
4 Due to the pandemic, the 2021 Erasmus year was extended to 31 March 2023. To ensure a meaningful comparison with previous years, however, only activities undertaken during the usual period, in other words, from 1 June 2020 to 31 May 2022, were included when calculating the numbers for the 2021 Erasmus year.

5 Subject group distribution for all students in Germany in the 2020/21 winter semester. The deviation from 100% is due to a small percentage of students who cannot be assigned to a specific subject.

6 The number and shares of all students in Germany refer to the 2020/21 winter semester.

7 For the sake of clarity, the Netherlands and Portugal are not included in the lower section of the figure.

C2.5 Erasmus participants from Germany by major host countries in 2021 and since 2010[1, 3, 4, 7]



Source: DAAD, Erasmus statistics

An analysis of the distribution of Erasmus participants from Germany by subject group shows that students of the social sciences, journalism and information notably account for an above-average proportion.[5] Their share among Erasmus participants (15%) is almost double that of their share of all students in Germany (8%). The subject groups business, administration and law, and arts and humanities are also significantly over-represented. By contrast, the subject groups engineering, manufacturing and construction, information and communication technologies, education, and health and welfare are distinctly under-represented. At 3%, the share of all Erasmus participants in information and communication technologies was merely one third that of students as a whole (9%).

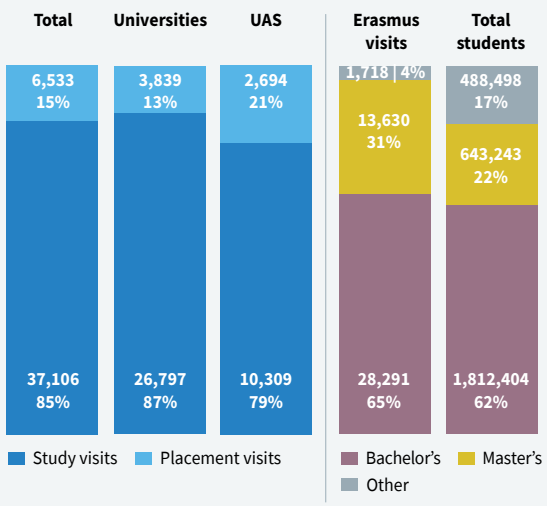
85% of all Erasmus visits undertaken by students from Germany in the 2021 Erasmus year were study visits, while 15% were placements. However, the share of placement visits at UAS (21%) is a great deal higher than that at universities (13%). Bachelor's students accounted for 65% and master's students for 31% of Erasmus visits. A comparison of this distribution with that of all students in Germany reveals that both types of degree are over-represented among Erasmus participants. By contrast, state examinations, doctorates and other types of degree are strongly under-represented.

C2.6 Erasmus participants from Germany and all students in Germany, by subject group, 2021[1, 3, 4, 5]

Share of all students in Germany in %	Subject group	Share of all outgoing Erasmus participants in %
11.0	Education	4.2
8.9	Arts and humanities	16.9
8.2	Social sciences, journalism and information	14.6
26.1	Business, administration and law	32.2
8.2	Natural sciences, mathematics and statistics	8.1
8.5	Information and communication technologies	3.2
17.0	Engineering, manufacturing and construction	11.9
1.4	Agriculture, forestry, fisheries and veterinary	1.3
8.6	Health and welfare	5.5
2.0	Services	2.0

Sources: DAAD Erasmus statistics; DAAD calculations; Federal Statistical Office, student statistics; DZHW calculations

C2.7 Erasmus participants from Germany by type of university, visit and degree, in 2021[1, 2, 3, 4, 6]



Number and share in %
Source: DAAD, Erasmus statistics; DAAD calculations

SPOTLIGHT

Study-related international mobility of domestic students at German universities

A guest article by Daniel Völk, Jonas Koopmann, Dr. Martina Kroher and Karsten Becker

Daniel Völk is a researcher in the DZHW's "The Student Survey in Germany" project.

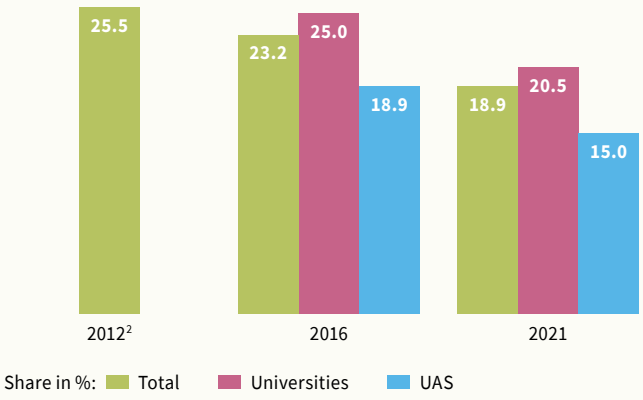
Dr. Martina Kroher spearheads the DZHW's "The Student Survey in Germany" project.

Jonas Koopmann is a researcher in the DZHW's "The Student Survey in Germany" project.

Karsten Becker is a researcher in the DZHW's "The Student Survey in Germany" project.

In 2021, the share of all domestic students[1] from the sixth university semester with temporary study-related visits abroad is 19% overall. In 2016, this figure was 23%, down from 26% in 2012.[2] It may be assumed that the decrease in the mobility rate of four percentage points between 2016 and 2021 was due to some extent to the pandemic-related travel restrictions in 2020 and 2021. On the other hand, the fall of three percentage points between 2012 and 2016 was probably first and foremost a consequence of the tiered bachelor-master degree that was introduced at this time, with its more structured study and examination system; as a result, fewer semesters were required to obtain a degree.

CS1 Share of internationally mobile domestic students in later semesters of all domestic students, by type of university, since 2012[1,3]



Sources: DZHW, the Student Survey in Germany (2021), 20th and 21st Social Survey

Source: The Student Survey in Germany

The Student Survey in Germany represents an amalgamation into a single study of three major, previously independently conducted, long-term studies on the definition and analysis of higher education and students at German universities – the Social Survey, the Student Survey of the University of Konstanz and "best – Studying with disabilities and chronic illnesses". The first wave of this new study, which will be repeated every four years, took place in the 2021 summer semester. The survey addressed a nationwide representative sample of all students at German universities apart from those at colleges of public administration. In total, approximately 188,000 students at 250 universities responded. See also: https://www.die-studierendenbefragung.de/en/the-student-survey.

Significantly higher mobility figures were found among students in later semesters at universities than at universities of applied sciences (UAS). However, there were similar downshifts in international mobility at both types of university between 2016 and 2021. Although the share

> "31% of master's students in later semesters have completed a study-related visit abroad.

of internationally mobile students in later semesters at universities was 25% in 2016, it dropped to 21% by 2021. The quota at UAS fell from 19% to 15% over the same period.

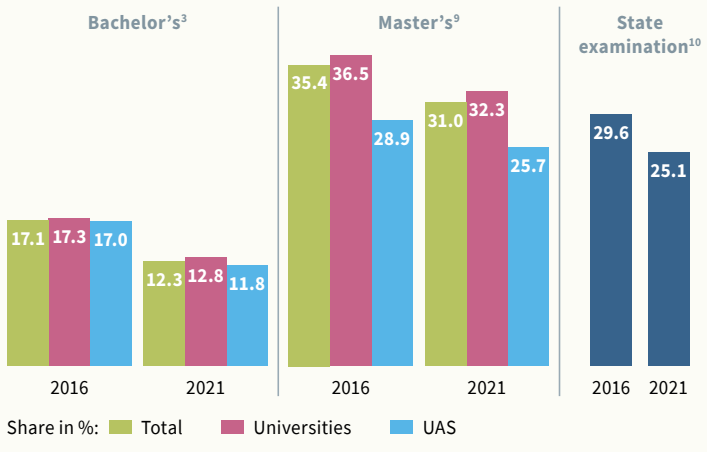
The quota of temporary study-related international mobility among domestic students in later semesters at German universities

The most reliable method of calculating the extent of temporary study-related international mobility is by carrying out a survey of corresponding data among the higher education graduates in any cohort. Any visits that the graduates undertook abroad during their studies can then be documented in full. Indeed, the amendment of the Higher Education Statistics Act in 2016 makes provision for a comprehensive survey of study-related visits abroad. Although the Federal Statistical Office now publishes highly specific data on graduates' temporary study-related international mobility, it appears that a number of universities and universities of applied sciences (UAS) are not yet in a position to record these mobility figures.[4] Representational graduate surveys are another means of calculating the quota of study-related visits abroad. Unfortunately, no up-to-date, reliable findings that are based on graduate surveys are currently available. Therefore, previous editions of *Wissenschaft weltoffen* used the results of representational student surveys to draw conclusions on the scale of international mobility. In so doing, the mobility rate is presented with respect to students in later semesters as most will have completed their international mobility shortly before graduating. It may therefore be assumed that this quota approximately reflects the corresponding value for graduates. As they represent the whole of Germany, the findings of the Social Survey conducted by the DZHW are the most reliable source of data, enabling an analysis of the development in temporary study-related international mobility among students at German universities. Since 2021, the Social Survey has been continued as "The Student Survey in Germany". The current data from 2021 form the basis for calculating the quota of international mobility in this edition.

The reference group of students in later semesters was redefined to better reflect the study trajectories that are followed today. This group now includes all students from the sixth university semester.[5] Admittedly, it is no longer possible to compare previous calculations of the quota of international mobility;[6] however, these new figures are a more accurate reflection of the reality of studying. To analyse the different types of degree, it was decided that the group of students in later semesters in bachelor's programmes would also comprise all students from the sixth university semester, master's students from the fourth study programme semester[7] and students from the ninth university semester in state examination programmes. The respective quotas refer to all students at German universities apart from international students, students in distance learning, part-time programmes[8] and on-the-job degree programmes. These groups are excluded as they are subject to special restrictive conditions with regard to temporary study-related international mobility (distance learning, part-time and on-the-job degrees) or because it is difficult to distinguish between the various types of mobility (in the case of international students). Students in dual study programmes are taken into consideration, however. The project design of "The Student Survey in Germany" also makes allowance for any students (in later semesters) who currently reside in other countries for the purpose of studying as these visits abroad are factored into the mobility quota.

The highest mobility rate can be observed among master's students in later semesters, 31% of whom have gained study-related experience abroad in 2021. At the same time, the higher proportion of international mobility compared to bachelor's programmes is also due to the longer total study duration of master's students (including their bachelor's studies). Furthermore, there are noticeable variations between the types of university: while 32% of the reference group at universities spent time abroad, this applies to just 26% of students at UAS. Compared to the recalculated figures for 2016 according to the new basis, international mobility in master's programmes has declined. At the time, 35% of master's students in later semesters indicated that they had experience abroad, 36% at universities and 29% at UAS. Due to their shorter total study duration, international mobility among bachelor's students is substantially below that among master's students. 12% of bachelor's students in later semesters travelled to other countries for the purpose of studying: 13% at universities, 12% at UAS. Once again, the situation is very different to that five years previously; in 2016, the quota was 17% at both universities and UAS. Finally, students in later semesters in the state examination programmes indicate a mobility rate of 25% in 2021, roughly five percentage points below that of 2016.

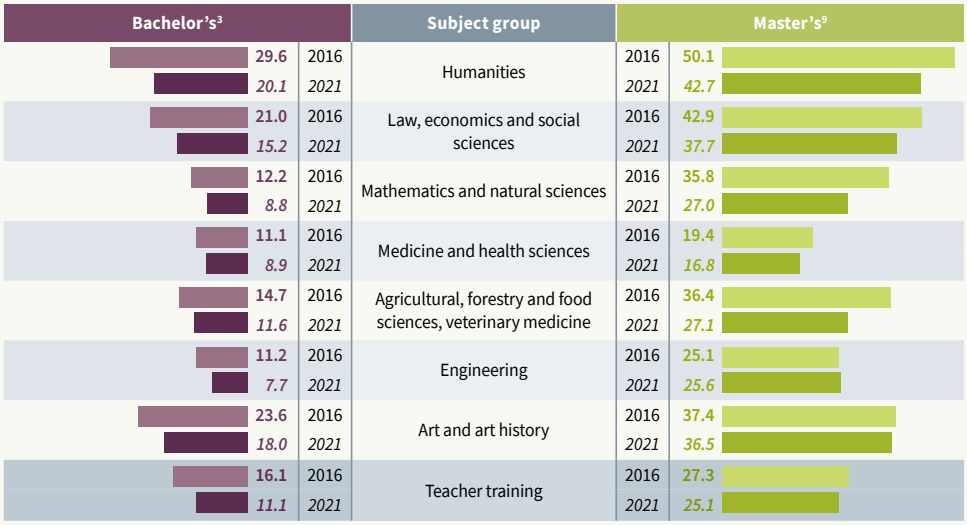
CS2 Share of internationally mobile domestic students in later semesters of all domestic students in later semesters, by type of degree and university, in 2016 and 2021[1]



Sources: DZHW, the Student Survey in Germany (2021), 21st Social Survey

Study-related international mobility of domestic students at German universities

CS3 Share of internationally mobile domestic students in later semesters of all domestic students in later semesters, by type of degree and subject group, in 2016 and 2021[1]



Share of all domestic students in later semesters in %

Sources: DZHW, the Student Survey in Germany (2021), 21st Social Survey

CS4 Internationally mobile domestic students by type of university and visit, in 2016 and 2021[11]

	2016			2021		
	Total	Universities	UAS	Total	Universities	UAS
Type of visit	**Share of all internationally mobile students in %, multiple answers**					
Study cycle abroad	56.6	59.1	49.9	63.4	66.7	53.8
Placement visit abroad/practical phase	30.0	29.6	30.8	24.2	22.9	27.8
Language course	5.1	5.7	3.4	2.0	2.1	1.8
Study trip	11.3	10.2	14.3	6.0	4.9	9.2
Project work	5.9	5.2	7.7	3.5	3.2	4.5
Summer school	3.4	3.1	4.0	2.0	1.6	3.1
Other visit	4.8	5.2	3.7	6.0	6.5	4.5

Sources: DZHW, the Student Survey in Germany (2021), 21st Social Survey

Sizeable variations in international mobility can also be observed across the individual subject groups. It is helpful to differentiate the figures according to the type of degree, however, as the relationship between bachelor's and master's programmes varies from one discipline to the next. Most notably, international mobility is above average among bachelor's students in later semesters in the humanities (20%) and art and art history (18%). Course contents, particularly those focusing on foreign languages, literatures and cultures, are much more likely to lead directly to students spending time abroad during their degree than the curricula of other subjects. In addition, above-average proportions of students of law, economics and social sciences (15%) complete visits abroad. This may be chiefly attributed to the greater interest in other countries that is clearly exhibited by economics students (18%), while the international mobility of those studying law and social sciences (13% each) or education and psychology (11%) tends to be average. By comparison, insignificant mobility rates are primarily found among bachelor's students of engineering (8%), mathematics and natural sciences, and in medicine and health sciences (9% each). The proportion of those in later semesters studying information technologies, classified in the engineering subject group, who undertake visits abroad is extremely low (7%). Nonetheless, it may be assumed that the natural sciences and some of the engineering study programmes, which undoubtedly have a strong international focus, maintain extensive virtual international connections that are not covered here.

Moreover, below-average international mobility (11%) is characteristic of teacher training programmes. Compared to 2016, almost all subject groups in bachelor's programmes in 2021 saw a decrease in the number of students in later semesters undertaking temporary study-related visits abroad, most notably in the humanities, where the mobility rate plunged from 30% to 20%.

In master's programmes, too, the highest international mobility rate for 2021 is found in the humanities (43%), law, economics and social sciences (38%) and art and art history (37%). Economics alone scores a remarkable 44%. By contrast, below-average percentages can be chiefly observed among students in later semesters in medicine and health sciences (17%) and teacher training (25%). Some significant differences emerge between students in 2016 and 2021; art and art history (37% each) and engineering (2016: 25%, 2021: 26%) are the only subject groups reporting a small or no downshift.

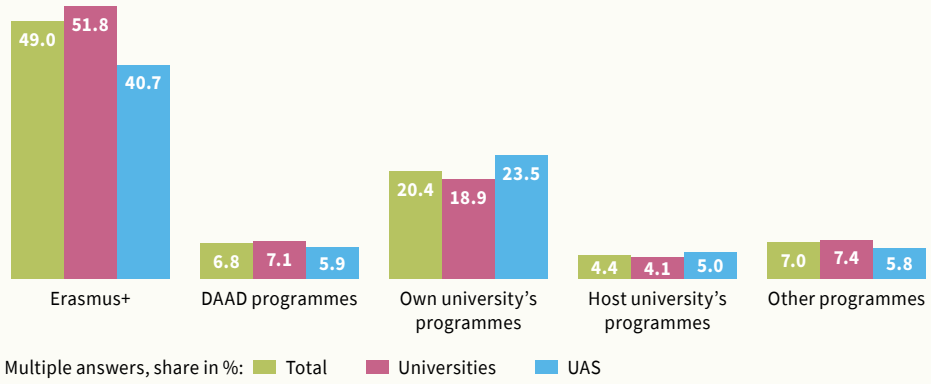
The most important means of studying in another country is to embark on a temporary study cycle abroad. In total, 63% of all domestic internationally mobile students[11] completed a study visit at a foreign

university[12] in 2021. Their share at universities, 67%, is considerably higher than that at UAS, where just 54% of internationally mobile students were temporarily enrolled at a foreign university for the purpose of studying. Compared to the situation in 2016, when the percentage was 57%, the proportion of those studying abroad

> “ 63% of internationally mobile students have completed a study visit at a foreign university.

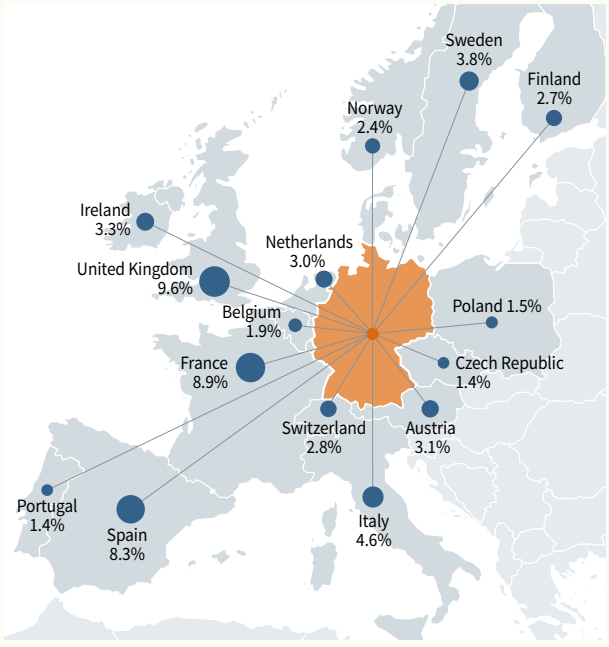
has risen significantly. This applies to internationally mobile students at both universities (2016: 59%) and UAS (2016: 50%). By contrast, the share of students carrying out a placement visit abroad saw a similar loss in 2021, down to 24%, compared to 30% five years ago. This decline is even somewhat more marked at universities (2021: 23%; 2016: 30%) than at UAS (2021: 28%; 2016: 31%). Thus, following a convergence in the frequency of placement visits abroad, a greater gap has re-appeared between internationally mobile students at universities and UAS. The other forms of visits abroad – language courses (2%), study trips (6%), project work (4%), summer school (2%) and other visits (6%) – are far less common than a study cycle abroad or a placement visit, with their shares all in single digits. With the exception of other visits abroad, they are of diminishing relevance compared to 2016. These developments suggest that the overall reduction in study-related international mobility between 2016 and 2021 is mainly due to a smaller number of placement visits abroad, but also to the drop in language courses, study trips, project work and summer schools. On the other hand, in terms of study visits, it may be assumed that there was no major decrease here, or rather, that this decrease was lower than that of placement visits abroad.

CS5 Share of internationally mobile domestic students spending time abroad as part of a funding programme of all internationally mobile domestic students, in 2021[11]



Source: DZHW, the Student Survey in Germany (2021)

CS6 Study-related temporary visits abroad undertaken by domestic students by host region and key host countries, in 2021[11]



Host region	Share in %
Western Europe	58.7
Central and South Eastern Europe	8.6
Eastern Europe and Central Asia	1.8
North America	8.3
Latin America	4.8
North Africa and Middle East	2.6
Sub-Saharan Africa	3.0
Asia and Pacific	12.2

Source: DZHW, the Student Survey in Germany (2021)

The overwhelming majority or 75% of internationally mobile students achieved their visits abroad with the support of funding programmes, indicating shares of 77% at universities and 70% at UAS. As expected, the Erasmus+ programme played the most important role in this regard. Approximately half of internationally mobile students (49%) went abroad through this programme. In second place are programmes organised by students' own universities, with roughly one fifth of the relevant group taking advantage of this option for their visits abroad. The shares of students benefiting from the DAAD programmes,

Study-related international mobility of domestic students at German universities

programmes offered by the host universities or other international mobility programmes vary between 7% and 4%. It is important to bear in mind, however, that some students do not recognise DAAD programmes as such and thus fail to cite them in questionnaires where they apply through their own university as part of DAAD project funding.

Western Europe is the most popular host region for study-related visits abroad undertaken by domestic students, with 59% of all visits taking place there. This is not just a consequence of the study expectations associated with the highly developed higher education and economic systems in Western European countries but also a result of the extremely popular Erasmus+ programme in which all countries in Western Europe are involved during the period under review. Moreover, the proximity of neighbouring countries, plus students' experience of them on holiday trips and their familiarity with the local language, to some extent at least, are likely to also be deciding factors. Overall, 12% of study-related visits abroad were to Asia and Pacific and 9% to Central and South Eastern Europe. 8% of students flew to North America for their visits abroad. By contrast, visits to Latin America (5%), Sub-Saharan Africa, North Africa and Middle East (3% each) plus Eastern Europe and Central Asia (2%) were less common. These findings suggest that the majority of countries that are particularly relevant for the international mobility of students from Germany are in Western Europe. Thus, 10% of visits abroad saw students travel to the United Kingdom, 9% to France, 8% to Spain, 5% to Italy and 4% to Sweden. With a share of 6%, the US is the only non-Western European country ranking among the ten key countries.

> "Approximately half of internationally mobile students spent time abroad via the Erasmus+ programme.

Internationally mobile students spent an average of 5.1 months in another country, with the median[13] likewise at five months. Roughly half of all visits abroad (51%) lasted between four and six months. These averages arise from the frequency of study visits. Students who were enrolled at a foreign university spent an average of 6.1 months (median: 5 months) in another country. The share of those who studied at a university abroad for four to six months was 70%. Indeed, 22% of visits lasted between seven and twelve months. Placement visits abroad and other practice-based periods spent in another country were much shorter. On average, they lasted 3.9 months (median: 3 months); in 41% of placements, students spent two to three months abroad and in 36%, four to six months. Language courses attended abroad were of similar duration, with an average of 3.5 months; however, the median was just 2 months. The difference between the two averages is calculated based on the clusters at the poles of the time scale: 42% of language courses had a maximum duration of one month, while 29% were longer than 3 months. The other types of visit were achieved over much shorter periods: projects carried out overseas took an average of 2.3 months (median: less than 1 month), attendance at summer schools 1.2 months

Footnotes

1 Students holding German citizenship and *Bildungsinlaender*, not including international students and students in part-time, distance learning and on-the-job degree programmes.

2 Not including students who were undertaking a temporary study-related visit abroad at the time of the survey.

3 Students from the sixth university semester.

4 Federal Statistical Office (2022c). Prüfungen an Hochschulen, 2021. Fachserie 11, Reihe 4.2. Wiesbaden.

5 Kroher, M. et al (2023). The Student Survey in Germany (SiD): 22nd Social Survey. The economic and social situation of students in Germany in 2021. Berlin: Federal Ministry of Education and Research. P. 78 *ff*

6 The Social Surveys from 1997 to 2016 defined students in later semesters as students in the 9th to the 14th university semesters at universities and the 7th to the 11th university semesters at UAS.

7 The number of university semesters includes all semesters completed after enrolling at a university in Germany for the first time; by contrast, the number of study programme semesters refers to the semesters completed in one particular degree programme.

8 Part-time students refers exclusively to students in official part-time degree programmes. Students who are enrolled in a full-time programme but who organise their studies themselves in such a way that they are studying part-time, whether during certain periods or wholly, are not excluded from calculations of the international mobility rate.

9 Students from the fourth study programme semester.

10 Students from the ninth university semester.

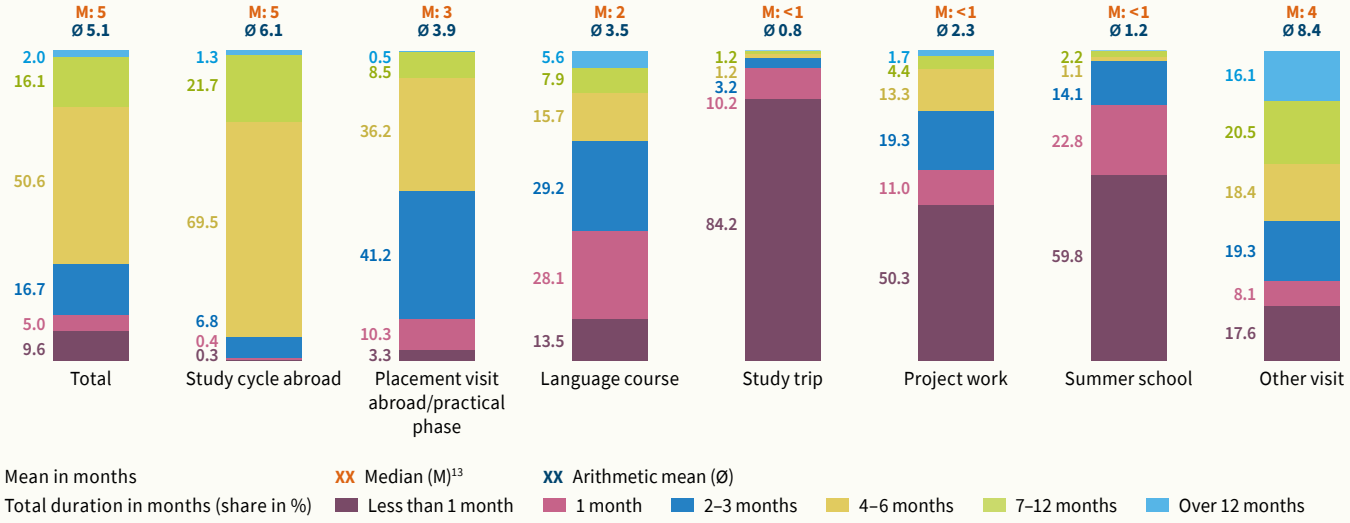
11 Students holding German citizenship and *Bildungsinlaender*, not including international students.

12 For the first time, the study entitled "The Student Survey in Germany" also included students who had been enrolled at a foreign university and, in some cases, obtained a university degree there prior to embarking on their studies in Germany. They account for 4.8% of all internationally mobile students in Germany. As they have spent time abroad, they were factored in when calculating the mobility rate. However, these visits are not included in the types of international mobility presented as they are not temporary.

13 The median is the value at the exact centre of a series of data that is arranged according to size. A median of four months means that half of the visits lasted less than four months and the other half for longer than four months. It has the advantage of being less susceptible to outliers than the arithmetic mean.

14 Excluding students who were enrolled at or who obtained a university degree from a foreign university before embarking on their studies.

CS7 Average duration of study-related temporary visits abroad undertaken by domestic students by type of visit, in 2021[11, 14]



Source: DZHW, the Student Survey in Germany (2021)

(median: less than 1 month) and study trips 0.8 months (median: less than 1 month). With respect to these types of visit, over half of the visits in question were shorter than one month.

> “On average, a study-related visit lasted 5.1 months.

It can therefore be safely assumed that degree programmes involving compulsory visits abroad encourage international mobility among students. As visits abroad are core curricular elements of these degree programmes, students receive unfailing organisational support by being offered appropriate options, for example. In 2021, 5.7% of domestic students were enrolled in degree programmes with compulsory visits abroad. Despite this relatively low share, its significance for the international mobility of students should not be underestimated. Around 22% of all students with study-related temporary visits abroad are in degree programmes that require a period abroad. Conversely, at the time of the survey, 56% of all students in degree programmes in which periods abroad are an inherent part of the curriculum have undertaken at least one study-related visit abroad. Particularly high shares of students in degree programmes with compulsory visits abroad are encountered in the humanities (14%) and economics (12%), yet are comparatively rare in medicine and health sciences (1%) as well as in information technologies, other fields of engineering, agricultural, forestry and food sciences, and veterinary medicine (2% each).

CS8 Share of domestic students in degree programmes with compulsory visits abroad of all domestic students, by selected subject groups and fields of study, in 2021[11]

Subject group	Share in %
Humanities	14.0
Economics	12.2
Law	5.1
Social sciences	4.7
Sports science	4.6
Art and art history	4.2
Administration	4.2
Education	3.9
Natural sciences	2.6
Agricultural, forestry and food sciences, veterinary medicine	2.2
Other engineering	2.1
Information technology	2.1
Medicine and health sciences	1.2
Total	5.7

Source: DZHW, the Student Survey in Germany (2021)

1 International academics and researchers at German universities

1.1 Mobility trends, regions of origin and countries of origin

International academic personnel[1] at German universities in 2021[2] were composed of around 59,300 academic and artistic staff of foreign nationalities, or 13.9% of all academic staff. Since 2016, the number of international staff has increased by 29%. By comparison, the number of German academics and researchers has only risen by 8% over the same period.

> “22% of professors at colleges of art and music come from abroad.

However, this dynamic cannot be observed for all groups under the heading of international academic staff. In particular, this appears to be a more gradual process for international professors. In 2021, around 3,700 professors of foreign nationality were appointed at German universities, equating to a rise of 17% since 2016. The lower growth rate compared to other international personnel is also explained by the fact that, unlike the recruitment of most other academic staff, professors are generally appointed for life. Positions of this kind usually only become vacant when the incumbent reaches the age limit.

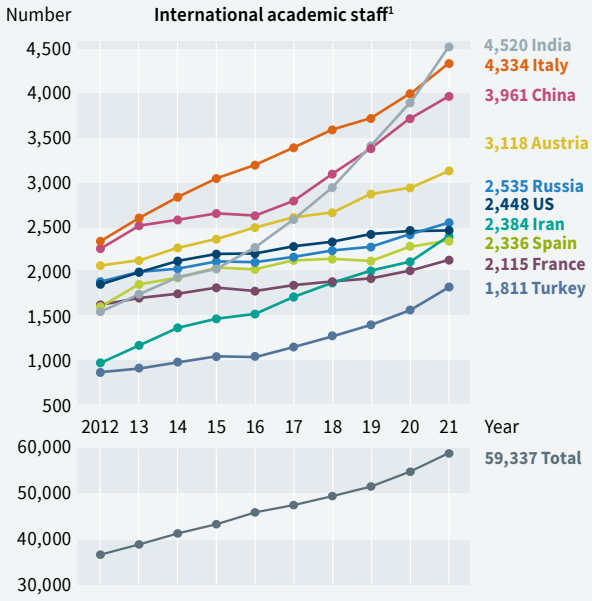
International professors account for just 7.4% of all professors at German universities. This is a much lower proportion than that of international personnel among all academic staff. Even among international academic staff, a mere 6% are professors, while this figure is 13% of German academic staff. This situation may be attributed both to “hidden” appointment hurdles and the smaller pool of international candidates. Above all, professorships at universities of applied sciences, which account for over 40% of all professorships at German universities, may not be attractive enough for international applicants thanks to a lack of recognition and prestige. Moreover, international applicants are probably less likely to be considered due to their insufficient proficiency in German or they may even refrain from applying altogether.

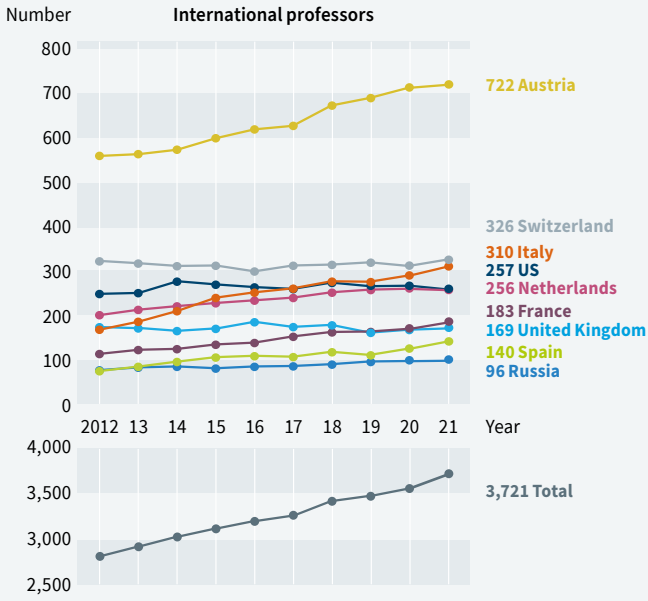
A comparison of types of universities confirms these assumptions. While international staff at universities account for 16.7% of all academic personnel and international professors for 10.9% of all professors, the corresponding figures at universities of applied sciences (UAS) are 6.1% and 2.8% respectively. By contrast, at colleges of art and music, the share of international academic staff is 20.2% and that of international professors a remarkable 22%.

The key countries of origin for international academic staff at German universities are India, Italy, China, Austria, Russia, the US, Iran and Spain. While Italy, Austria and Russia have seen an average increase of between 21% and 36% in the number of academic staff since 2016, this rate is below average for the US (+12%) and Spain (+16%) and well above average for India (+100%), Iran (+58%) and China (+51%).

In terms of international professors, Austria is by far the most important country of origin, followed by Switzerland, Italy and the US. Together, the two German-speaking countries of origin, Austria and Switzerland, account for more than one quarter of all international professors, at 19% and 9% respectively. However, while the number of Austrian professors has climbed by 16% since 2016, the Swiss figure

D1.1 Total international academic staff and international professors, by key countries of origin, since 2012[2]





Source: Federal Statistical Office, university staff statistics

has only gone up by 9%. The largest increase can be observed for Spain (+31%). By contrast, the numbers of professors from the United Kingdom and the US have dwindled during the same period (–8% and –2% respectively).

A regional breakdown shows that the Western Europe region of origin dominates both for international academic staff as a whole and for international professors. Of all international staff, 34% come from Western European countries; for professors, the figure is as high as 66%. Other major regions of origin for academic staff are Asia and Pacific (21%), Central and South Eastern Europe (13%), and North Africa and Middle East (11%). In the case of international professors, they are Central and South Eastern Europe (10%) and North America (8%). The vital role played by Western Europe is also reflected in other groups of internationally mobile academics and researchers who come to Germany (see pp. 100/101). This is partly attributable to the high level of the academic and higher education systems in these countries, but also to corresponding alliances between universities, along with historic, economic and political relationships such as those in the context of the EU.

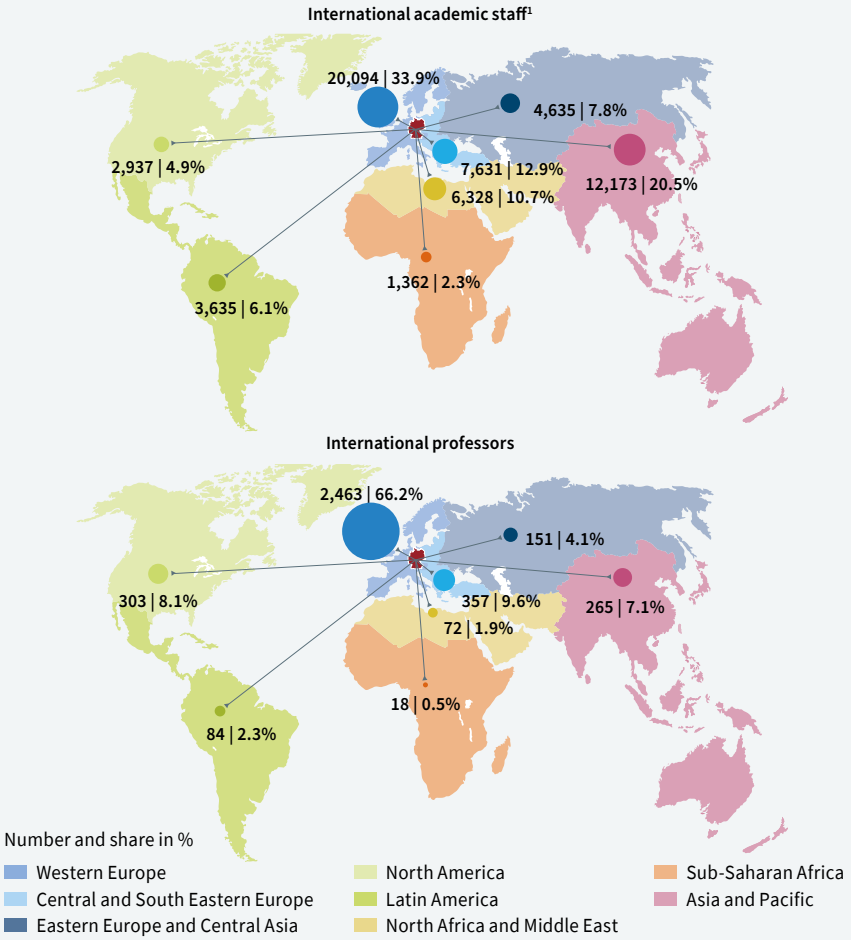
Footnotes

1 International academic staff comprise all academic and artistic personnel at German universities with foreign citizenship, including academic and artistic staff whose citizenship is unknown. The following groups are included in academic and artistic staff: professors, lecturers and assistants; academic and artistic staff; teaching staff with special duties; visiting professors and emeriti; assistant lecturers and honorary professors; private lecturers and graduate student research assistants (i.e. with a degree).

2 Data from the Federal Statistical Office on academic staff at universities refer to reporting years (January–December) and not to academic years.

3 No concrete details have been released regarding the citizenship of 542 scientific and artistic staff members, including eight professors. They represent approximately 1% of international academic staff.

D1.2 Total international academic staff and international professors, by region of origin, in 2021[3]



Sources: Federal Statistical Office, university staff statistics; DZHW calculations

D1.3 Share of international academic staff of the total academic staff, by type of university, in 2011, 2016 and 2021

Type of university	Staff	Year	Share in %
Universities	International academic staff	2011	11.8
		2016	13.5
		2021	16.7
	International professors	2011	8.8
		2016	10.0
		2021	10.9
Universities of applied sciences	International academic staff	2011	4.7
		2016	7.1
		2021	6.1
	International professors	2011	2.0
		2016	2.4
		2021	2.8
Colleges of art and music	International academic staff	2011	15.9
		2016	18.3
		2021	20.2
	International professors	2011	20.1
		2016	21.8
		2021	22.0
Total	**International academic staff**	2011	**10.1**
		2016	**11.9**
		2021	**13.9**
	International professors	2011	**6.1**
		2016	**6.8**
		2021	**7.4**

Sources: Federal Statistical Office, university staff statistics; DZHW calculations

1.2 Federal states and subject groups

Most academic and artistic personnel with foreign citizenship work at the universities in North Rhine-Westphalia (19%), Baden-Wuerttemberg (18%) and Bavaria (17%). These three federal states alone account for more than half of international academic staff. The same also applies to international professors. The number of international staff depends not only on the number and size of the universities in a federal state, but also on structural aspects such as the proportion of different types of universities and the subjects offered. Proximity to other countries' borders and the attractiveness of certain locations are also factors. The universities in Berlin and Saarland (18.4% each) and Brandenburg (17.0%) therefore have particularly high shares of international staff. This figure is relatively low for Mecklenburg-Western Pomerania (11.0%) and Schleswig-Holstein (11.3%). A similar picture emerges for the proportion of international professors as a percentage of the total professorial body. Here, Berlin's universities lead the field with 11.2%, while in Mecklenburg-Western Pomerania just 4.1% of professors come from abroad.

> "41% of international academic staff work in STEM subjects.

Over the last five years, the different federal states have seen varying quantitative increases in international academic staff. Thuringia and Saxony-Anhalt show a significant upswing (+88% and +70% respectively), while Bremen trails far behind (+1%). The development in the number of international professors shows a similar range. The strongest growth rates between 2016 and 2021 are recorded for Mecklenburg-Western Pomerania (+29%) and Bavaria (+27%), with a slight decline in Bremen (–5%). When interpreting these findings, it should be noted that the differences are also linked to the state-specific expansion of staffing levels at universities.[1]

International academic staff are represented to varying degrees across the different subject groups. With a share of 21%, most foreign academic personnel can be found in the mathematics and natural sciences subject group. Engineering, medicine and health sciences are of similar consequence (20% each). Some 11% of international academic staff work in the humanities, and in law, economics and social sciences, with another 10% in central institutions of the universities. A comparison with German academics and researchers reveals two key differences: while the share of foreign academic staff in law, economics and social sciences is only half that of German staff, it is around twice as high in mathematics and natural sciences.

In addition to mathematics and natural sciences (22%), the subject groups of engineering, law, economics and social sciences, plus art

D1.4 Total international academic staff and international professors, by federal state, in 2021 and development since 2016

	International academic staff		International professors		Development 2016–2021 in %	
Federal states	Number	Share in %	Number	Share in %	Academic staff	Professors
Baden-Wuerttemberg	10,707	13.6	605	8.0	+21	+13
Bavaria	9,889	15.6	664	8.8	+32	+27
Berlin	5,143	18.4	433	11.2	+45	+21
Brandenburg	1,332	17.0	66	6.7	+46	+40
Bremen	593	13.2	57	7.9	+1	–5
Hamburg	2,061	12.1	133	7.1	+52	+10
Hesse	3,668	13.1	242	6.3	+26	+5
Mecklenburg-Western Pomerania	729	11.0	36	4.1	+51	+29
Lower Saxony	3,933	13.3	225	6.0	+31	+22
North Rhine-Westphalia	11,193	12.4	696	6.6	+14	+13
Rhineland-Palatinate	2,058	12.8	150	6.9	+22	+24
Saarland	828	18.4	41	8.0	+17	+24
Saxony	3,095	14.0	160	6.8	+46	+17
Saxony-Anhalt	1,233	13.5	63	6.2	+70	+24
Schleswig-Holstein	1,062	11.3	78	6.3	+45	+5
Thuringia	1,813	14.7	72	5.3	+88	+13
Total	**59,337**	**13.9**	**3,721**	**7.4**	**+29**	**+17**

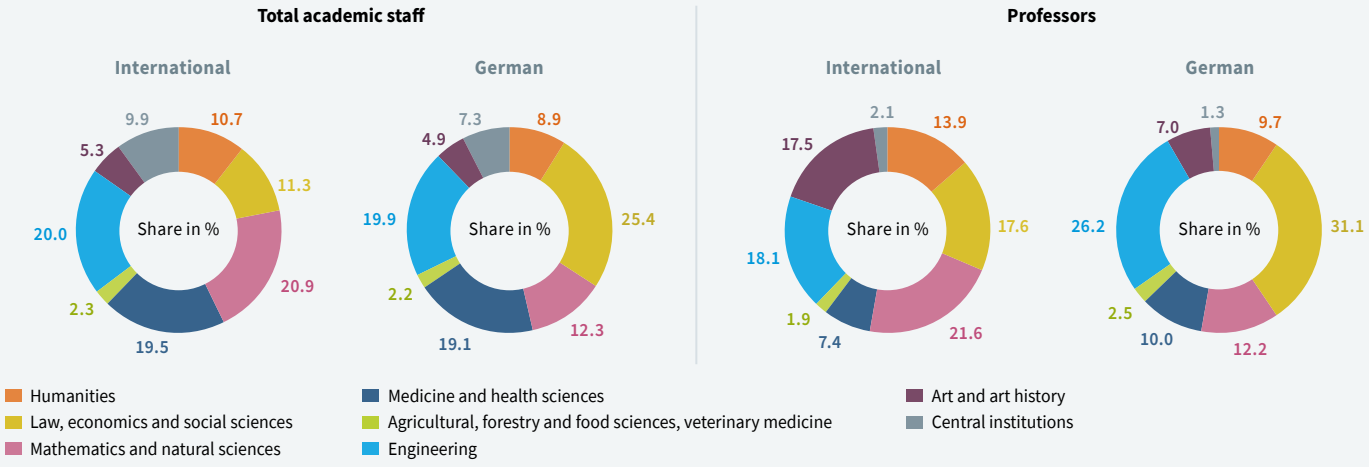
Sources: Federal Statistical Office, university staff statistics; DZHW calculations

D1.5 Share of international academic staff of all academic staff and share of international professors of all professors, by type of university and subject group, in 2021

Subject groups	Share of total academic staff in %		Share of all professors in %	
	Universities	Universities of applied sciences	Universities	Universities of applied sciences
Humanities	15.9	19.1	10.7	5.6
Law, economics and social sciences	9.1	4.1	7.0	2.4
Mathematics and natural sciences	22.0	8.0	13.6	3.3
Medicine and health sciences	14.9	2.5	6.4	2.2
Agricultural, forestry and food sciences, veterinary medicine	18.3	4.3	9.4	1.7
Engineering	20.1	5.6	10.9	2.8
Art and art history	16.8	7.2	20.1	6.4
Central institutions	18.3	16.5	15.2	4.8
Total	**16.6**	**6.0**	**10.9**	**2.8**

Sources: Federal Statistical Office, university staff statistics; DZHW calculations

D1.6 Total international and German academic staff plus international and German professors, by subject group, in 2021[2]



Sources: Federal Statistical Office, university staff statistics; DZHW calculations

and art history (18% each) are particularly relevant for international professors. Compared to German professors, international professors are thus much more strongly represented in art and art history (German professors: 7%) and in mathematics and natural sciences (German professors: 12%), yet tend to be under-represented in law, economics and social sciences (German professors: 31%) and in engineering (German professors: 26%).

The distribution of international academic staff among all academic staff at universities follows the same pattern, with large shares especially found in the subject groups of mathematics and natural sciences (22%) and engineering (20%), as well as in agricultural, forestry and food sciences, veterinary medicine, and universities' central services (18% each). At universities of applied sciences (UAS), high percentages are employed in the central institutions (17%) or work first and foremost in the humanities (19%). This may be explained by the strong focus at UAS on foreign languages, which are taught by native speakers. With regard to international professors, above-average shares can be observed in art and art history, both at universities (20%) and at universities of applied sciences (UAS) (6%).

Footnotes

1 While the number of professorships went up by 16% in Rhineland-Palatinate between 2016 and 2021, for example, it fell by 3% in Saxony-Anhalt.

2 Deviations from 100% are due to rounding.

1.3 The employment situation of international academics and researchers at universities and non-university research institutes

The international status of academic staff at universities and non-university research institutes is not only measured by the number of international academics and researchers and their professional status, but also by the circumstances of their employment. Is this the primary occupation of academic staff? Do they work full-time or part-time? And were they appointed on a permanent or temporary contract?

In 2021, international academic staff are more likely to be engaged in their primary occupation at universities and universities of applied sciences (UAS) than their German colleagues. This is their primary occupation for 72% of international, but just 63% of German academics and researchers. There are noticeable variations between the subject groups. As a result, the proportion of international academic staff engaged in that activity as their primary occupation is above average in the subject groups of medicine and health sciences (94%), mathematics and natural sciences (89%) as well as agricultural, forestry and food sciences, and veterinary medicine (80%), dropping to below average in art and art history (46%) and the central institutions (35%). Similar tendencies, although not quite as pronounced, can be observed among German academic staff.

> “International academic staff are more likely to work full-time, yet less likely than German colleagues to be permanently employed.

International academic staff are also slightly more likely than their German colleagues to work full-time at universities and UAS. With shares of 43% and 39% respectively, these figures refer only to those for whom this is their primary occupation. Moreover, above-average percentages of full-time employment are recorded for international academic staff in medicine and health sciences (60%) and in engineering (55%), as opposed to below-average shares thereof in art and art history (19%), in the central institutions (26%), law, economics and social sciences (27%), the humanities (33%) plus agricultural, forestry and food sciences, and veterinary medicine (35%). Here again, similar, yet fairly insignificant differences emerge for German academic staff.

The higher proportion of those working full-time among international academic staff for whom this is their primary occupation does not mean that they are more likely to be on permanent contracts than their German counterparts. On average, just 15% of international staff hold long-term positions in 2020, in contrast to 36% of German staff. These disparities occur across all relevant personnel groups, apart from specialised teaching staff, where the share of international personnel is 76%, compared to 69% of their German colleagues. International teachers in this group are frequently engaged to teach foreign languages on an ongoing basis, where they play a key role as native speakers. By contrast, 88% of German and just 74% of international professors hold tenured positions. Differences are even more marked among lecturers and assistants (international 13%, German 41%) and for academic and artistic staff (international 7%, German 20%).

In terms of fixed-term contracts, the situation is similar at non-university research institutes. In 2020, 18% of international and 42% of German academic staff are on permanent contracts at these institutes. However, while there are minor variations between academic staff requiring a doctorate (international 4%, German 6%), the figures for other academic staff, in particular, diverge substantially

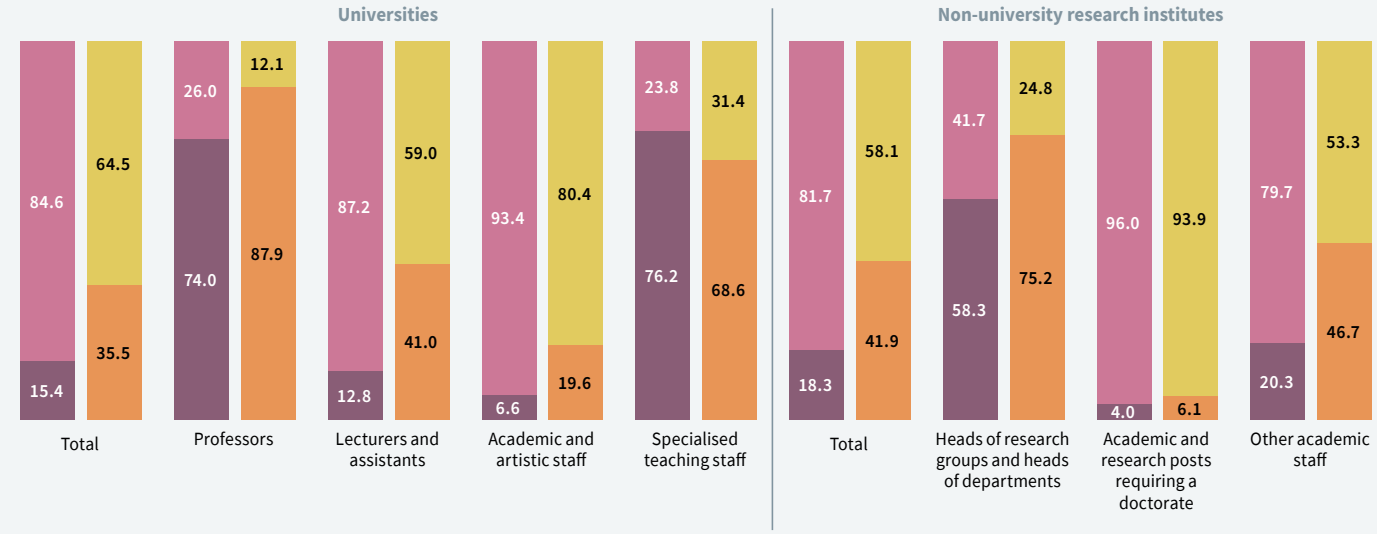
D1.7 Primary occupation and full-time employment of international and German academic staff at universities, by subject group, in 2021

Primary occupation in %	Subject groups	Full-time employment in %
57.3 / 63.3	Humanities	32.5 / 32.9
47.1 / 52.2	Law, economics and social sciences	26.7 / 27.0
76.6 / 88.7	Mathematics and natural sciences	35.0 / 42.6
85.1 / 94.0	Medicine and health sciences	54.9 / 60.2
69.6 / 80.1	Agricultural, forestry and food sciences, veterinary medicine	32.7 / 35.5
65.0 / 73.6	Engineering	50.3 / 54.7
37.4 / 35.1	Art and art history	21.3 / 19.4
56.0 / 46.2	Central institutions (including university clinics)	31.7 / 25.8
63.2 / 72.5	Total	38.6 / 42.5

German academic staff International academic staff

Sources: Federal Statistical Office, university staff statistics; DZHW calculations

D1.8 International and German academic staff with their primary occupation at universities and non-university research institutes, by professional and employment status, in 2020



Figures in %

Sources: Federal Statistical Office, university staff statistics; statistics on non-university research institutes; DZHW calculations

D1.9 Permanent international and German academic staff at universities, by subject group, in 2020

Share of permanent International academic staff in %	Subject groups	Share of permanent German academic staff in %
31.2	Humanities	38.1
18.7	Law, economics and social sciences	40.7
9.9	Mathematics and natural sciences	27.6
11.3	Medicine and health sciences	32.1
7.9	Agricultural, forestry and food sciences, veterinary medicine	31.9
9.3	Engineering	34.1
61.7	Art and art history	64.4
30.3	Universities' central services	42.9

Sources: Federal Statistical Office, university staff statistics; DZHW calculations

(international 20%, German 47%), even among heads of research groups and heads of department (international 58%, German 75%).

The situation as to fixed-term contracts also diverges across the individual subject groups at universities and UAS. With regard to the permanent employment rate, there are considerable differences, particularly in the subject groups of medicine and health sciences (international 11%, German 32%), engineering (international 9%, German 34%), agricultural, forestry and food sciences, veterinary medicine (international 8%, German 32%), law, economics and social sciences (international 19%, German 41%) as well as mathematics and natural sciences (international 10%, German 28%). Meanwhile, these groups tend to be more balanced in universities' central services (international 30%, German 43%), the humanities (international 31%, German 38%) and, most notably, in art and art history (international 62%, German 64%).

2 International academics and researchers at non-university research institutes

2.1 Mobility trends, regions of origin and countries of origin

In 2021[1], around 15,900 academics and researchers of foreign nationalities were contractually employed by the four largest non-university research institutes (NURI).[2] Their number has more than doubled since 2011 (+112%), indicating more dynamic development at NURI than at universities in terms of international academic staff. While the number of international academics and researchers at universities has risen by 29% since 2016, the increase at NURI over the same period is 50%, up 6% on 2020 alone, despite the mobility restrictions that were still in place due to Covid-19.

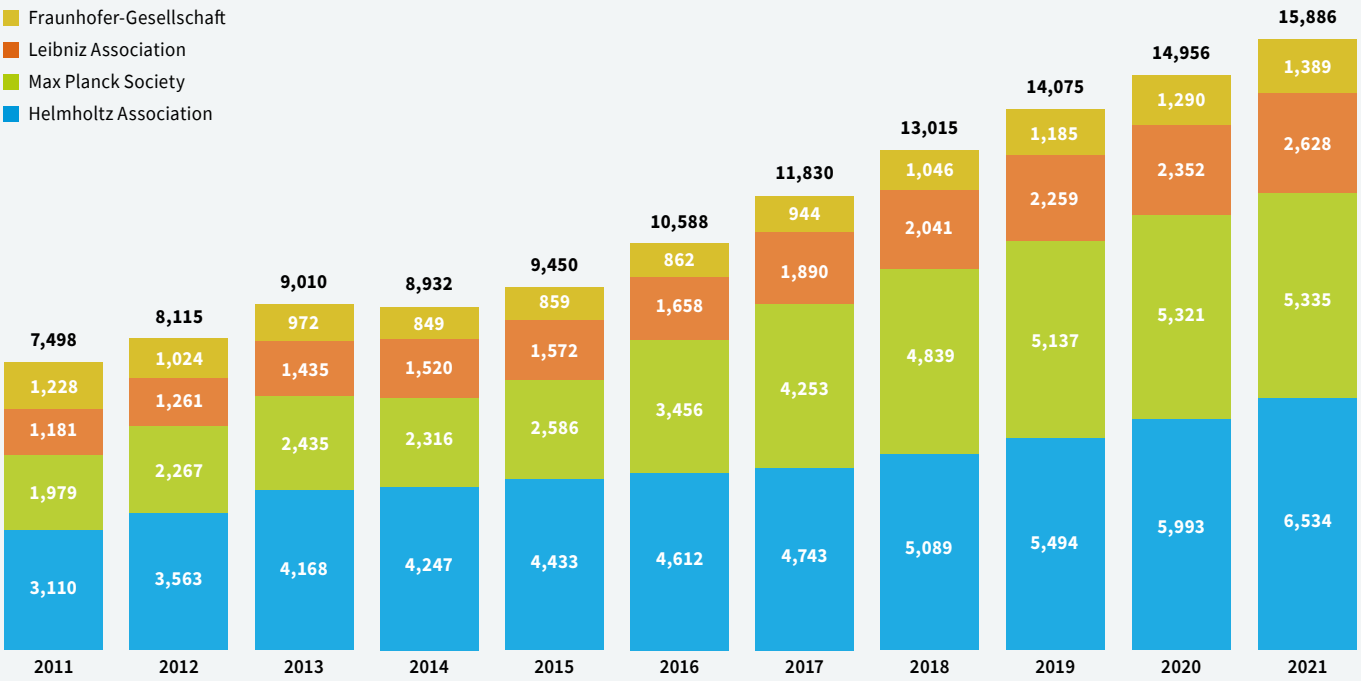
> “ The number of international academics and researchers at the Fraunhofer-Gesellschaft has soared by 61% since 2016.

The Fraunhofer-Gesellschaft registers the strongest growth, where the number of international academics and researchers has soared by 61% in the last five years. Nonetheless, this uptick was preceded by a plunge of corresponding magnitude between 2011 and 2015. At the Leibniz Association and the Max Planck Society, there has also been a similarly significant increase in international academic staff since 2016, up by 58% and 54% respectively. During this period, the Helmholtz Association shows an influx of 42% in its international academic staff.

The steady growth in international academic staff at NURI means that, in 2021, about 29% of all academics and researchers come from abroad. In 2016, this proportion was roughly 23%. The current share of international academics and researchers at NURI is thus more than twice as high than at universities (see pp. 88/89). This is partly due to the different subject profiles. The majority of NURI – with the exception of the Fraunhofer Institutes – focus strongly on the highly internationalised field of natural sciences. In these disciplines, the proportion of international academic staff of all those working in science and research, including universities, is above average at 22% (see pp. 90/91). In addition, the outstanding research conditions and lower language barriers – there are no teaching obligations and English is generally spoken in natural science laboratories – also contribute to the international attractiveness of NURI.

By far the highest proportion of international academics and researchers among all employed academics and researchers, roughly 52%, is found at the institutes of the Max Planck Society. Approximately half of academics and researchers are thus foreign nationals. This high number is partly due to the decision taken in 2015 to no longer finance doctoral students by means of scholarships, as is still the case in other non-university research institutes, but to offer them fixed-term contracts. By contrast, just one in ten academics and researchers at the mostly engineering-oriented institutes of the Fraunhofer-Gesellschaft comes from abroad (11%). For both the Helmholtz and Leibniz Associations, this figure is over one quarter (29% and 26% respectively).

D2.1 International academic staff at the four largest non-university research institutes, since 2011[1]



Source: Federal Statistical Office, statistics on non-university research institutes

International academic staff at NURI are mainly from European countries. EU countries account for 39% of international academics and researchers, the remaining European countries for 12%. Another large share, namely 32%, come from Asia. The dominance of academics and researchers from European countries at NURI corresponds to the origin of international academic staff at the universities, where more than half of academics and researchers are from Europe. These numbers only vary slightly across the various NURI. The largest proportion of academics and researchers from European countries can be found at the institutes of the Helmholtz Association (55%), while most academics and researchers from Asia (36%) work at the Fraunhofer-Gesellschaft.

> “ 39% of international academic staff in non-university research institutes come from EU countries and 32% from Asian countries, primarily China and India.

The key countries of origin are China and India, each with around 1,600 academics and researchers, and Italy in third place, with roughly 1,400 staff engaged at NURI in 2021. Other major countries are Russia (approximately 800), Spain, France and the US (roughly 700 each).

Footnotes

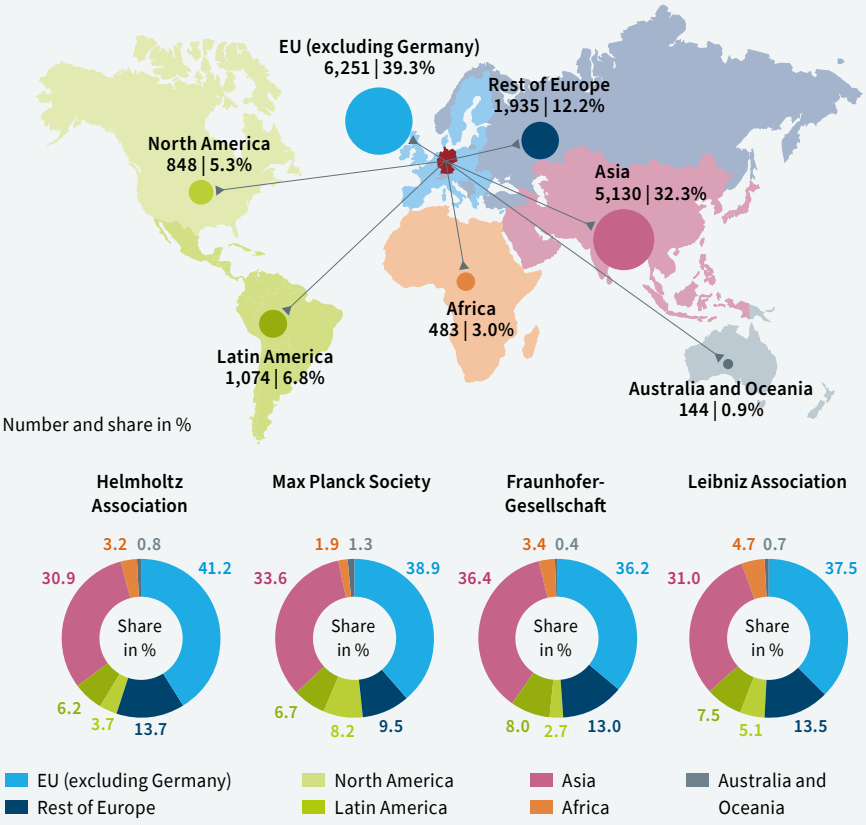
1 Data from the Federal Statistical Office on staff at non-university research institutes refer to reporting years (January-December) and not to academic years.

2 The data and statements refer solely to the four largest non-university German research institutes: the Helmholtz Association, the Max Planck Society, the Leibniz Association and the Fraunhofer-Gesellschaft.

3 In the official statistics on non-university research institutes, the origin of international staff is not broken down by more differentiated regions, but by continents.

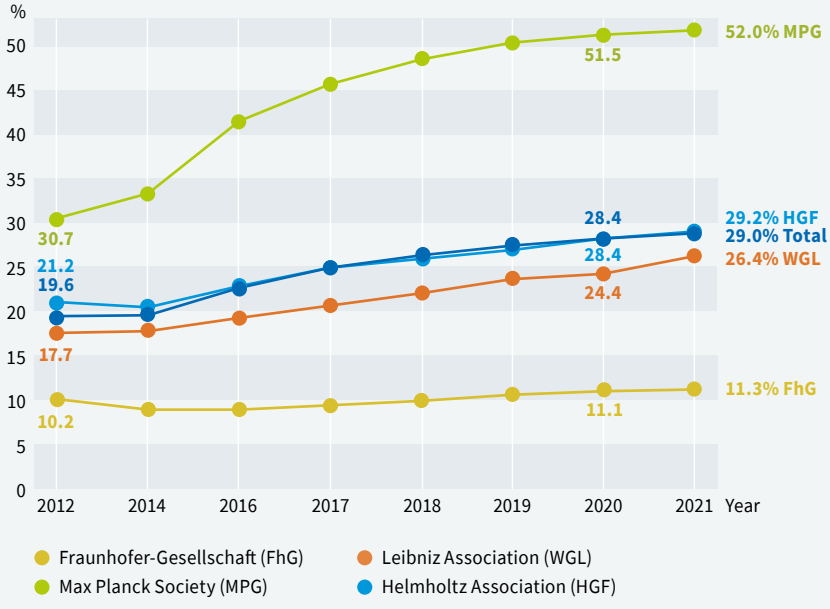
4 Deviations from 100% are due to rounding.

D2.2 International academic staff at the four largest non-university research institutes, by region of origin, in 2021[3, 4]



Sources: Federal Statistical Office, statistics on non-university research institutes; DZHW calculations

D2.3 Share of international academic staff of the total international academic staff at the four largest non-university research institutes, since 2012



Sources: Federal Statistical Office, statistics on non-university research institutes; DZHW calculations

2.2 Subject groups and qualifications

With a share of approximately 67%, the majority of international academic staff at non-university research institutes (NURI) can be assigned to the mathematics and natural sciences subject group. Most are physicists and biologists. 18% of international academics and researchers are employed in engineering, while medicine, social sciences and the humanities each account for 7%. The preponderance of international academic staff working in the natural sciences is in line with the general focus of the NURI. Only the institutes of the Fraunhofer-Gesellschaft are primarily oriented towards engineering.

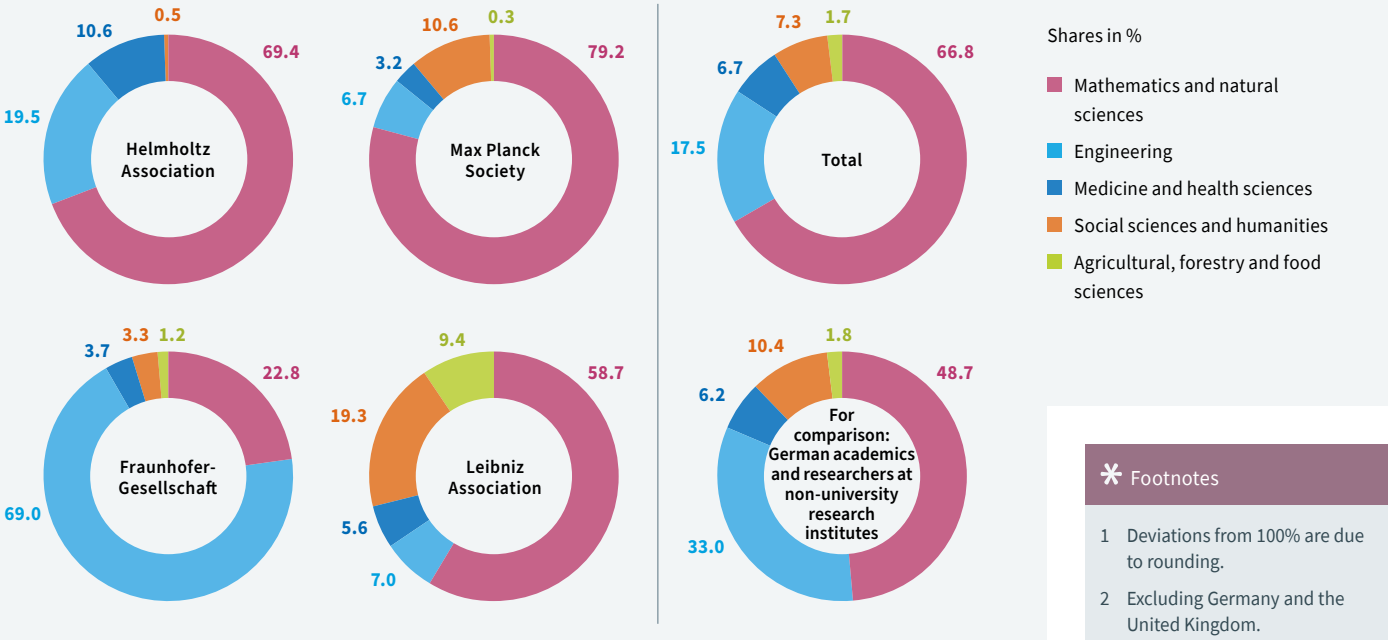
> “ 79% of international academic staff working at Max Planck Institutes are mathematicians or scientists.

The proportion of international academics and researchers working in mathematics and natural sciences is significantly higher than that of German staff (67% vs. 49%), whereas it is much lower in engineering (18% vs. 33%). At the level of the individual research institutes, however, these differences even out as they are due first and foremost to the lower proportion of foreign academics and researchers employed at the Fraunhofer-Gesellschaft (see pp. 94/95). Only the Helmholtz and Leibniz Associations report a slightly higher percentage of international than German academics and researchers in the field of mathematics and natural sciences.

The keen interest of international academics and researchers in scientific research at NURI is demonstrated not only by the large number of people engaged in this field, but also by the fact that these disciplines account for the highest share of the total staff (36%) compared to other subjects. Only medicine presents a similar figure of 31%. The relatively low proportion of foreign academics and researchers in engineering (18%) is quite surprising, given the high number of international bachelor’s, master’s and doctoral students on engineering programmes at German universities.

4% of the international academic staff at NURI are heads of research groups or heads of departments, while 29% hold posts requiring a doctorate and 67% are other academics and researchers. A comparison with German academic staff reveals a matching share among heads of research groups and heads of departments at 5%, while that of other academics and researchers is substantially larger at 81% and the share of posts requiring a doctorate considerably smaller at 14%. The pattern is similar at all research institutes. Worthy of note here is the exceptionally high proportion of international heads of research groups and heads of departments in the Leibniz Association (7%), whereas the share is particularly low in the Fraunhofer-Gesellschaft (1%). In both cases, however, these figures are in line with the corresponding percentages of German academics and researchers (12% and 2% respectively). A remarkable number of personnel hold posts requiring a doctorate, namely 35% each of the international

D2.4 International academic staff at the four largest non-university research institutes, by subject group, in 2021[1]



Sources: Federal Statistical Office, statistics on non-university research institutes; DZHW calculations

Footnotes

1 Deviations from 100% are due to rounding.

2 Excluding Germany and the United Kingdom.

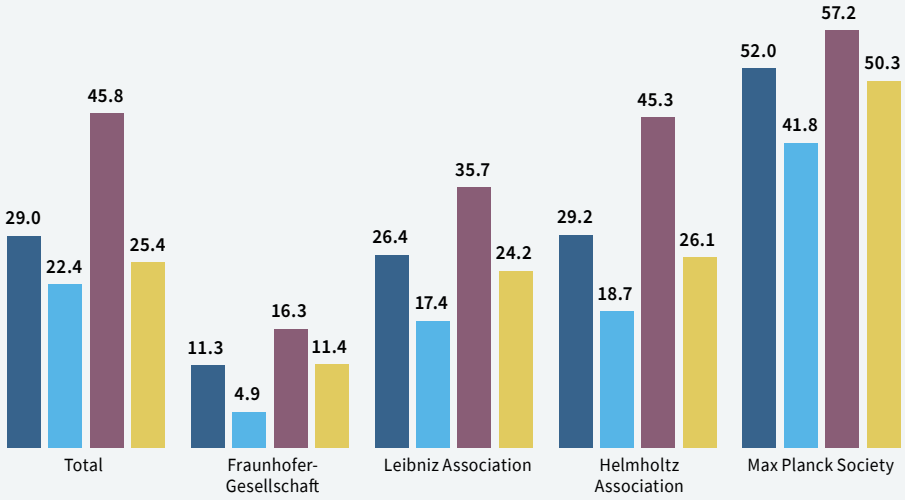
academic staff employed at the institutes of the Max Planck Society and the Leibniz Association.

> “ More than one fifth of senior management at non-university research institutes are foreign nationals.

Looking at the respective shares of international academic staff in all staff groups, it becomes clear that one in five research group heads or heads of department comes from abroad (22%). Furthermore, 46% of employees in positions requiring a doctorate and 25% of the other academics and researchers are foreign nationals. At the institutes of the Max Planck Society, these figures are higher for all staff groups: 42% of research group heads and heads of department, 57% of posts requiring doctorates and 50% of the remaining academics and researchers come from abroad. At the institutes of the Fraunhofer-Gesellschaft, by contrast, just 5% of the research group leaders and heads of department, 16% of employees in posts requiring a doctorate and 11% of the other academics and researchers are foreign nationals.

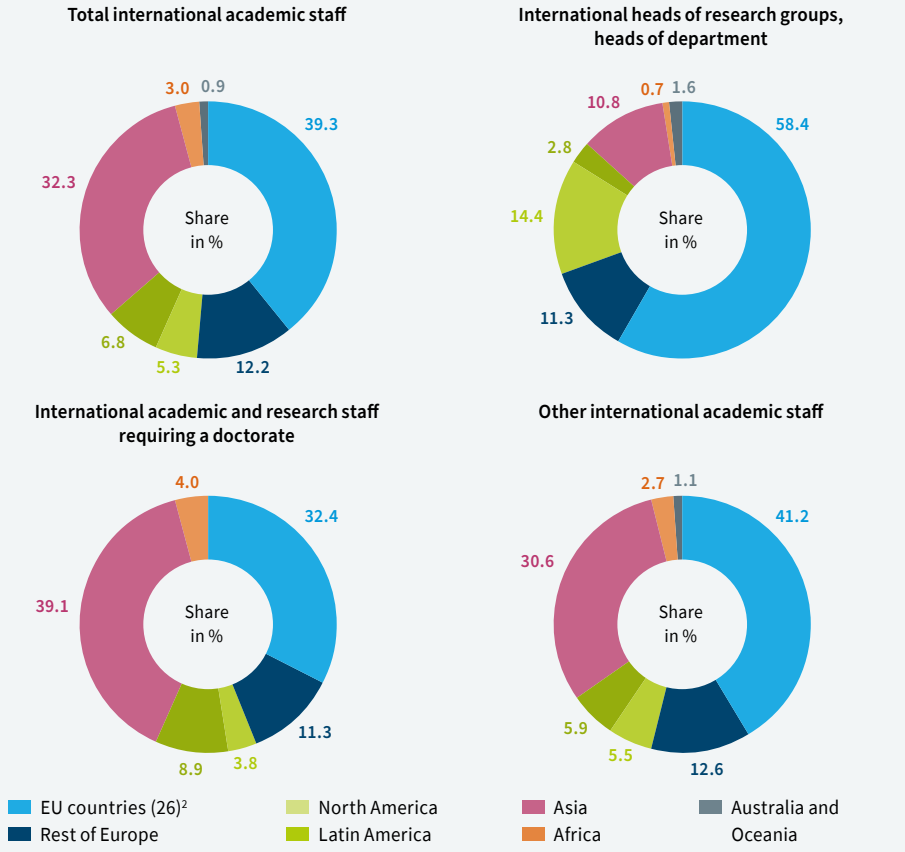
The majority of international research group heads and heads of department, namely 58%, are from EU countries, 14% from North America and 11% from Asia, while another 11% come from the rest of Europe. Among international academic staff requiring a doctorate, doctoral students from Asian countries represent the largest group (39%), followed by academics and researchers from EU countries (32%). Most of the remaining international academic staff also come from EU countries (41%) and Asia (31%).

D2.5 Share of international academic staff of the total international academic staff at the four largest non-university research institutes, by employment status, in 2021



Sources: Federal Statistical Office, statistics on non-university research institutes; DZHW calculations

D2.6 International academic staff at the four largest non-university research institutes, by employment status and region of origin, in 2021[1]



Sources: Federal Statistical Office, statistics on non-university research institutes; DZHW calculations

3 International guest researchers in Germany

3.1 Mobility trends, funding organisations and funded groups

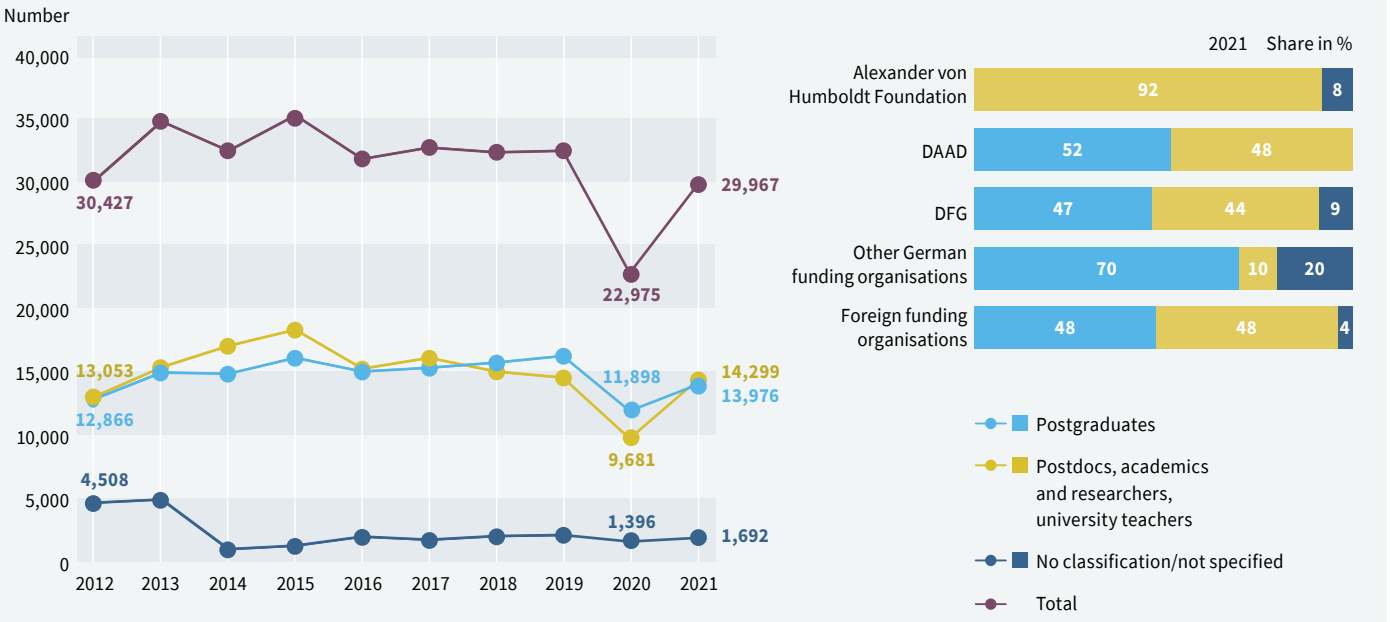
In 2021, domestic and foreign organisations funded around 30,000 visits by international guest researchers to Germany.[1, 2] Guest researchers are foreign nationals visiting Germany for a limited period without being contractually employed, yet receive financial support, and are active in teaching and research at universities or other research institutes. Although the data collected on mobility funding do not represent a complete analysis of German funding organisations, they cover the major part of sponsored visits undertaken by international guest researchers.[3] With regard to funding provided by foreign organisations, however, the data have so far been limited to a few countries and the Marie Skłodowska-Curie actions of the EU.

Compared to the previous year, the number of sponsored visits by international guest researchers has jumped sharply by 30%,[4] thereby almost cancelling out the year-on-year drop due to the pandemic. In 2021, visits by international guest researchers are thus just 9% below the level of pre-pandemic year 2019. Different developments are discernible in relation to the various funding organisations. Three large funding organisations are still the primary source of support for the vast majority of guest researchers' visits to Germany: the German Research Foundation (DFG), the German Academic Exchange Service (DAAD) and the Alexander von Humboldt Foundation (AvH). In 2021, the DFG alone sponsored 44% of all guest research visits, the DAAD 41% and the AvH 8%. Together, they contributed to the funding of 93% of all recorded visits. Moreover, the funding activities of the DFG rose by around 8% within one year, those of the AvH by 30%, while the DAAD sponsored a notable 76% more visits. The enormous jump in DAAD funding activities can be explained by the fact that, in 2021, the DAAD once again sponsored shorter visits abroad that were mainly impacted by the restrictions resulting from Covid-19. In comparison, the longer visits funded by the DFG and the AvH were less disrupted by the pandemic years.

> "The number of visits by international guest researchers in Germany is back up by 30% in 2021.

In 2021, approximately 5% of the visits undertaken by international guest researchers received support from a large number of other, smaller, German funding organisations. Although the scope of the funding activities of these organisations may not seem impressive, their contribution to international mobility should not be underestimated. Firstly, their activities reveal that numerous institutes in Germany play a role in subsidising the international mobility of academics and researchers. Secondly, these smaller institutions often focus on supporting specific areas of teaching and research, thereby creating a strong incentive for internationalisation in these fields. In 2021, inter alia, the German National Committee of the Lutheran World Federation/Bread for the World, the Konrad-Adenauer-Stiftung, the Katholischer Akademischer Ausländer-Dienst (scholarship organisation of the Catholic Church in Germany), the Baden-Württemberg Stiftung and the University of Münster stepped up their funding activities. Conversely, other organisations such as the Rosa Luxemburg Foundation, the Hanns Seidel Foundation, the Hans

D3.1 International guest researchers in Germany, by funded group, since 2012[1, 2]



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

Böckler Foundation and the Evangelisches Studienwerk were obliged to substantially reduce the number of funded visits abroad to some extent. Overall, however, the number of visits by international guest researchers sponsored by these organisations has increased by around 10% compared to the previous year.[4]

Foreign institutions' funding activities included in the survey cover roughly 2% of the visits of international guest researchers presented here. Year-on-year, the number of visits they sponsor has remained the same. Unlike the German funding organisations, the foreign institutions did not succeed in redeveloping their funding in 2021.

48% of all sponsored international guest researchers are academics and researchers with doctorates, including professors and experienced researchers, such as heads of research groups. A further 47% of funded visits were carried out by doctoral students and other postgraduates. This distribution of the funding activities among the different status groups of academics and researchers has essentially remained unchanged for several years, making it clear that, even during the pandemic, the various organisations have adhered to their longer-term strategy with regard to funding activities.

Sponsorship provided by the Alexander von Humboldt Foundation was reserved almost exclusively (92%) for experienced academics and researchers with doctorates visiting German universities and research institutes. In contrast, the DAAD supported visits by international postgraduates to a significant extent (52%), along with the DFG (47%).

D3.2 International guest researchers in Germany, by funding organisation, in 2021[2]

Funding organisations	Number
Key German funding organisations	
German Research Foundation (DFG)	13,236
German Academic Exchange Service (DAAD)	12,355
Alexander von Humboldt Foundation	2,275
Other German funding organisations	
Konrad Adenauer Foundation	333
Katholischer Akademischer Ausländerdienst	196
Gerda Henkel Foundation	172
German National Committee of the Lutheran World Federation/ Bread for the World	130
Friedrich Ebert Foundation	68
Hanns Seidel Foundation	66
Hans Böckler Foundation	56
Baden-Württemberg Stiftung	46
University of Münster	40
German Federal Environmental Foundation	36
Einstein Foundation Berlin	35
Friedrich Naumann Foundation for Freedom	33
Akademie Schloss Solitude	28
Herzog August Bibliothek Wolfenbüttel	28
Fritz Thyssen Foundation	28
Boehringer Ingelheim Fonds	26
Rosa Luxemburg Foundation	26
IASS Institute for Advanced Sustainability Studies[5,6]	23
Study Foundation of the Berlin House of Representatives	21
Evangelisches Studienwerk	18
Heinrich-Böll-Stiftung	15
Klassik Stiftung Weimar	14
Alfried Krupp Institute for Advanced Study	8
Heinrich Hertz-Stiftung – MKW NRW	5
Stiftung Charité	5
Alfred Toepfer Stiftung F.V.S.	3
ZEIT-Stiftung Ebelin und Gerd Bucerius	3
DECHEMA Research Institute	2
Foreign funding organisations and programmes	
Marie Skłodowska-Curie actions of the EU	397
Swiss National Science Foundation	126
Japan Society for the Promotion of Science	81
German-American Fulbright Commission (US)	25
The Austrian Science Fund (FWF)	4
Natural Sciences and Engineering Research Council of Canada	4
Sources: data provided by funding organisations; DZHW survey	**29,967**

Sources: data provided by funding organisations; DZHW survey

Footnotes

1 The statistics on foreign guest researchers in Germany on pp. 98–101 do not contain any information on the major non-university research institutes: Helmholtz Association, Max Planck Society, Leibniz Association and Fraunhofer-Gesellschaft. See pp. 102/103.

2 Not including Erasmus visits to Germany undertaken by international academics and researchers.

3 No information is available on university funding of visits by international guest researchers, for example.

4 This figure was calculated without the number of visits funded by the Alfried Krupp Institute for Advanced Study, whose data were recorded for the first time in 2021.

5 Figure estimated.

6 As of 2023, Research Institute for Sustainability – Helmholtz Centre Potsdam.

3.2 Regions and countries of origin and subject groups

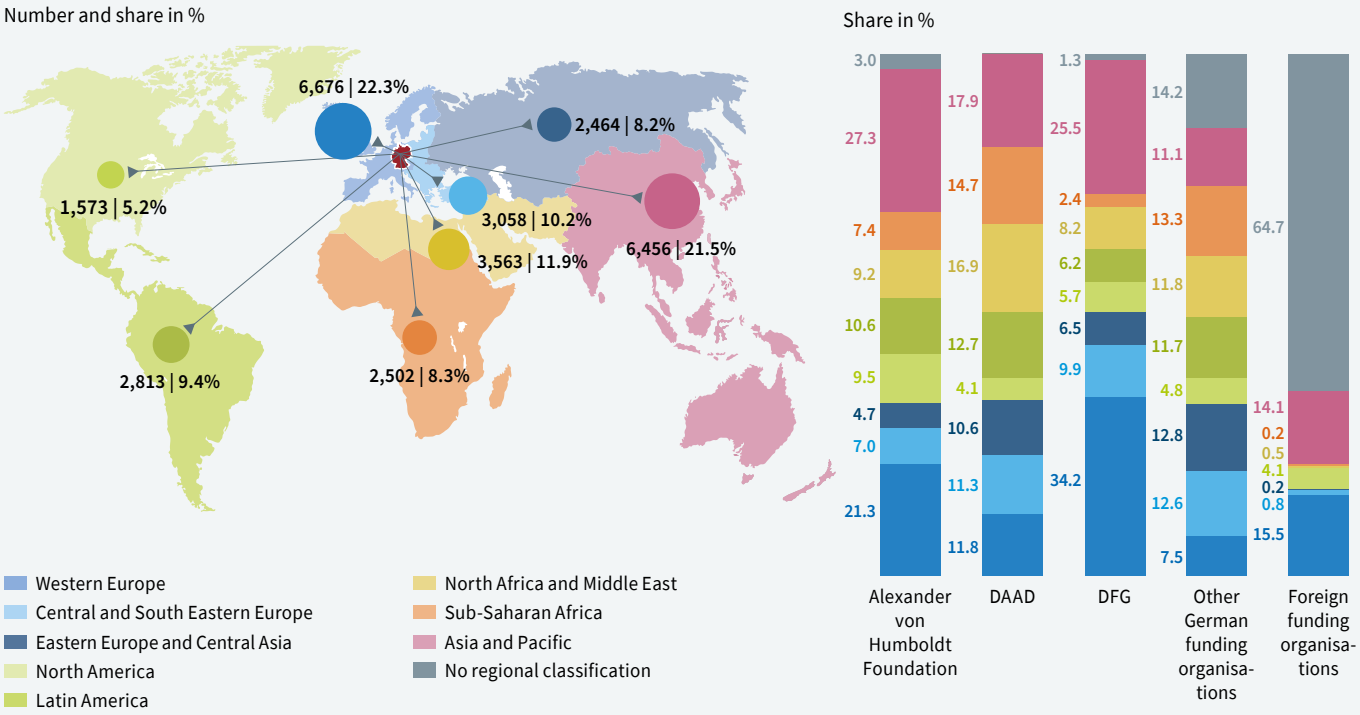
In 2021, Western Europe and Asia and Pacific are the key regions of origin for international guest researchers, whose visits to Germany were sponsored by domestic and foreign funding organisations. 22% of the funded academics and researchers came from each of these regions. Other major regions of origin are North Africa and Middle East (12%), Central and South Eastern Europe (10%), and Latin America (9%). The percentages for Eastern Europe and Central Asia plus Sub-Saharan Africa (8% each) and North America (5%) are lower. The frequency of visits by academics and researchers from Western Europe and Asia and Pacific for research and teaching purposes in Germany corresponds to the preponderance of these regions of origin among international academics and researchers employed at German universities or non-university research institutes (see pp. 88/89 and 95/95). The mobility flows of Western European and Asian guest researchers to Germany are not only a consequence of demographics – that is, the high number of university-trained academics and researchers in these regions – they are also the result of many years of economic and academic collaboration, including alliances between German universities and research institutes. The shares of the various regions of origin have not changed substantially compared to previous years.

> “ India is the key country of origin in 2021 with approximately 2,100 guest researchers.

The individual funding organisations are distinguished by their different regional emphases.[1] The DFG's shares of sponsored guest researchers from Western Europe (34%) and Asia and Pacific (26%) are particularly remarkable. The Alexander von Humboldt Foundation also subsidises an above-average proportion of academics and researchers from Asia and Pacific (27%). In contrast, support from the DAAD and the smaller German funding organisations is more evenly spread across the various regions of origin.

For the first time, India is the frontrunner among the key countries of origin with 2,100 guest researchers, followed by China and Italy. In 2021, around 2,000 and 1,800 funded academics and researchers came from these countries respectively. Compared with 2020, the number of guest researchers from India increased by 33%, from China by 11% and from Italy by 26%. Nevertheless, these countries are still not back to the levels of the pre-pandemic year 2019. Other major countries of origin are the US, Russia, Iran, Spain and Brazil. However, there has been a noticeable surge in the number of guest academics and researchers from the US and Brazil (37% each) in particular.

D3.3 International guest researchers in Germany, by region of origin and funding organisation, in 2021[1, 2]



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

The largest single group of international guest researchers, namely 42%, can be found in the fields of mathematics and natural sciences. The humanities (14%), engineering and law, economics and social sciences (13% each) trail far behind, while medicine and health sciences (7%), agricultural, forestry and food sciences, and veterinary medicine (3%), plus art and art history (2%) only play a subordinate role. The dominance of the natural sciences among international guest researchers corresponds to the importance of this subject area among foreign academics and researchers who are contractually employed at German universities or non-university research institutes. The only striking feature is the disproportionately high share of guest researchers representing the humanities (see pp. 90/91 and 96/97).

Clear distinctions can be drawn between the various funding organisations in terms of the specialist areas of the sponsored academics and researchers. At the DFG, the share of academics and researchers in the natural sciences, 64%, is remarkably high. By contrast, the smaller German funding organisations typically support the humanities, as well as law, economics and social sciences (28% each) to a greater degree. At 16%, the foreign funding organisations subsidise the highest proportion of engineering academics and researchers.

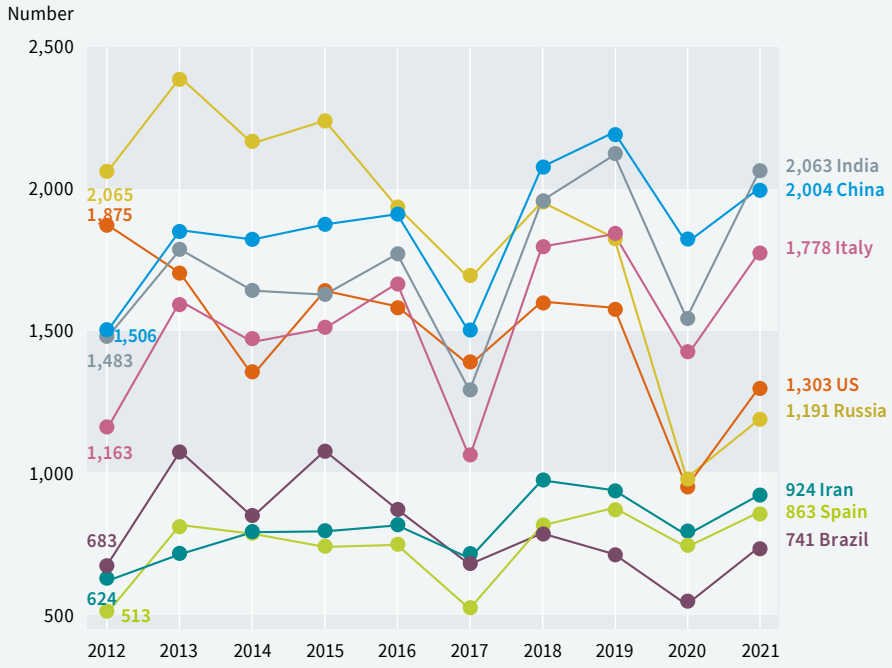
Footnotes

1 With the exception of EU funding under the Marie Skłodowska-Curie actions, foreign funding organisations generally sponsor visits to Germany by guest researchers from their respective countries of location.

2 Total funded international guest researchers in Germany: 29,967 (including 862 guest researchers who cannot be assigned to any region of origin).

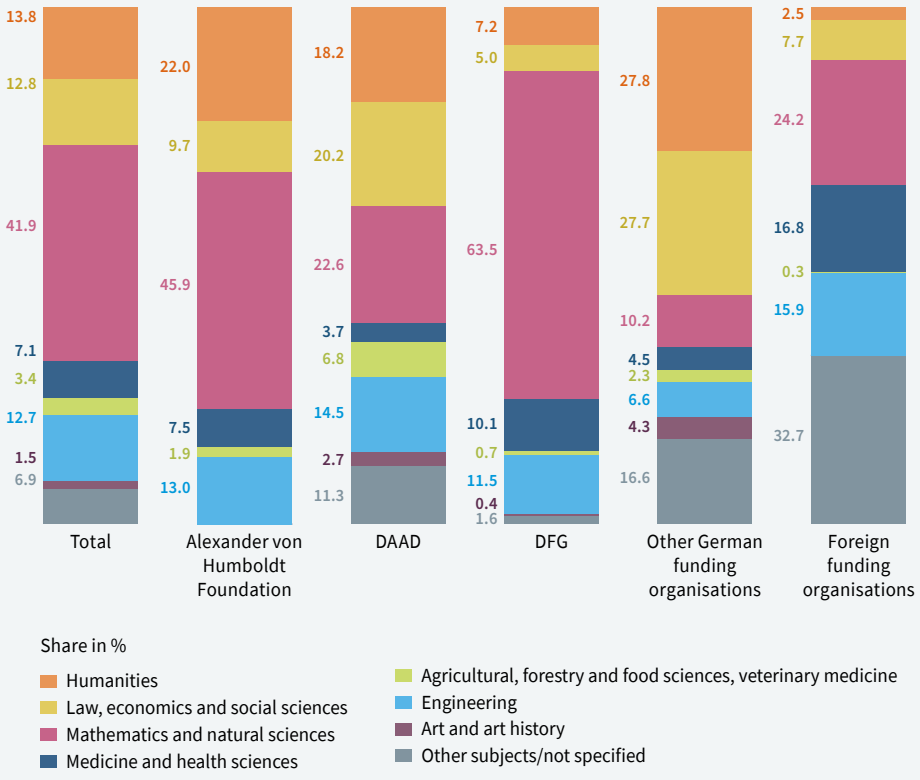
3 Deviations from 100% are due to rounding.

D3.4 International guest researchers in Germany, by key countries of origin, since 2012



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

D3.5 International guest researchers in Germany, by funding organisation and subject group, in 2021[3]



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

3.3 International guest researchers at non-university research institutes

Internationalisation processes at the non-university research institutes (NURI) are not limited to the employment of foreign academics and researchers, but also include temporary research visits by guest researchers from other countries. Some of these visits are sponsored by institutions other than NURI, whereas another significant percentage of these temporary visits are facilitated by NURI themselves by awarding scholarships or other funding. Data on international guest researchers whose visits are financed by the NURI have improved considerably in recent years. Above all, the Max Planck Society and the Helmholtz Association – and the Leibniz Association to a lesser extent – now have robust data on funded visits by international guest researchers to their institutes or on the projects they undertake. Only the Fraunhofer-Gesellschaft has not yet provided information of this kind.

> “ In 2021, the Max Planck Society, the Helmholtz Association and the Leibniz Association funded a total of 14% more visits to Germany by international guest researchers compared to the previous year.

In 2021, the Max Planck Society and the Helmholtz and Leibniz Associations together funded the visits to Germany of around 7,200 international guest researchers. Compared to the previous year, this equates to roughly 800 or 14% more sponsored visits. Nevertheless, this rise by no means compensates for the dramatic fall in the number of grants for approximately 5,000 guest researchers between 2019 and 2020.[1] The Helmholtz Association accounts for approximately 4,500 (+35%), the Leibniz Association for 1,700 (–8%) and the Max Planck Society for around 1,000 (–13%) guest researchers.[2] With regard to contractually employed academic staff, this means that, in 2021, the Max Planck Society funded one guest researcher for every ten salaried researchers, while the Helmholtz Association funded one guest researcher for every five salaried researchers.[3] The ratio at the Leibniz Association is one to six.

In 2021, all three research institutes recorded the region of origin of their international guest researchers. Both the Helmholtz and the Leibniz Associations tend to sponsor academics and researchers from European countries. In total, 39% and 38% respectively of their guest researchers were from EU countries, with 14% and 18% respectively from other European countries. Academics and researchers from Asia also figured prominently, representing 29% and 15% respectively of all guest researchers receiving funding. China (17%) topped the list of countries at the Helmholtz Association, followed by India (8%), Italy, France and Sweden (6% each). The key countries at the Leibniz Association are the US (14%), France (11%), China (9%) and the United Kingdom (8%).

The Max Planck Society also frequently sponsored temporary visits by guest researchers from European countries, with 26% from EU countries and 14% from other European countries. However, the funding extended to academics and researchers from Asia, accounting

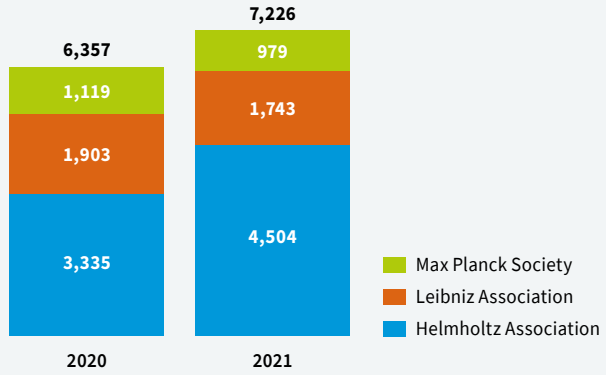
D3.6 International guest researchers whose visits were funded by the Helmholtz and Leibniz Associations and the Max Planck Society, by region and country of origin, in 2021

	Helmholtz Association	Leibniz Association	Max Planck Society
Region of origin	Share in %		
EU (excluding Germany)	39.0	38.4	25.8
Rest of Europe	13.8	18.0	14.4
North America	3.5	15.1	9.4
Latin America	5.1	4.6	10.2
Asia	29.1	15.2	31.5
Africa	8.3	8.2	7.6
Australia and Oceania	0.6	0.4	1.1
Not specified	0.6	0.0	0.0
Total	**100.0**	**100.0**	**100.0**

Helmholtz Association			Leibniz Association			Max Planck Society		
Countries of origin	Number	Share in %	Countries of origin	Number	Share in %	Countries of origin	Number	Share in %
China	745	16.5	US	237	13.6	China	163	16.6
India	338	7.5	France	189	10.8	India	84	8.6
Italy	272	6.0	China	158	9.1	US	79	8.1
France	254	5.6	UK	138	7.9	Italy	52	5.3
Sweden	246	5.5	Italy	92	5.3	France	41	4.2
Other countries	2,649	58.8	Other countries	929	53.3	Other countries	560	57.2
Total	**4,504**	**100.0**	**Total**	**1,743**	**100.0**	**Total**	**979**	**100.0**

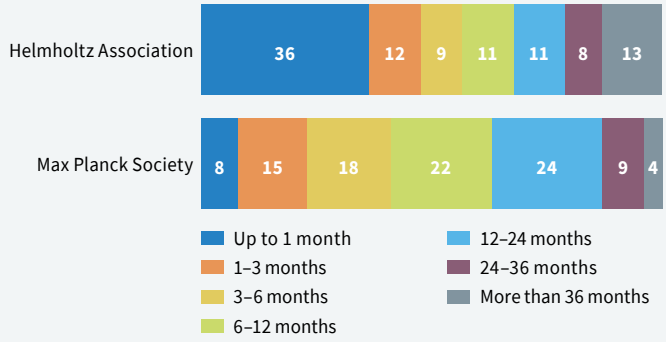
Sources: data provided by non-university research institutes, DZHW survey; DZHW calculations

D3.7 International guest researchers whose visits were funded by the Helmholtz and Leibniz Associations and the Max Planck Society, in 2020 and 2021



Sources: data provided by non-university research institutes, DZHW survey; DZHW calculations

D3.8 International guest researchers whose visits were funded by the Helmholtz Association and the Max Planck Society, by visit duration, in 2021



Share in %

Sources: data provided by non-university research institutes, DZHW survey; DZHW calculations

for 33%, is equally important. 10% of the guests hailed from Latin America and 9% from North America. China is the leading country of origin with 17% of all guest academics and researchers, followed by India (9%) and the US (8%).

The Max Planck Society and the Helmholtz Association have also published data on the subject groups of international guest researchers in 2021. In both research institutes, the largest group of international guest researchers were mathematicians and scientists, making up 57% and 44% respectively. Meanwhile, at the Max Planck Society, 21% were active in medicine and health sciences and 19% in the disciplines of law, economics and social sciences. Thus, compared to the international academics and researchers contractually employed by the Max Planck Society, the subject groups of medicine and health sciences plus law, economics and social sciences play a much more significant role for guest researchers, while mathematics and natural sciences figure less prominently (see pp. 96/97).

Information on visit duration is also available for the Max Planck Society and the Helmholtz Association. In 2021, the Helmholtz Association chiefly funded shorter visits by international guest researchers – some 57% of visits were six months or less – whereas longer visits played a central role at the Max Planck Society. 46% of the guest visits it sponsored lasted between six months and two years.

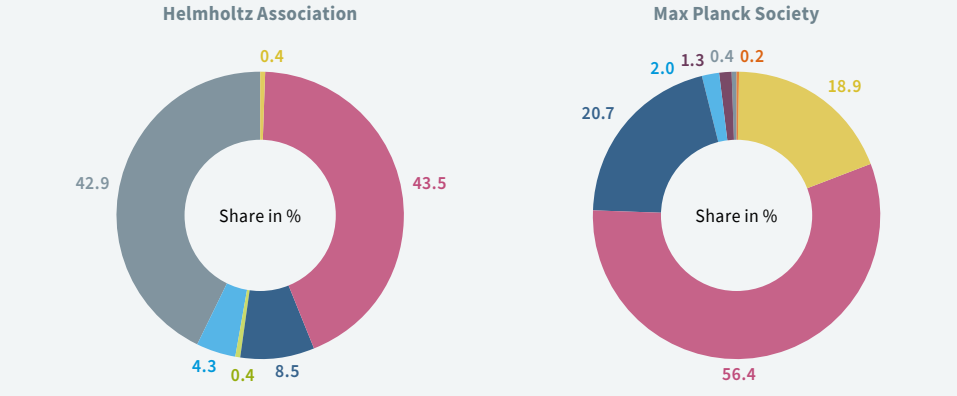
Footnotes

1 The 2021 funding data for non-university research institutes, particularly the Max Planck Society, can only be compared to a limited extent with the figures for years prior to 2020 due to changes in the way in which they are collected.

2 For 2021, the Max Planck Society indicates an additional 2,100 visits or thereabouts by guest researchers, which were financed by other institutes (whether international or German).

3 When evaluating these data, it should be noted that, since 2015, the Max Planck Society has given doctoral students (including international doctoral candidates) fixed-term contracts, thus they are no longer financed by scholarships.

D3.9 International guest researchers whose visits were funded by the Helmholtz Association and the Max Planck Society, by subject group, in 2021



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

3.4 Erasmus guest lecturers

Temporary visits abroad by guest lecturers also receive funding under the European Union's Erasmus+ Programme. These guest lectureships in Europe can last between two and sixty days. Funding includes teaching visits by academic staff and professors from universities and research institutes as well as business entrepreneurs. Participants in this programme do not necessarily have to be nationals of the sending country and foreign academic staff at universities in the sending country can also take part. It is therefore possible for some Erasmus guest lecturers in Germany to be German citizens, although this percentage is likely to be very small.

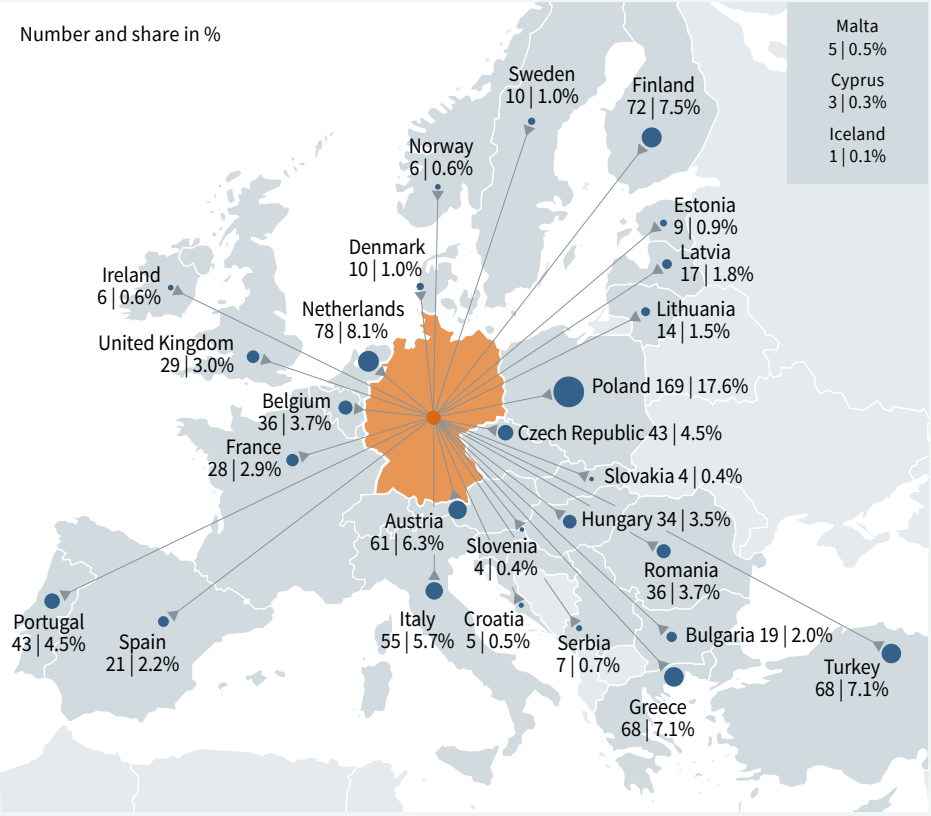
> "The number of Erasmus guest lecturers from Turkey in 2021 was five times that of 2020.

In the 2021 Erasmus year[1], a total of 961 Erasmus guest lecturers came to Germany on teaching visits, a year-on-year increase of 100 or 12%. However, this uptick does very little to offset the steep decline in Erasmus visits by guest lecturers in Germany in 2020, the first year of the pandemic. The 2021 figures are still a whopping 62% below those for 2019.

32% of Erasmus guest lecturers – the largest group – came from countries in Central Eastern Europe, 22% were from South Eastern Europe and 18% from Western Europe. Southern Europe and Northern Europe reported shares of guest lecturers of 13% and 10% respectively, with 6% from Central Western Europe. Despite Covid-19, there has been no significant change in the size or respective proportions of the groups from these regions. Poland is the key country of origin for Erasmus guest lecturers in Germany, alone accounting for 18%. The Netherlands and Finland lag behind in second and third place, each with 8%. Turkey and Greece (7% each) also continue to play a crucial role, along with Austria (6%). While the number of participants from Turkey (+423%) and Poland (+47%) increased dramatically again compared to the previous year, the numbers fell in the Netherlands (–28%), for example, over the same period.

With a share of 33%, most foreign Erasmus guest lecturers in Germany are found in the arts and humanities.[2] 18% belong to the group of business, administration and law, while a further 13% represent

D3.10 Erasmus guest lecturers in Germany, by region and country of origin, in 2021[1]



Regions of origin	Number	Share in %
Central Eastern Europe	306	31.8
Southern Europe	124	12.9
Western Europe	177	18.4
South Eastern Europe	194	20.2
Northern Europe	99	10.3
Central Western Europe	61	6.3
Total	**961**	**100.0**

Source: DAAD, Erasmus statistics

Footnotes

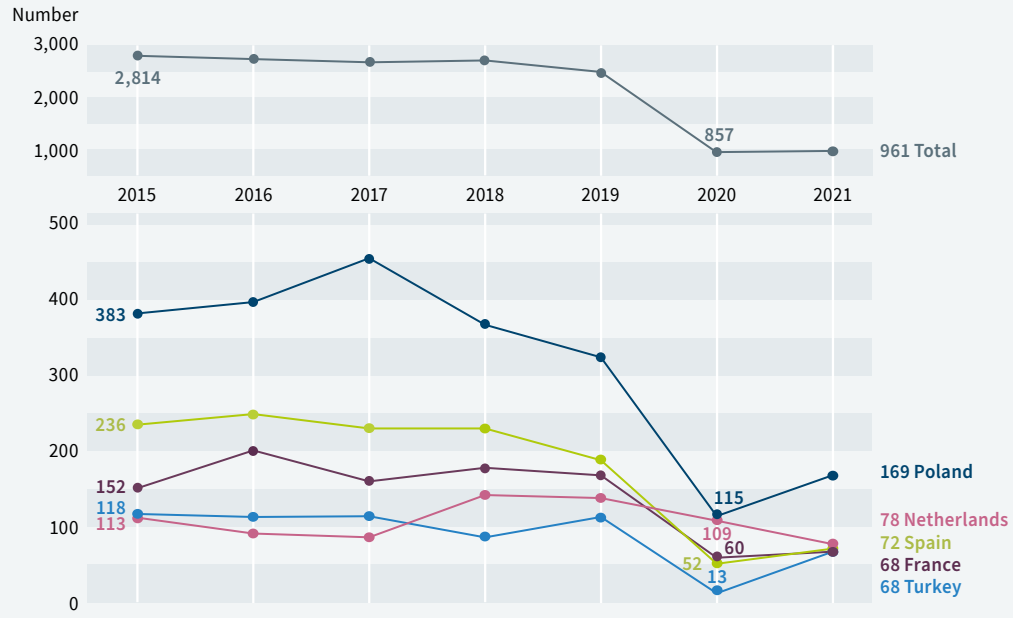
1 Erasmus statistics until 2014: the Erasmus year starts in the winter semester and ends in the summer semester of the following year. 2014 = WS 2013/14 + SS 2014. New Erasmus statistics since 2015: the Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2021 = 1 June 2020 to 31 May 2022.

2 Data on Erasmus guest lecturers by subject group are only available using the ISCED classification system.

engineering, manufacturing and construction. Social sciences, journalism and information make up 9%, while education and the natural sciences, mathematics and statistics account for 7% each. By contrast, the other subject areas are relatively inconsequential. Compared to German Erasmus guest lecturers who venture abroad for a temporary visit, there are no significant differences in the distribution of subject groups (see pp. 118/119).

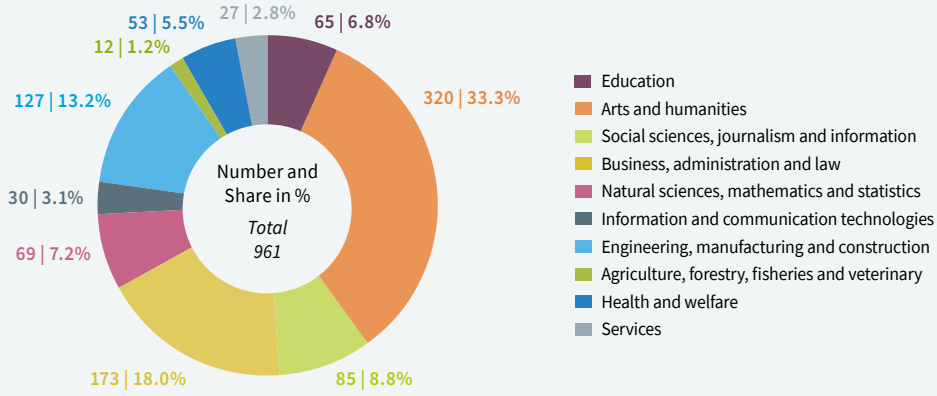
Although Erasmus guest lectureships can last up to two months, lecturers in Germany only stayed between five and six days on average. This figure is the same as the previous year. The longest average visit can be found among Erasmus guest lecturers from Slovenia (15 days) and Ireland (12 days); however, it should be noted that these countries report single-digit participant numbers. By contrast, guest lecturers from the Netherlands, Austria and Denmark spent an average of just three days in Germany.

D3.11 Erasmus guest lecturers in Germany, by key countries of origin, since 2015



Source: DAAD, Erasmus statistics

D3.12 Erasmus guest lecturers in Germany, by subject group, in 2021[2]



Source: DAAD, Erasmus statistics

D3.13 Erasmus guest lecturers in Germany, by country of origin and average visit duration, in 2021

Countries of origin	Duration Ø Days	Countries of origin	Duration Ø Days	Countries of origin	Duration Ø Days
Slovenia	15.3	Spain	5.2	Estonia	4.3
Ireland	12.0	Portugal	5.2	Cyprus	4.3
Sweden	7.0	Croatia	5.1	Serbia	3.9
Czech Republic	7.0	United Kingdom	5.1	Norway	3.8
Iceland	6.2	Slovakia	5.0	Italy	3.8
Romania	6.1	Finland	4.9	Malta	3.4
Greece	5.7	Poland	4.8	Denmark	3.2
Hungary	5.3	Lithuania	4.6	Austria	3.1
France	5.3	Turkey	4.5	Netherlands	2.8
Bulgaria	5.2	Belgium	4.3	**Total**	**5.7**

Source: DAAD, Erasmus statistics

1 German academics and researchers at foreign universities

1.1 Contractually employed academic staff

Only very few countries currently record the number, origin and status of international academics and researchers employed at their universities. Data of this kind are only available to some extent for the United Kingdom, the Netherlands, Austria and Switzerland. Data are missing for countries such as Sweden, France, Australia or even Spain, the US and Canada, where it may be assumed that there are a great many German academics and researchers (see pp. 108/109), given the large number of doctoral students from Germany. Moreover, there are considerable differences in how the countries listed above collect data.[1]

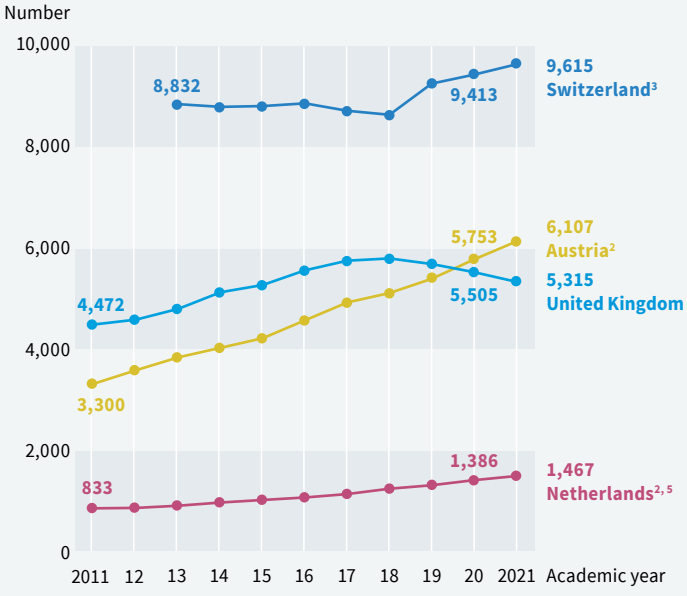
> “ Approximately 6,100 German academics and researchers are employed at Austrian universities.

Many factors determine whether the number of international academics and researchers working in a country is large or small. These factors include the size, attractiveness and structure of the science and higher education systems; access and employment opportunities, including the development of academic labour markets, as well as cultural and linguistic aspects. In the countries covered here, by far the most German academics and researchers are employed at universities in neighbouring Switzerland. Numbering approximately 9,600 in 2021, the vast majority of over 80% work at universities in the German-speaking cantons. Universities in Austria come second, with 6,100 German academics and researchers, followed – at some distance – by the United Kingdom, with roughly 5,300 German academics and researchers. Its direct proximity to Germany and a common language are likely to be important factors in Austria’s attractiveness. In 2021, roughly 1,500 German academics and researchers were working at universities in the Netherlands.

While the number of German academics and researchers at Swiss universities rose noticeably between 2016 and 2021, namely by 9% overall, the United Kingdom saw a downturn during the same period (–8%), particularly since the peak in 2018, following steady increases for many years. This may be a consequence of the United Kingdom’s withdrawal from the European Union. On the other hand, the numbers of German academics and researchers at both Austrian and Dutch universities have shot up by 34% and 40% respectively over the last five years. More German academics and researchers are now currently employed at universities in Austria than in the United Kingdom.

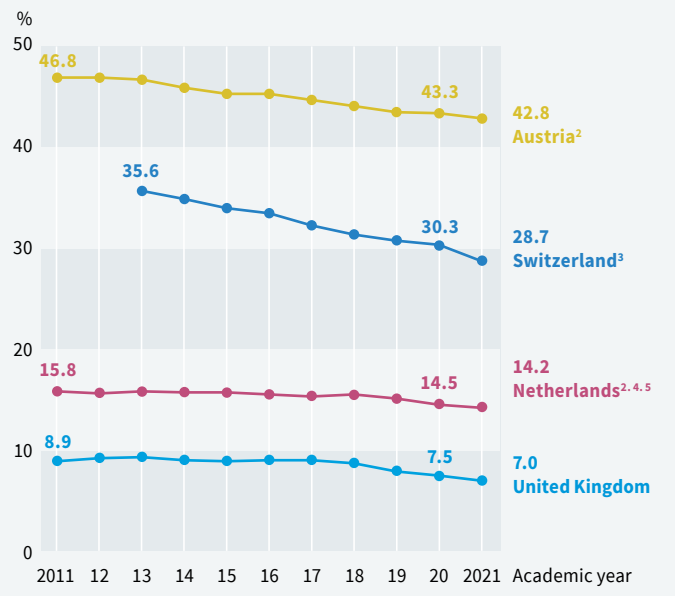
In addition to the number of German academics and researchers at universities in other countries, their share of all international academics and researchers is also a revealing criterion for their success on academic labour markets. The highest proportion of German academics and researchers (43%) is found at Austrian universities, where they account for 14% of all academics and researchers. However, since 2016, they have dropped back by two and a half percentage points as a proportion of all international academics and researchers.

E1.1 German academic staff at universities in selected host countries, since 2011



Sources: data provided by the respective statistical offices

E1.2 Share of German academic staff of the total international academic staff at universities in selected host countries, since 2011



Share in %

Sources: data provided by the respective statistical offices; DZHW calculations

In Switzerland, too, German academics and researchers account for a substantial share (29%), although this figure has also declined by around five percentage points since 2016. They thus represent 13% of all academics and researchers at Swiss universities. Furthermore, 14% of all international academics and researchers at universities in the Netherlands and 7% at universities in the United Kingdom are German nationals.

The number of German professors abroad corresponds to that of German academics and researchers. For 2021, Switzerland leads the field with 1,282 German professors, followed by Austria with 939 and the United Kingdom with 820 (2018). Some 235 German professors teach and conduct research at Dutch universities. All countries considered here have seen an increase in this regard since 2016. The number of German professors rose dramatically at universities in the Netherlands, at +47%.

> “The number of German professors at universities in the Netherlands soared by 47% between 2016 and 2021.

Furthermore, in each of the above countries, the share of German professors also exceeds that of German academics and researchers. Professorships advertised there are evidently very attractive to German academics and researchers, who can hold their own against international competition. German professors make up the highest share of all international professors in Austria, at 70%, and 44% in Switzerland. Lower figures can be observed in the Netherlands (29%) and the United Kingdom (15%). While this share has dropped by about two percentage points at universities in both Austria and Switzerland over the last five years, it has scarcely fluctuated at universities in the Netherlands.

Footnotes

1 Some figures are only available for universities but not for other types of higher education institutions; moreover, the understanding of the terms “academic and researcher” and “professor” differs considerably.

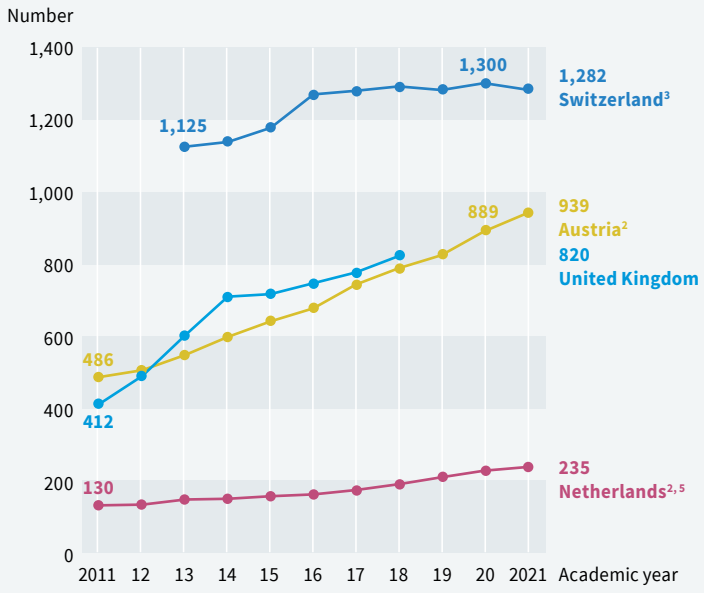
2 Data from the Netherlands and Austria refer to universities only.

3 Data do not specify members of university administration.

4 Proportion of German academics and researchers of all international academics and researchers at Dutch universities including contractually employed doctoral students.

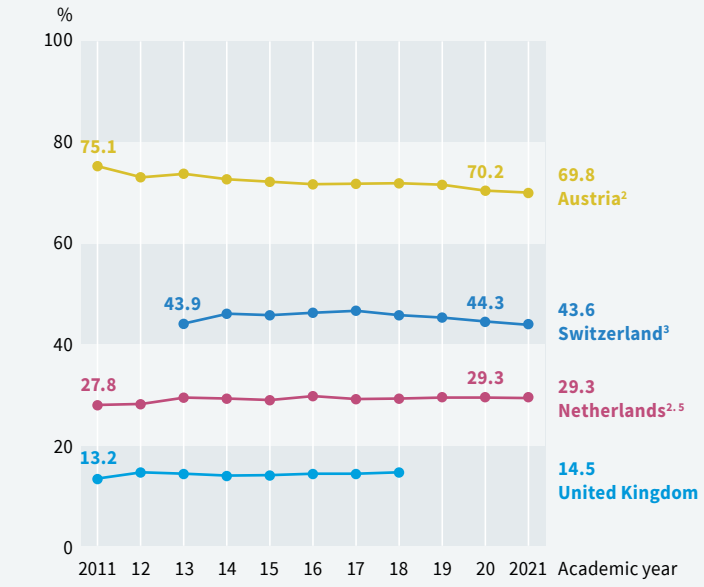
5 Not including information from seven of the eight medical training centres in the Netherlands, plus estimated figures for Utrecht University (2016–2021), Vrije Universiteit Amsterdam (2019–2021), the University of Amsterdam (2017) and the Open Universiteit (2021).

E1.3 German professors at universities in selected host countries, since 2011



Sources: data provided by the respective statistical offices

E1.4 Share of German professors of all international professors at universities in selected host countries, since 2011



Share in %

Sources: data provided by the respective statistical offices; DZHW calculations

1.2 Doctoral students

Overall, approximately 14,300 German doctoral students were documented at foreign universities for 2020/21.[1] This figure roughly corresponds to that of previous years. Although this does not cover all German doctoral students, it includes the majority. Of the key countries in which a significant number of German students are enrolled at universities, relevant data are only missing for China. Most German doctoral students were enrolled at universities in Switzerland (2021: around 3,400), Austria (2019: around 2,300), the United Kingdom (2020: around 1,900) and the US (2021: around 1,200). German doctoral candidates in Switzerland alone account for 24% of all German doctoral students abroad. The regional and linguistic proximity to Germany, excellent conditions for research at renowned universities and attractive remuneration are likely to be the most important factors in Switzerland's popularity as a host country for German doctoral students. The four countries at the top of the doctoral ranking together account for no less than three fifths (63%) of all German doctoral students abroad. Also of no small importance is the Netherlands, with around 700 German doctoral students, Sweden and Australia with around 500 doctoral students each, as well as France and Spain, with around 400 doctoral students each. In total, 81% of all German doctoral students abroad are based in these nine countries, with the remaining 19% spread across another 28 countries.

> "49% of all German students in Australia are studying for a doctorate.

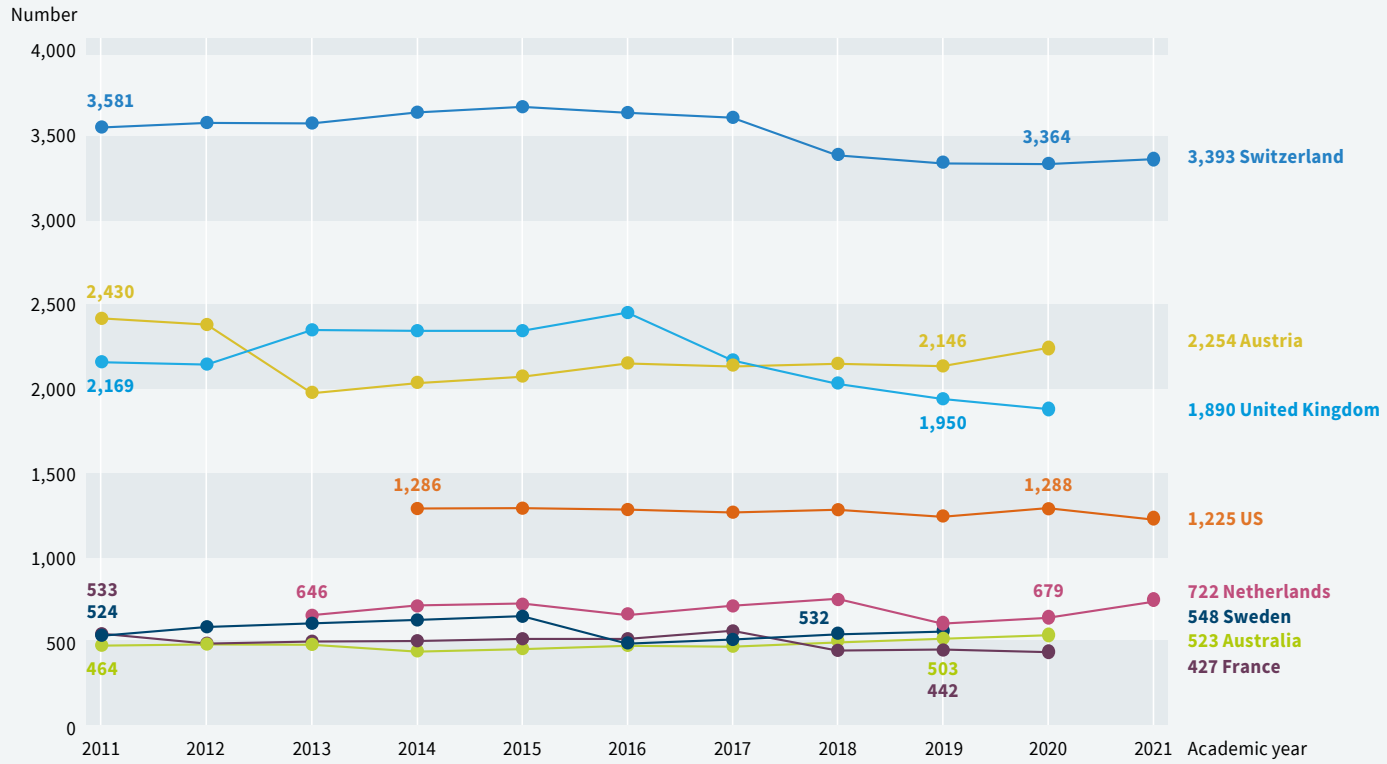
Broken down by region, the overwhelming majority (78%) of doctoral students from Germany conduct research in Western Europe, with 10% in North America, 6% in Central and South Eastern Europe and 4% in Australia and Oceania. The regional distribution of German doctoral candidates abroad thus closely resembles the distribution of all German students abroad. Here again, Switzerland, Austria, the United Kingdom and the US are among the most popular countries (see pp. 74/75). It can therefore be assumed that a fair number of German students who are awarded a master's degree abroad remain at the

E1.5 German doctoral students at universities in selected host countries, in 2020/2021[1]

Host countries	Reference year	Number	Share of all German doctoral students in %	Share of all German students in the respective country in %
Switzerland	2021	3,393	24.3	27.4
Austria	2020	2,254	16.1	6.7
United Kingdom	2020	1,890	13.5	14.9
US	2021	1,225	8.8	13.2
Netherlands	2021	722	5.2	2.9
Sweden	2019	548	3.9	26.2
Australia	2020	523	3.7	48.5
France	2020	427	3.1	11.2
Spain	2020	394	2.8	19.1
Denmark	2019	341	2.4	12.2
Canada	2019	264	1.9	25.3
Czech Republic	2020	243	1.7	25.5
Norway	2020	201	1.4	31.5
Finland	2020	172	1.2	22.6
Slovakia	2019	171	1.2	21.9
Italy	2019	160	1.1	10.4
Ireland	2020	144	1.0	21.3
New Zealand	2020	103	0.7	45.6
Turkey	2020	97	0.7	2.3
Portugal	2020	87	0.6	5.0
Liechtenstein	2020	83	0.6	37.7
Japan	2019	75	0.5	9.0
Hungary	2021	66	0.5	1.9
Bulgaria	2021	65	0.5	3.8
Romania	2021	59	0.4	3.3
Israel	2019	54	0.4	23.1
Poland	2020	39	0.3	2.6
Belgium	2020	38	0.3	9.2
Latvia	2021	28	0.2	2.8
Iceland	2019	27	0.2	17.4
Estonia	2019	24	0.2	32.9
Brazil	2019	18	0.1	6.8
Russia	2019	16	0.1	6.3
Greece	2019	10	0.1	0.9
Lithuania	2021	7	0.1	1.2
Total		**13,968**		**10.1**

Sources: German Federal Statistical Office, "Deutsche Studierende im Ausland" survey; OECD; US Department of Homeland Security, SEVIS data (Student and Exchange Visitor Information System); DZHW calculations

E1.6 German doctoral students abroad, by selected host countries, since 2011[1]



Sources: Federal Statistical Office, "Deutsche Studierende im Ausland" survey; US Department of Homeland Security, SEVIS data (Student and Exchange Visitor Information System)

same university, or at least in the same country, for their doctorate. One exception is the Netherlands, where a large number of German students enrol at universities, but not for a doctorate. One reason for this is probably that they are mainly students on bachelor's programmes, while German nationals make up only a comparatively small percentage of master's students in the country (see Fig. C1.6 on p. 77).

In addition to the number of German doctoral students at universities in other countries, considering German doctoral candidates as a share of all German students and doctoral students in a given country also sheds light on their geographical distribution, with other countries coming to the fore: Australia (49%) is in first place, followed by New Zealand (46%), Liechtenstein (38%), Estonia (33%) and Norway (32%).

Footnote

1 The numbers of German doctoral students abroad were primarily taken from the current survey of "Deutsche Studierende im Ausland" conducted by the German Federal Statistical Office. This was supplemented by data from OECD statistics and the Student and Exchange Visitor Information System of the US Department of Homeland Security to factor in current data from other host countries (including the US, Estonia, Italy, the Netherlands and Slovakia). In some cases, the data for the various host countries refer to different years.

By contrast, despite the relatively high number of German doctoral students in Austria, they account for just 7% of all German students and doctoral candidates in the country.

Compared to the previous year, the number of German doctoral students abroad has barely changed. In some cases, there are striking differences between the various countries with regard to the development in the number of doctoral candidates, however. A fairly steep downturn can be observed in German doctoral students in Greece (–29%), Ireland (–26%), Latvia (–24%) and Romania (–21%). Conversely, Bulgaria (+20%), Liechtenstein (+16%), Finland (+15%) and Portugal (+13%) reported substantial gains in the number of doctoral students from Germany. Looking at the long-term trend in numbers of German doctoral students in major host countries, it may be noted that, between 2015 and 2020 or 2021, there was a reduction in the United Kingdom (–20%) in particular, but also in Sweden (–14%) and France (–13%). The number of German doctoral students went up in Australia and the Netherlands during this period (+18% each). Nevertheless, in all countries for which data since 2011 are available, the number of German doctoral students has maintained a relatively high level of continuity, while all fluctuations remain within narrow limits. This means that no significant changes can be observed in the essential regional distribution of German doctoral students abroad over the years.

1.3 Doctoral students with temporary doctoral-related visits abroad

Just as for other students, there are two types of international mobility for doctoral students: firstly, those spending their whole doctoral period abroad, including the examination process and, secondly, those undertaking doctoral-related temporary visits abroad while working on a doctorate in Germany.[1] The Federal Statistical Office and international organisations regularly provide current data on the degree-related international mobility of German doctoral students (see pp. 108/109). However, representative surveys are still needed to obtain information on temporary mobility.

According to the National Academics Panel Study (Nacaps) conducted by the DZHW, 31% of all doctorate holders who were awarded a doctorate between 2019 and 2022 had completed at least one doctoral-related temporary visit abroad while studying for their doctorate. There are clear variations between the subject groups, however. Above-average shares of doctoral holders with doctoral-related experience abroad can be found in art and art history (48%) and the humanities (45%). Among other reasons, this is due to the fact that many doctoral topics in the humanities, especially in the subjects of linguistics, literature and cultural studies, refer to other cultures. This thematic orientation is also a characteristic feature of doctorates in art history. Above-average proportions of doctoral holders undertaking doctoral-related visits abroad are also encountered in mathematics and natural sciences (37%). In contrast, a relatively small percentage of doctoral holders with experience abroad are recorded in engineering (28%) as well as in medicine and health sciences (12%). Most importantly, doctorates in medical subjects are typically undertaken in parallel with specialised medical training, which limits the opportunities for doctoral visits abroad. Finally, just 26% of doctorate holders in agricultural, forestry and food sciences, and veterinary medicine spent time abroad.

Methodology

Data on the temporary international mobility of doctoral students at German universities were collected as part of the DZHW's National Academics Panel Study (Nacaps). The data refer to former doctoral students who were awarded their doctorate between 2019 and 2022. The information they provided on doctoral-related visits abroad only refers to the period during which they wrote their dissertation. Nacaps is a regular nationwide survey of doctoral students from 57 German universities that are entitled to confer doctorates.

The vast majority or 86% of the doctoral-related visits abroad were primarily for research purposes. Time spent abroad for the purpose of teaching, employment or placements each accounted for 3% of the visits. Further training was the goal in 5% of the periods spent abroad. Variations can be observed between the individual subject groups, with the highest proportion of research visits, 90%, taking place in the fields of mathematics and natural sciences. By contrast, research was given as the intended purpose in just 55% of visits abroad in medicine and health sciences. Moreover, gainful employment (21%), further training (13%) and placements (8%) were more likely than average to be the objectives of the visit. Continuing professional development was also an important factor for visits abroad in agricultural, forestry and food sciences, and veterinary medicine (14%). On the other hand, gainful employment was also relevant in engineering subjects (6%). In addition, doctoral-related teaching visits abroad are particularly characteristic of the fields of art and art history (11%), the humanities (6%) as well as agricultural, forestry and food sciences, and veterinary medicine (5%).

E1.7 Doctorate holders who obtained their doctorate between 2019 and 2022, with temporary doctoral-related visits abroad, by subject group

Subject group	Share of internationally mobile doctorate holders in %
Art and art history	48
Humanities	45
Mathematics and natural sciences	37
Law, economics and social sciences	34
Engineering	28
Agricultural, forestry and food sciences, veterinary medicine	26
Medicine and health sciences	12
Total	**31**

Source: DZHW, National Academics Panel Study (Nacaps)

Footnotes

1 See also Netz/Hampel (2019).

2 The median is the value at the exact centre of a series of data that is arranged according to size. A median of four months means that half of the visits lasted less than four months and the other half for longer than four months.

E1.8 Temporary doctoral-related visits abroad undertaken by doctorate holders who were awarded a doctorate between 2019 and 2022, by subject group and type of visit

Subject group	Share of doctorate holders with temporary doctoral-related visits abroad in %					
Humanities	88	6	2	4		
Law, economics and social sciences	86	3	3	4	4	
Mathematics and natural sciences	90	2	2	6		
Medicine and health sciences	55	3	21	8	13	
Agricultural, forestry and food sciences, veterinary medicine	81	5	14			
Engineering	84	2	6	5	3	
Art and art history	80	11	3	3	3	
Total	86	3	3	3	5	

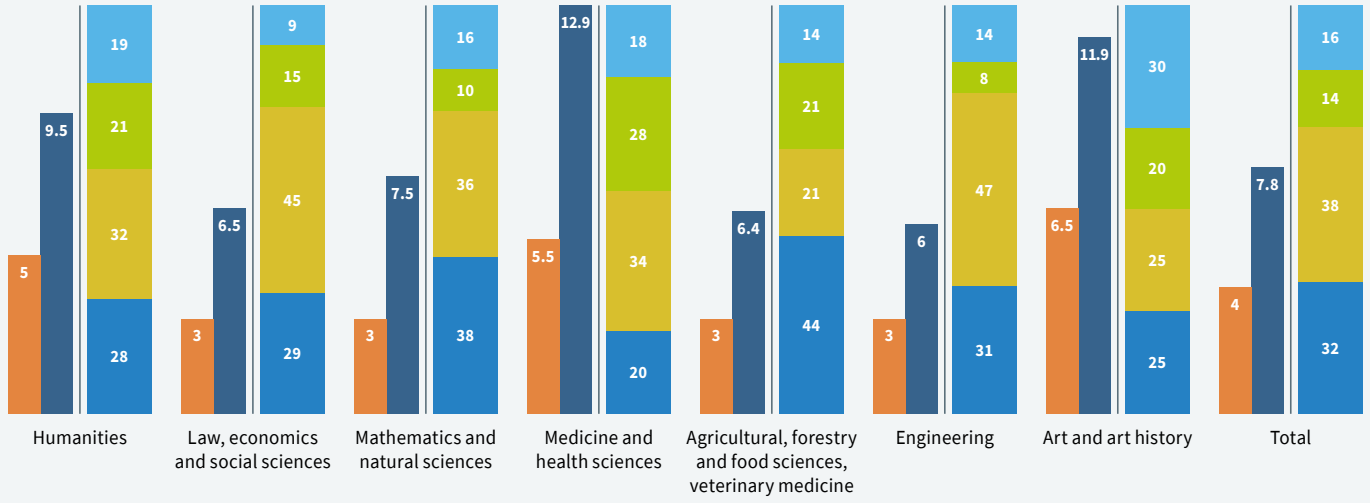
Research visit · Teaching visit · Employment · Placement visit · Further education

Source: DZHW, National Academics Panel Study (Nacaps)

Internationally mobile doctorate holders who obtained their doctorate between 2019 and 2022 spent an average of 7.8 months abroad in relation to their doctorate. Nonetheless, the median[2] is four months; in other words, half of the internationally mobile doctorate holders spent less than four months abroad while the other half stayed for four months or longer. Some 32% of internationally mobile doctorate holders lived abroad for up to two months, a further 38% spent three to six months in other countries and 29% a minimum of six months.

Disproportionately long visits abroad are recorded for doctorate holders in the subject groups of medicine and health sciences (average: 12.9 months; median: 5.5 months), art and art history (average: 11.9 months; median: 6.5 months) plus the humanities (average: 9.5 months; median: 5 months). Approximately half of doctorate holders in art and art history have more than six months of experience abroad. This share drops to roughly one quarter in the case of engineering and in law, economics and social sciences.

E1.9 Total duration of doctoral-related visits abroad undertaken by internationally mobile doctorate holders who were awarded a doctorate between 2019 and 2022



Source: DZHW, National Academics Panel Study (Nacaps)

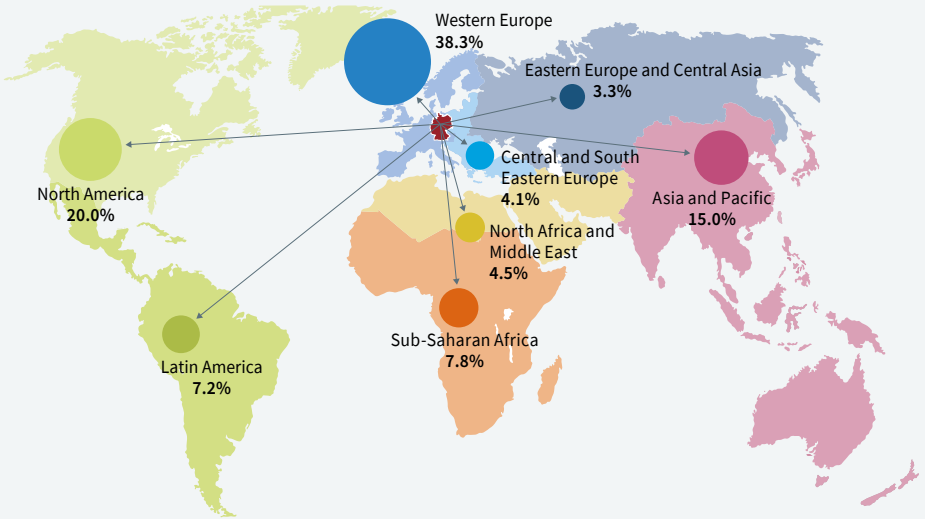
1.4 Doctoral students with temporary doctoral-related visits abroad – host regions and host countries

Some 38% of temporary visits abroad undertaken by doctorate holders who were awarded a doctorate by a German university between 2019 and 2022 took place in Western Europe. Other major host regions were North America (20%) plus Asia and Pacific (15%). By comparison, the world regions of Sub-Saharan Africa (8%), Latin America (7%), North Africa and Middle East (5%), Central and South Eastern Europe (4%), and Eastern Europe and Central Asia (3%) did not figure prominently. The key host country for doctorate holders was the US, where 17% of all doctoral-related temporary visits took place. Other major host countries were France (7%), the United Kingdom (6%) and Switzerland (5%), with Italy, Australia and Canada (4% each) bringing up the rear. Along with Japan and the Netherlands (3% each), these countries account for around half of all doctoral-related visits abroad undertaken by those who obtained their doctorate between 2019 and 2022. Thus, most visits abroad were completed in countries that are economically and scientifically advanced, which clearly offered excellent conditions for the research work carried out by the doctorate holders.

> “58% of all doctoral-related visits abroad were spent in Western Europe or North America.

The common denominator for all host regions is that the majority of research visits were related to a doctorate. This is particularly true of Sub-Saharan Africa (94%), North Africa and Middle East (92%) and Central and South Eastern Europe (90%). The lowest proportion is found in Western Europe (82%). An above-average share of doctorate holders undertaking visits for the purpose of further training (7%) is characteristic of this host region. This also applies to North America, Latin America and Asia and Pacific (5% each). By contrast, teaching visits were of slightly greater significance in North Africa and Middle East (6%) and Eastern Europe and Central Asia (5%). Doctoral-related employment was somewhat more likely in Western Europe, Central and South Eastern Europe and Latin America (4% each). These differences are even more pronounced at the host country level: 13% of all doctoral-related visits in the Netherlands were for the purpose of teaching. By the same token, gainful employment was the reason for 13% of periods spent in Switzerland. Continuing professional development was disproportionately relevant for visits in Australia (14%) and the United Kingdom (13%).

E1.10 Temporary doctoral-related visits abroad undertaken by doctorate holders who were awarded a doctorate by German universities between 2019 and 2022, by host region and key host countries[1]



Key host countries	Share in %
US	16.6
France	6.6
United Kingdom	6.2
Switzerland	4.5
Italy	4.3
Australia	3.8
Canada	3.5
Japan	2.9
Netherlands	2.8
Spain	2.4
China	2.3
Denmark	2.0
Austria	2.0
Brazil	1.6
India	1.6
Sweden	1.6
Colombia	1.5
Turkey	1.4
South Africa	1.4
Indonesia	1.2

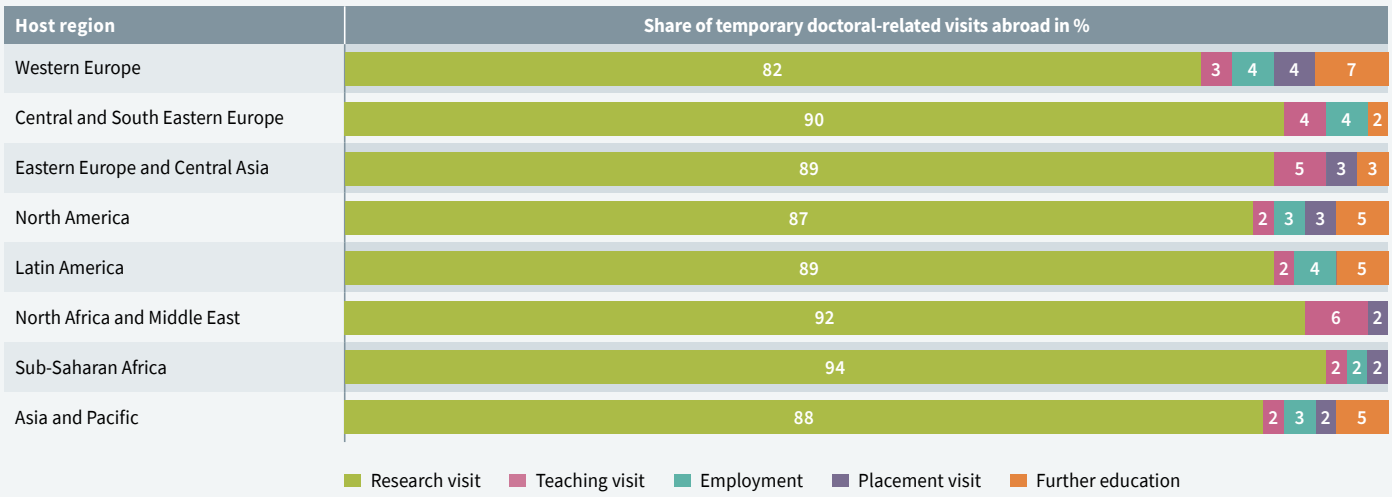
Source: DZHW, National Academics Panel Study (Nacaps)

Footnotes

1 Deviations from 100% are due to rounding.

2 The median is the value at the exact centre of a series of data that is arranged according to size. A median of four months means that half of the visits lasted less than four months and the other half for longer than four months.

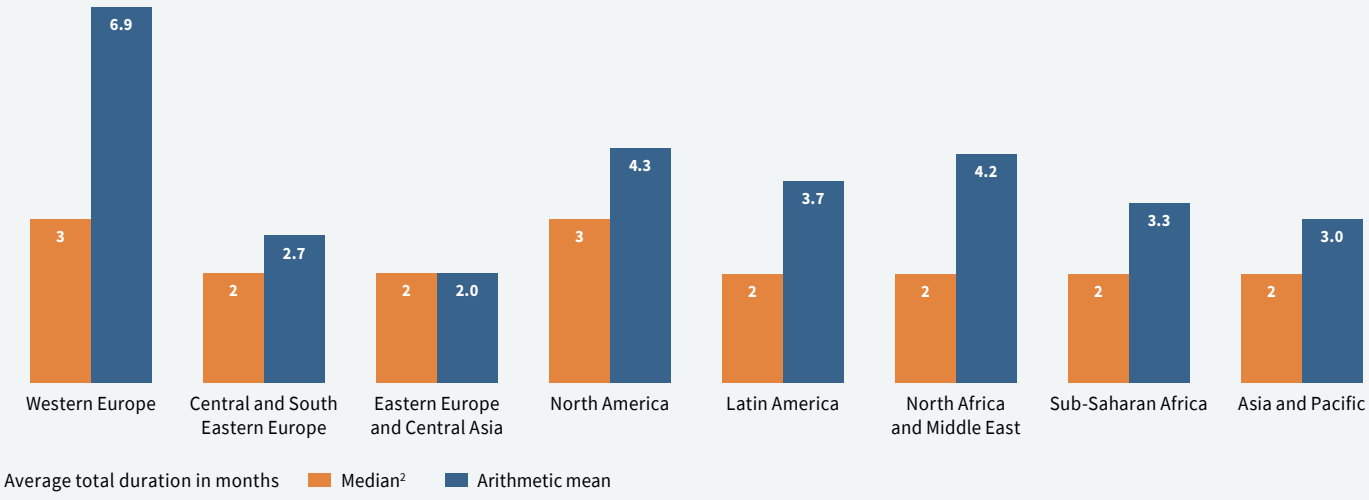
E1.11 Temporary doctoral-related visits abroad undertaken by doctorate holders who were awarded a doctorate by German universities between 2019 and 2022, by host region and type of visit



Source: DZHW, National Academics Panel Study (Nacaps)

Apart from the type of doctoral-related visits abroad, the research purposes and residence requirements in the different host regions and host countries also affect their duration. As a result, those obtaining a doctorate between 2019 and 2022 and who resided abroad in a Western European country spent an average of 6.9 months there. For 20% of these doctorate holders alone, their sole visit in Western Europe lasted for a minimum of seven months. However, the median[2] is three months; that is, half of the respective doctorate holders lived there for up to three months, while the other half remained for longer than three months. The longest stays can be observed among visits in Switzerland, where the average duration was 15.5 months (median: 6 months). Some 43% of visits were for longer than six months. Likewise of above-average duration were doctoral-related visits abroad in North America (average: 4.3 months; median: 3 months) as well as North Africa and Middle East (average: 4.2 months; median: 2 months). Conversely, other visits were shorter than average, such as those in Eastern Europe and Central Asia (average: 2 months; median: 2 months) and Central and South Eastern Europe (average: 2.7 months; median: 2 months).

E1.12 Average duration of temporary doctoral-related visits abroad undertaken by doctorate holders who were awarded a doctorate by German universities between 2019 and 2022, by host region



Source: DZHW, National Academics Panel Study (Nacaps)

2.1 Mobility trends, funding organisations and funded groups

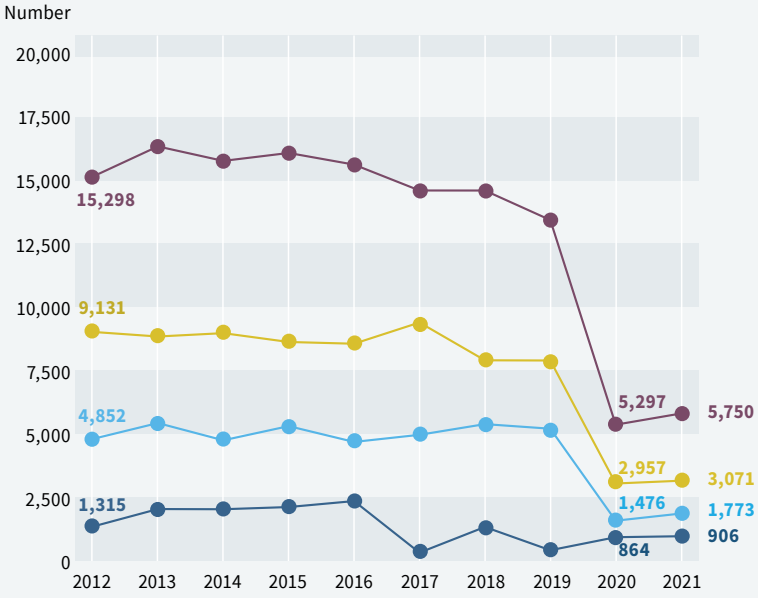
In 2021, domestic and foreign organisations funded a total of around 5,800 visits by German guest researchers abroad.[1] German guest researchers refer to individuals working in Germany as academics and researchers, but who receive financial support to spend a limited period abroad to teach and research at a foreign university or research institute without occupying a specific post. Although the data collected on mobility funding do not represent a complete analysis of German funding organisations, they cover the majority of sponsored visits undertaken by German guest researchers abroad.[2] With regard to funding provided by foreign organisations, however, the data so far only represent a small section of the funding activities carried out by a few countries.

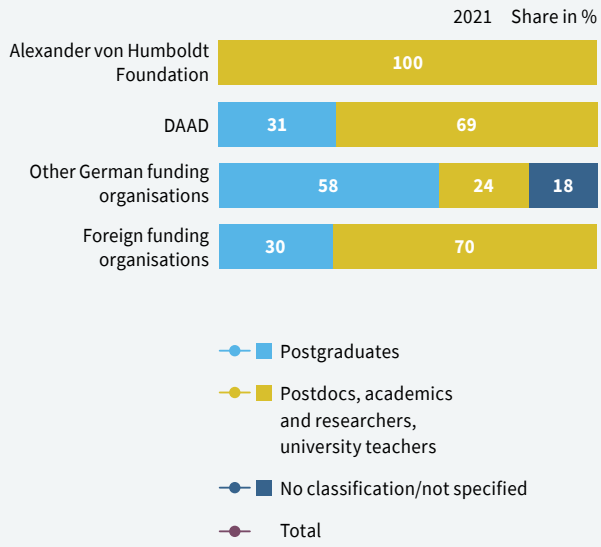
> “The number of funded visits abroad undertaken by German guest researchers rose by just 9% in 2021, following a sharp fall in the previous year.

The number of sponsored visits abroad by German guest researchers is substantially lower than the corresponding number of grants awarded to foreign guest researchers in Germany (see pp. 98/99). While funding was almost back to 2019 levels in 2021, the second year of the pandemic, the number of German guest researchers abroad only increased by 9% year-on-year. After the international mobility of German academics and researchers plunged dramatically by two thirds, the number of grants remained more or less at the low level seen in 2020. Global mobility restrictions evidently made visits abroad even more difficult for German academics and researchers than it was, conversely, for foreign academics and researchers to enter Germany. Nonetheless, it should not be forgotten, firstly, that the smaller number of grants awarded to German academics and researchers is due, above all, to the incomplete records of both German and foreign funding organisations, including the missing information for the Marie Skłodowska-Curie actions in 2021. Secondly, the data for the German Research Foundation (DFG) only document sponsored visits abroad undertaken by German guest researchers who received funding in the form of research fellowships. Moreover, a number of German funding organisations only support visits to Germany by international academics and researchers.

There was no significant change in the prominence of individual funding organisations. The DAAD continues to sponsor the majority of visits by German guest researchers (64%). However, the DAAD is also one of those organisations whose funding activities had not yet fully recovered (+13%) from the sharp drop in 2020. The share of visits funded by the DFG came to roughly 13%, whereby the number of grants issued decreased by another 10% in 2021, after falling 9% the year before. Another 22% of visits abroad were sponsored by smaller German funding organisations and 2% or thereabouts by the foreign organisations presented here. Some of these organisations suffered a (further) massive downturn in their funding activities year-on-year, such as the Heinrich-Böll-Stiftung (–76%), the Hans Böckler Foundation (–64%), the Fritz Thyssen Foundation (–48%)

E2.1 German guest researchers abroad, by funded group, since 2012[1]





Sources: data provided by funding organisations; DZHW survey

and the Friedrich Ebert Foundation (–46%), while others saw a noticeable uptick in their funding activities (e.g. the Joachim Herz Foundation: +600%, the Rosa Luxemburg Foundation: +65% or the Studienstiftung des deutschen Volkes: +44%). Although, in terms of sponsoring German guest researchers, the scope of these smaller organisations' activities was proportionately greater than their funding of foreign academics and researchers in Germany, it was still restricted. All the same, their contribution should not be underestimated. Their activities reveal that numerous institutes in Germany play a role in facilitating the international mobility of academics and researchers. Moreover, the smaller funding institutes tend to focus on sponsoring specific teaching and research fields, along with host countries or regions, that would otherwise be overlooked.

> "Approximately 31% of all grant recipients are doctoral students or other postgraduates.

53% of all funded German guest researchers were academics and researchers with doctorates, including professors and experienced researchers, such as heads of research groups. A further 31% of sponsored visits were carried out by doctoral students and other postgraduates. This distribution of the funding activities among the different status groups of academics and researchers has essentially remained unchanged for several years, underlining the fact that the funding activities of the various organisations are based on a long-term strategy.

The DAAD funds the majority of visits by experienced German academics and researchers with doctorates to foreign universities and research institutes (69%). The funding activities of foreign organisations have a similar focus. By contrast, the smaller German organisations mainly supported a high percentage of visits by German doctoral students in 2020 (58%).

Footnotes

1 Not including Erasmus visits by German academics and researchers abroad.

2 No information is available on university funding of visits by German guest researchers, for example.

3 Data for the DFG only include funded visits abroad undertaken by German guest researchers who received funding in the form of research fellowships.

E2.2 German guest researchers abroad, by funding organisation, in 2021

Funding organisations	Number
Key German funding organisations	
German Academic Exchange Service (DAAD)[1]	3,692
German Research Foundation (DFG)[3]	721
Other German funding organisations	
Studienstiftung des deutschen Volkes	227
Max Weber Foundation – German humanities institutes abroad	213
Alexander von Humboldt Foundation	194
Gerda Henkel Foundation	174
CERN fellowships	118
Cusanuswerk – Bischöfliche Studienförderung	53
Rosa Luxemburg Foundation	33
Leopoldina – the German National Academy of Sciences	31
Evangelisches Studienwerk	31
Joachim Herz Foundation	30
Boehringer Ingelheim Fonds	27
German National Committee of the Lutheran World Federation/ Bread for the World	24
Friedrich Naumann Foundation for Freedom	18
Hans Böckler Foundation	16
Friedrich Ebert Foundation	14
Fritz Thyssen Foundation	11
The Martin Buber Society of Fellows	9
Heinrich-Böll-Stiftung	7
Avicenna-Studienwerk	7
Heinrich Hertz-Stiftung – MKW Nordrhein-Westfalen	5
Deutsche Herzstiftung	2
ZEIT-Stiftung Ebelin und Gerd Bucerius	2
Foreign funding organisations and programmes	
Japan Society for the Promotion of Science	41
German-American Fulbright Commission	32
The Austrian Science Fund (FWF)	10
Natural Sciences and Engineering Research Council of Canada	8
Total	**5,750**

Sources: data provided by funding organisations; DZHW survey

2.2 Regions and countries of origin and subject groups

Western Europe is the key host region for German guest researchers whose visits abroad in 2021 were supported by the domestic and foreign funding organisations included in this report. 30% of these sponsored visits were to Western European countries. Other major host regions are North America (13%) and Central and South Eastern Europe (10%). These three host regions alone thus account for more than half (53%) of all visits undertaken by German guest researchers. By contrast, the shares of Asia and Pacific (8%), North Africa and Middle East (7%), Eastern Europe and Central Asia (6%), Latin America (5%) and Sub-Saharan Africa (4%) are considerably lower. There are marked differences compared to the regions of origin of foreign guest researchers in Germany (see pp. 100/101). Only Central and South Eastern Europe is of similar importance in 2020, both as a host region and as a region of origin. Otherwise, German academics and researchers tended to favour Western Europe and, above all, North America as host regions, while a higher proportion of foreign academics and researchers came to Germany from Asia and Pacific, Latin America, and North Africa and Middle East. This focus on Western Europe and North America is probably due to the high level of development of academia and research in these countries and the longstanding academic cooperation.

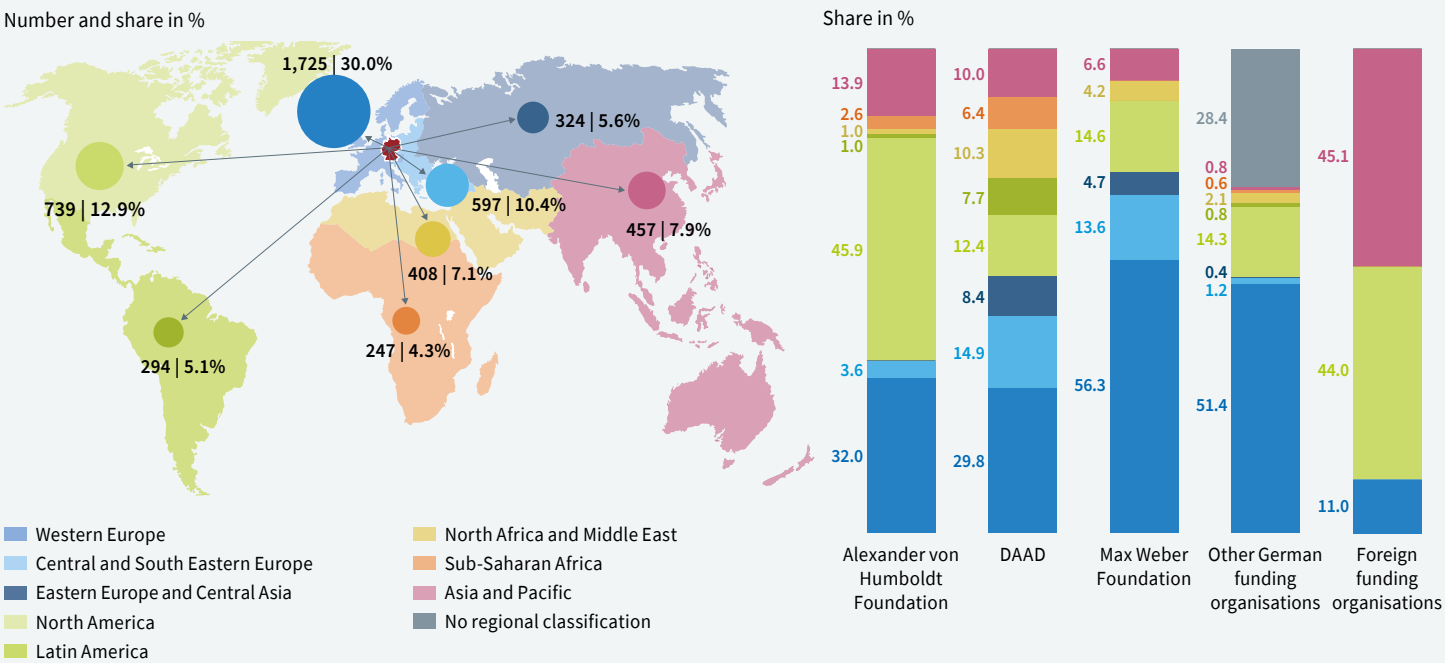
> “The number of funded guest visits in Italy has jumped by 36% compared to the previous year.

The various funding organisations are characterised by their different regional emphases. The Alexander von Humboldt Foundation (AvH) reported a particularly high percentage of sponsored guest visits to North America (46%). The smaller German funding organisations and the Max Weber Foundation primarily supported visits to Western European countries (51% and 56% respectively). By contrast, DAAD funding was more evenly balanced across the different host regions.

The key host country for German guest researchers abroad was the US, followed by the United Kingdom. The US alone accounted for 11% of all funded guest visits, the United Kingdom for 6%. Following the dramatic plummet of the previous year, the number of funded visits abroad continued to decline sharply in both countries owing to the pandemic, down by 37% in the US and by 12% in the United Kingdom. Conversely, the number of grants increased once more for Italy (+36%), France (+26%), Switzerland, Poland and Jordan (+11% each).

The two largest groups of German guest researchers abroad, with shares of 24% each, are found in mathematics and natural sciences, and the humanities, followed by law, economics and social sciences at 18%. Engineering (10%), medicine and health sciences (8%), art and

E2.3 German guest researchers abroad, by host region and funding organisation, in 2021[1, 2, 3]



Sources: data provided by funding organisations; DZHW survey

art history (3%) and, lastly, agricultural, forestry and food sciences, and veterinary medicine (2%) only play a subordinate role. Compared to international guest researchers in Germany, 42% of whom are categorised as working in mathematical and natural sciences subjects (see pp. 100/101), German guest researchers are more evenly distributed across the various areas of teaching and research.

> “ 60% of guest researchers funded by the Alexander von Humboldt Foundation work in mathematics and natural sciences.

Clear distinctions can be drawn between the various funding organisations in terms of the specialist areas of the sponsored academics and researchers. At the Max Weber Foundation, the proportion of humanities scholars, 85%, was correspondingly high, given the profile of the associated institutes. By comparison, with shares of 60% and 50% respectively, the AvH and the DFG were much more likely to sponsor academics and researchers in mathematics and natural sciences. On the other hand, funding provided by the DAAD and other German funding organisations is balanced more evenly across the subject groups.

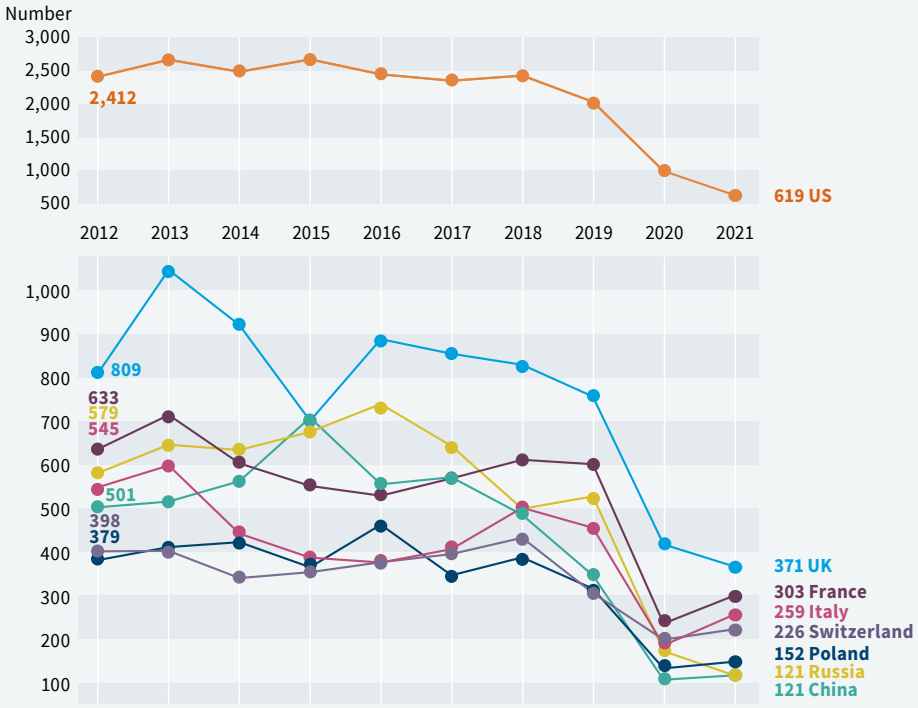
Footnotes

1 Foreign funding organisations generally sponsor visits by German guest researchers to their respective countries of location.

2 Total German guest researchers abroad at funding organisations: 5,750 (including 959 guest researchers who cannot be assigned to any host region, making up roughly 17% of all sponsored guest researchers).

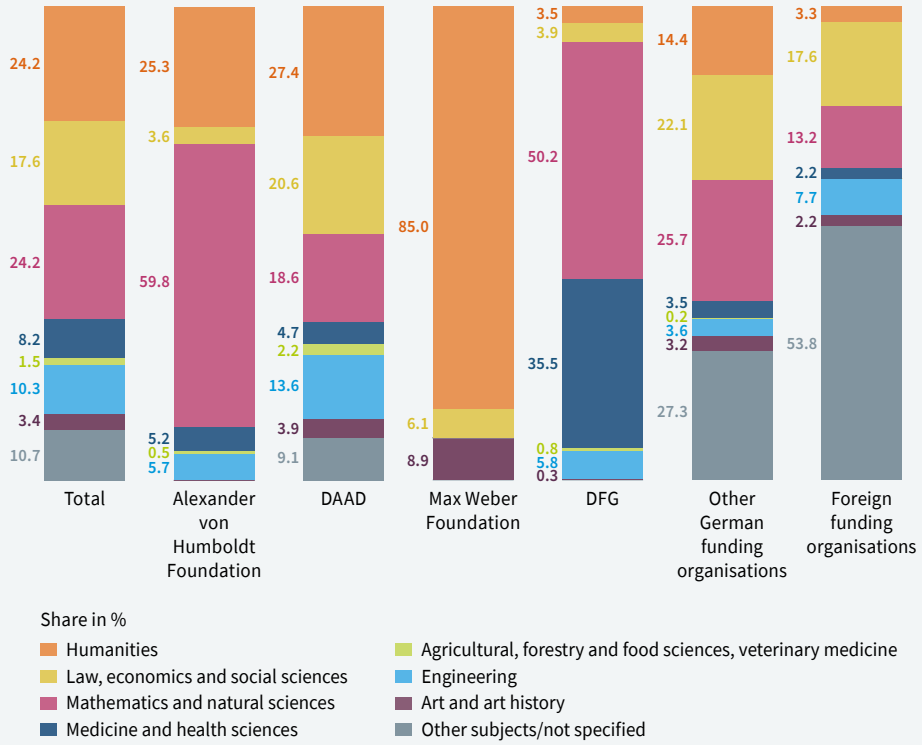
3 Deviations from 100% are due to rounding.

E2.4 German guest researchers abroad, by key host countries, since 2012



Sources: data provided by funding organisations; DZHW survey

E2.5 German guest researchers abroad, by funding organisation and subject group, in 2021[3]



Sources: data provided by funding organisations; DZHW survey

2.3 Erasmus guest lecturers

Temporary visits abroad by guest lecturers also receive funding under the European Union's Erasmus+ Programme. These guest lectureships in Europe can last between two and sixty days. Funding includes teaching visits by academic staff and professors from universities and research institutes as well as business entrepreneurs. Participants in this programme do not necessarily have to be nationals of the sending country and foreign academic staff at universities in the sending country can also take part. It is therefore possible for some Erasmus guest lecturers from Germany to be foreign nationals, although this percentage is likely to be very small.

> "As of 2021, 38% of Erasmus guest lecturers from Germany are found in the humanities.

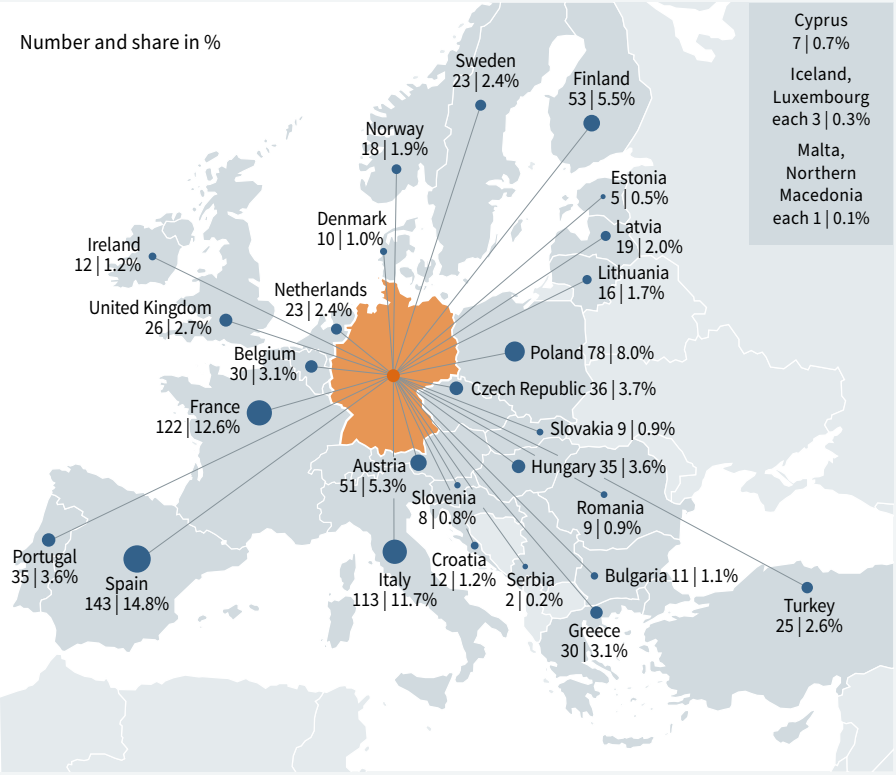
In the 2021 Erasmus year[1], a total of around 970 Erasmus guest lecturers from Germany spent a period teaching abroad with Erasmus funding. Compared to previous years, especially the dramatic fall year-on-year, their number therefore plummeted by a further 18%. Global travel restrictions in the wake of Covid-19 evidently continued to have an enormous impact on the relatively brief visits abroad undertaken by Erasmus guest lecturers.

In 2021, most Erasmus guest lecturers spent time in countries in Southern Europe (30%), while 23% went to Central Eastern Europe (23%) and 22% to Western Europe. 11% of visits were to Northern Europe, 9% to South Eastern Europe and 6% to Central Western Europe. The significance of the individual host regions and countries is probably also connected to the prevailing travel regulations in each case.

In 2021, the key host countries for Erasmus guest lecturers from Germany were Spain, France and Italy, which account for 15%, 13% and 12% respectively. They are followed by Poland with 8%, Finland with 6% and Austria with 5%. Portugal, Hungary and the Czech Republic (4% each) continued to figure prominently.

With a share of 38%, most German Erasmus guest lecturers abroad were found in the arts and humanities.[2] 18% belonged to the group of business, administration and law, while a further 14% represented engineering, manufacturing and construction. Social sciences, journalism and information plus natural sciences, mathematics

E2.6 Erasmus guest lecturers in Germany, by host region and host country, in 2021



Host region	Number	Share in %
Southern Europe	292	30.1
Central Eastern Europe	220	22.7
Western Europe	213	22.0
Northern Europe	107	11.0
South Eastern Europe	83	8.6
Central Western Europe	54	5.6
Total	**969**	**100.0**

Source: DAAD, Erasmus statistics

Footnotes

1 The Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2021 = 1 June 2020 to 31 May 2022.

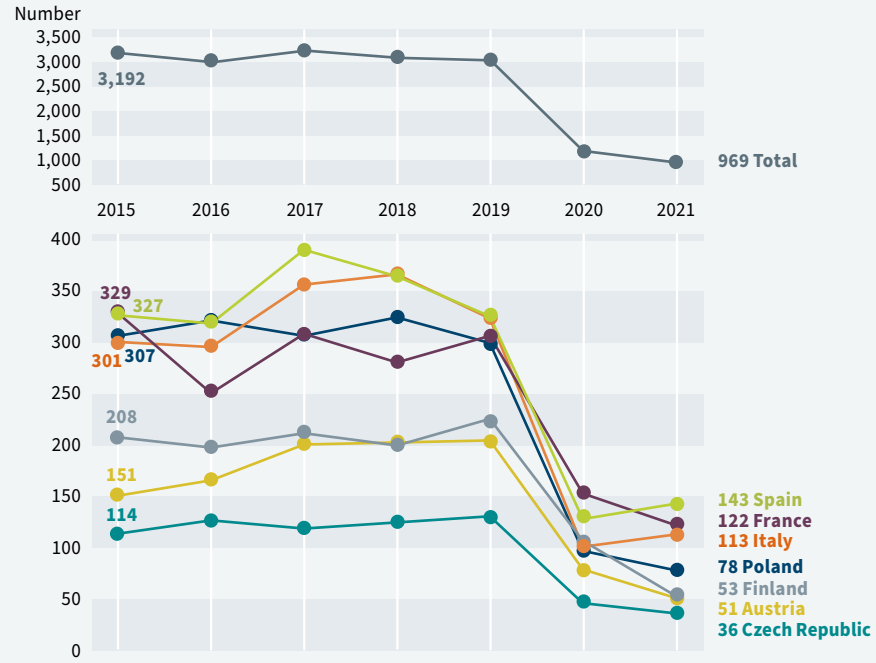
2 The distribution of Erasmus guest lecturers across the different subject groups is only available in the ISCED classification system.

and statistics each accounted for 6%, and health and welfare for 5%. Information and communication technologies (4%), services (2%), and agriculture, forestry, fisheries and veterinary (1%) played a subordinate role. Compared to foreign Erasmus guest lecturers who come to Germany for a temporary visit, there are no significant differences in the distribution of subject groups (see pp. 104/105). This is due chiefly to the fact that Erasmus+ is designed as a reciprocal exchange programme, with a similar number of funded places at the partner institutions on both sides.

> “ Erasmus guest lecturers from Germany spent an average of six and a half days in another European country.

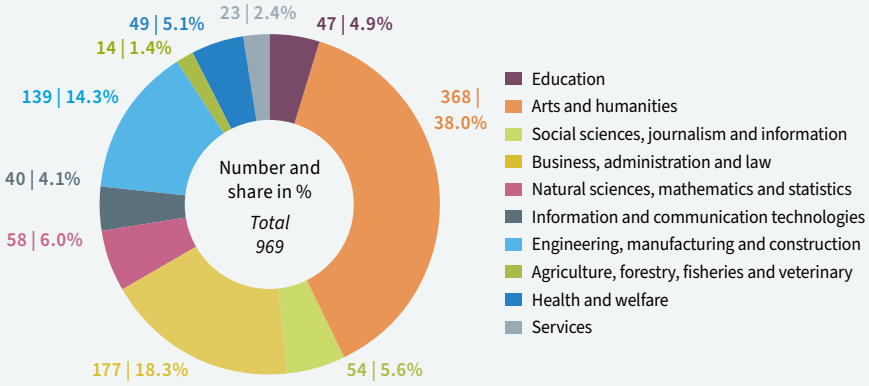
Although Erasmus guest lectureships can last for up to two months, lecturers from Germany stayed an average of just 6.4 days abroad in 2021. This figure is thus half a day longer than the previous year. In some cases, there are marked differences between the individual host countries; however, only a few guest lecturers stayed in several of the countries reporting particularly high or low figures. On average, Erasmus guest lecturers in Ireland, Luxembourg, Iceland and Cyprus spent between 12 and 24 days there. Finally, guest lecturers only visited Malta, Hungary, Northern Macedonia and Latvia for between three and four days on average.

E2.7 Erasmus guest lecturers from Germany, by key host countries, since 2015



Source: DAAD, Erasmus statistics

E2.8 Erasmus guest lecturers from Germany, by subject group, in 2021[2]



Source: DAAD, Erasmus statistics

E2.9 Erasmus guest lecturers from Germany, by host country and average visit duration, in 2021

Host country	Duration Ø Days
Ireland	23.6
Luxembourg	14.3
Iceland	13.3
Cyprus	11.7
Portugal	8.3
Italy	7.7
Turkey	7.6
Czech Republic	7.3
Norway	7.3
Romania	7.0
Slovakia	6.6

Host country	Duration Ø Days
Serbia	6.5
Spain	6.3
United Kingdom	6.2
Lithuania	6.2
Poland	6.2
Greece	6.0
Netherlands	6.0
Bulgaria	5.6
Denmark	5.6
Sweden	5.5
France	5.4

Host country	Duration Ø Days
Slovenia	5.3
Finland	5.2
Estonia	5.2
Croatia	4.9
Austria	4.9
Belgium	4.9
Latvia	4.3
Hungary	4.3
Northern Macedonia	4.0
Malta	3.0
Total	**6.4**

Source: DAAD, Erasmus statistics

Mapping mobility: data basis and analysis concepts on the international mobility of students, academics and researchers

Wissenschaft weltoffen relies on various data sources on the international mobility of students, academics and researchers. When interpreting the data, it should be borne in mind that there are different types of student, academic and researcher mobility, the data collection of which is bound to different preconditions. For example, it is much easier to record the inbound mobility of international students in Germany than the outgoing mobility of German students as valid official data on study-related visits abroad are not yet available as part of higher education statistics. By the same token, it is even more difficult to document the international mobility of academics and researchers. In Germany and many other countries, official records of this form of mobility are far from comprehensive and may not even exist. To serve as a guide for readers of *Wissenschaft weltoffen*, the following section therefore offers a brief overview of the relevant types of student, academic and researcher mobility, and outlines the data sources available for this purpose.

A. Student mobility

Types of mobility

The two terms degree mobility and credit mobility are used in connection with the international mobility of students. According to the European Mobility Strategy ("Mobility for Better Learning"), degree mobility covers all study-related visits during which a degree is acquired abroad. Credit mobility, on the other hand, refers to study-related visits abroad as part of a degree programme in the country of origin. In addition to temporary studies abroad, this also includes visits abroad that were undertaken as placements, language courses, study trips, project work or summer schools.

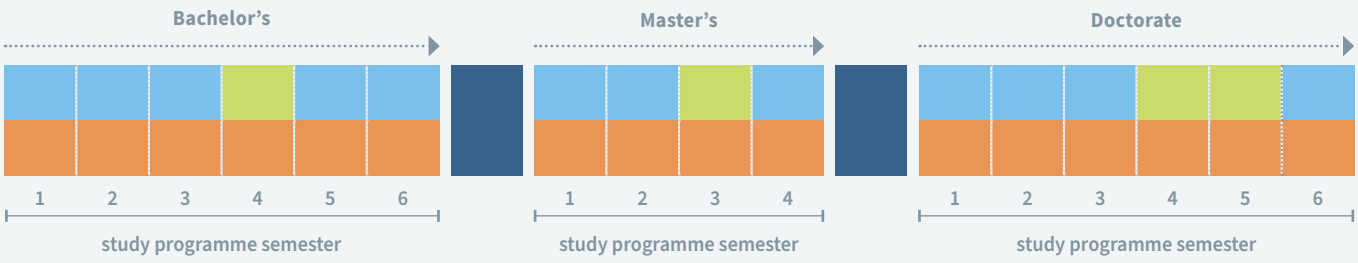
In line with the distinction between credit and degree mobility, *Wissenschaft weltoffen* distinguishes between temporary study-related visits abroad as part of a degree programme, where the degree is awarded in the country of origin, and degree-related international mobility, where visits abroad are undertaken with the aim of obtaining a degree abroad (see also Fig. 1). It should be noted that, due to the data situation regarding outgoing mobility, it is only possible to distinguish between these two forms of mobility to a limited extent. In the case of inbound mobility, on the other hand, this differentiation does not present any difficulties (see also the comments in the section on "Available data sources and data quality").

Lastly, the third type of mobility is bridge mobility between two study cycles (e.g. between a bachelor's degree and a master's programme or a master's programme and a doctorate). For some years, the Erasmus programme of the European Union has included financial provisions for these visits, such as summer schools or preparatory courses abroad, during which the recipients of funding are not enrolled at a university.

Available data sources and data quality

To record the **degree-related international mobility** (DIM) of German students, data must be taken from the higher education statistics compiled by the respective host countries as these students have only enrolled at local universities there (see also Fig. 3 below). The Federal Statistical Office therefore conducts an annual survey of the institutions responsible for education statistics in around 40 major host countries of German students. The results of this survey are published in the annual report entitled "Deutsche Studierende im Ausland". The students thus registered are predominantly, but not exclusively, students who are seeking a degree abroad. The data for some countries include Erasmus students and other students on temporary study-related visits. A useful supplement is therefore the data on German first-year students and graduates abroad collected by Germany's Federal Statistical Office from the 2008 academic year onwards. However, these data are available for fewer countries than the number of students. In addition to the official statistics, the statistics on international student mobility published by UNESCO, OECD and the Statistical Office of the EU (Eurostat) can also be used to assess DIM. They are based on joint data collection, the "UOE data collection on education systems". Compared with the survey conducted

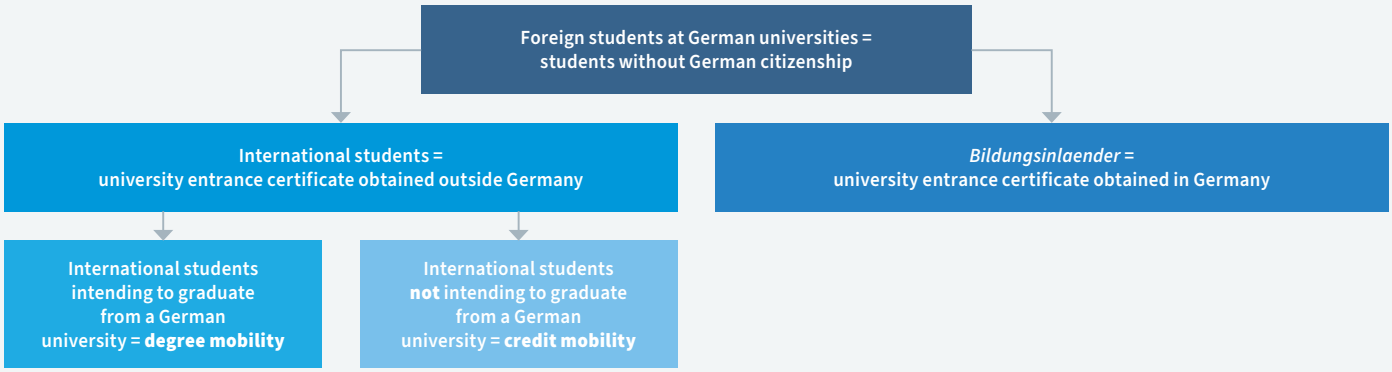
1 Forms of study-related international mobility during (ideal-typical) studies and doctoral studies



Degree at a university in Germany
Temporary study-related visits abroad as part of a domestic degree programme (e.g. semester abroad, placement visit abroad, study trip)
Bridge mobility between two study cycles (e.g. placement visit abroad, summer school, language course)
Degree-related international mobility (studies and degree abroad)

Source: own representation

2 Major groups of foreign students at German universities



Source: own representation

by the Federal Statistical Office, the UOE survey has the advantage of providing data for significantly more host countries and countries of origin. On the other hand, the data documentation within the framework of the UOE data collection allows hardly any conclusions to be drawn about the data quality (which varies greatly from host country to host country). Moreover, fewer differentiating characteristics (such as subject groups) are recorded.

Foreign students in Germany form part of the normal student statistics compiled by the Federal Statistical Office. According to these statistics, all students without German citizenship are classified as foreign students. They include both *Bildungsauslaender* and *Bildungsinlaender* (see also Fig. 2). *Bildungsauslaender* are international students who have acquired their university entrance certificate abroad or supplemented their school qualifications acquired abroad by successfully completing a preparatory course for higher education admission in Germany.

In *Wissenschaft weltoffen*, they are referred to exclusively as *international students* in accordance with the term commonly used in other countries and in international organisations. *Bildungsinlaender*, on the other hand, have obtained their university entrance certificate at a school in Germany or taken an aptitude or gifted students test here.

The student statistics compiled by the Federal Statistical Office enable international students to be **broken down** into students **intending to graduate in Germany** (degree-related international mobility or DIM) and those **not intending to obtain a degree in Germany** and/or who are seeking a degree abroad (temporary study-related international mobility or TSIM). Erasmus statistics are also available as a data source, although it should be noted that the students who have enrolled at a university and are recorded here are also included in the official student data. It is also important to note that the documentation of TSIM of international students in Germany only covers study visits at universities. Other study-related visits (e.g. placements, language courses or study trips) are not included in the statistics of the Federal Statistical Office prepared here. Erasmus data, on the other hand, include study-related visits and placements, depending on the possibilities offered by this exchange programme.

To date, no official statistics are available on the total **temporary study-related international mobility** (TSIM) of German students. Reliable official data are only available for the subsection of temporary study or placement visits within the framework of the EU Erasmus programme. According to the findings of corresponding surveys, these Erasmus stays represent about one third of the TSIM of German students. However, the amendment of the Higher Education Statistics Act in 2016 means that valid official figures on study-related visits outside the Erasmus programme will also be available in the foreseeable future. Until such time, the TSIM of German students will have to be estimated by means of student and graduate surveys.

Data sources used

The central database for the findings on the **degree-related international mobility of German students** presented here is the "Deutsche Studierende im Ausland" statistics of the Federal Statistical Office. These data are supplemented by figures from the UNESCO statistics for individual host countries. To describe **temporary study-related international mobility**, *Wissenschaft weltoffen* uses not only the Erasmus statistics but also results from the Social Surveys conducted until 2016 by the German Centre for Higher Education Research and Science Studies (DZHW) of the German National Association for Student Affairs (DSW) and from the new, national "Student Survey in Germany" (Studierendenbefragung in Deutschland, SiD) by the DZHW, the University of Konstanz and the DSW (especially when considering longer-term developments).

To trace the development of the study programmes of **international students in Germany**, reference is made in particular to the student statistics of the Federal Statistical Office. Data on Erasmus participants from abroad who spend temporary study periods at universities or on placement visits in Germany are also analysed.

Lastly, UNESCO student statistics are used to illustrate **global student mobility**.

3 Major data sources on student mobility

Source/creator	Title of statistics/study	Survey frequency	Types of mobility included[1]	Special features
German students abroad				
Federal Statistical Office	Deutsche Studierende im Ausland	Annually	DIM (primarily)	Data of approximately 40 major host countries of German students (at least 125 German students enrolled)
Federal Statistical Office	Examinations at universities/successful examinations with credits from abroad	Annually	TSIM	Only data on international mobility with degree-related credits, statistics still being prepared and/or incomplete
DAAD	Erasmus statistics	Annually	TSIM	Full survey
DAAD	Student survey "Benchmark internationale Hochschule" (BintHo)	Every three years	TSIM	Alternating participation of universities
DSW/DZHW	Social Survey	Every four years (until 2016)	TSIM	Nationally representative sample
DZHW	Graduate Panel	Every fourth cohort	TSIM	In total, three survey waves by degree, nationally representative sample
DZHW, University of Konstanz, DSW	"The Student Survey in Germany" (SiD)	Every four years (since 2021)	TSIM	Nationally representative sample
Institut für angewandte Statistik (ISTAT)	Graduate Survey Cooperation Project	Every cohort	TSIM	Alternating participation of universities
International students in Germany				
Federal Statistical Office	Students at universities	Annually	DIM and TSIM	Full survey
Federal Statistical Office	Examinations at universities	Annually	DIM	Full survey
DAAD	Erasmus statistics	Annually	TSIM	Full survey
DAAD	Student survey "Benchmark internationale Hochschule" (BintHo)	Every three years	TSIM	Alternating participation of universities
DSW/DZHW	Social Survey	Every four years (until 2016)	DIM and TSIM	Nationally representative sample
DZHW, University of Konstanz, DSW	"The Student Survey in Germany" (SiD)	Every four years (since 2021)	TSIM	Nationally representative sample
International student mobility				
UNESCO	UIS statistics database (online)	Annually	DIM (primarily)	Most extensive country data, differentiated by gender, not differentiated by type of degree
OECD	Education at a Glance, OECD statistics database (online)	Annually	DIM (primarily)	Only OECD countries, differentiated by gender and type of degree or ISCED level[2]
Eurostat	Eurostat database (online)	Annually	DIM (primarily)	Only European countries, differentiated by gender, type of degree and ISCED level or ISCED subject group[2]

1 DIM = degree-related international mobility; TSIM = temporary study-related international mobility.

2 The basis for the collection and processing of data is the International Standard Classification of Education (ISCED 2011) and/or ISCED-F 2013 (fields of education and training), which ensures the international comparability of national data. ISCED 2011 differentiates between eight levels, whereby Levels 5 to 8 refer to tertiary education. ISCED-F 2013 differentiates between ten subject groups.

Source: own representation

4 Advantages and disadvantages of official statistics, bibliometric data and surveys of academic and researcher mobility

Official and other public statistics	Bibliometric data	Surveys
Advantages		
• No time or effort required on the part of data users or academics and researchers surveyed • As a rule, publicly accessible and free of charge • Regular, usually annual surveys, i.e. developments can be analysed over time • As a rule, comprehensive data collection or even full surveys	• No time or effort required on the part of data users or academics and researchers surveyed • Enables a global, relatively comprehensive survey of academic and researcher mobility • Developments can be analysed over time	• Precise definition of target population • Wide range of possible study variables • High degree of international comparability
Disadvantages		
• Preselected sample • Sample depends on records of academics and researchers in public statistics • Preselected, very limited number of study variables • International comparability is severely restricted	• Preselected, very limited sample • Sample depends on publication activity of academics and researchers • Preselected, very limited number of study variables • International comparability is severely restricted • High costs for access to publication databases	• Difficult to obtain access to respondents • Considerable time and effort involved for surveying researchers and responding academics and researchers • Frequently requires the number of respondents to be limited, potential problems with representativeness • Often only cross-sectional surveys, i.e. no possibility of tracing developments over time

Source: own representation

B. Mobility of academics and researchers

Types of mobility

There are three basic types of mobility among academics and researchers, based on the particular reason for mobility, between which there are close links and overlaps: project- and event-related international mobility (e.g. conference trips or research projects abroad), qualification-related international mobility (e.g. doctoral studies abroad or postdoctoral projects abroad) and job-related international mobility (temporary or permanent research and teaching positions abroad). Depending on the perspective, many cases of academics' and researchers' mobility can be classed as several of these types. For example, many doctoral or postdoctoral projects abroad can be both project-related and qualification-related international mobility. In addition to the overlaps between the three types of mobility of academics and researchers, they are also linked by causal relationships. This also applies to the specific types of mobility within the three types of mobility. Students' study-related international mobility often leads to doctoral mobility, which in turn leads to postdoctoral mobility. Project-related mobility of academics and researchers becomes event-related mobility in many cases. By the same token, contacts are often established at international academic conferences, which in turn lead to project-related mobility among academics and researchers.

Available data sources and data quality

Research on international mobility among academics and researchers has so far relied mainly on **three data sources**: official or other publicly available statistics, publication databases (bibliometric data) and survey data (see also Fig. 5). All three sources have strengths and weaknesses, some of which mirror each other, in other words, the strength of one source turns out to be a weakness of the other (see also the overview in Fig. 4).

When drawing on **publicly available statistics**, independent data are not collected but existing data sets used instead. The work involved on the part of researchers and their respondents in collecting data is thus eliminated, which can be regarded as the central strength of these sources. Moreover, official data frequently contain very large samples or even full surveys, another of their strong points. In addition, publicly available data have the advantage that the findings can often be easily compared with other analyses that use the same data basis. The main shortcoming of publicly accessible statistics is that they are limited to the variables available in the respective databases and cannot be supplemented by additional variables that allow for in-depth analysis (e.g. of the causes and effects of academics' and researchers' mobility). Besides, they usually only record academics and researchers at public institutions. A further weak point of this source, which still exists at present, is the lack of comparability of the data across national borders as different definitions of academics and researchers are often used, and the

5 Major data sources of academic and researcher mobility

Source/creator	Title of statistics/study	Publication frequency	Special features
Foreign academics and researchers in Germany			
Federal Statistical Office	Staff at universities	Annually	Full survey
Federal Statistical Office	Finance statistics of public research institutes (staff at non-university research institutes)	Annually	Full survey
Federal Statistical Office	Survey of doctoral students	Annually	Full survey, i.e. including doctoral students not enrolled at universities
Federal Statistical Office	Students at universities (doctoral students)	Annually	Only includes enrolled doctoral students
DAAD	Erasmus statistics (guest lectureships)	Annually	Full survey
DAAD/DZHW	Funded guest researchers	Annually	Survey of relevant funding organisations
German academics and researchers abroad			
DAAD/DZHW	Funded guest researchers	Annually	Survey of relevant funding organisations
DAAD	Erasmus statistics (guest lectureships)	Annually	Full survey
National statistical offices in other major host countries	National university staff statistics	Annually	Varying definitions of recorded academics, researchers and universities, plus different scopes of the surveys
International mobility and cooperation among academics and researchers			
EU office of the BMBF	Contract database of EU Research Framework Programmes	Annually	Full survey
OECD	Student statistics (international doctoral students)	Annually	Not including data on international doctoral students in the US
National statistical offices in other key host countries	National university staff statistics	Annually	Varying definitions of recorded academics, researchers and institutes, plus different scopes of the surveys
Elsevier or Clarivate	Scopus or Web of Science	Ongoing	Contains bibliometric data on publications worldwide
European Commission	Mobility Patterns and Career Paths of EU Researchers (MORE)	Every three years since 2010	Only international researcher survey carried out regularly worldwide

Source: own representation

quality and completeness of official data collections also vary greatly from country to country.

International publication and citation databases are used as a data basis for **bibliometric analyses** of academics' and researchers' mobility. This is usually one of the two predominant databases around the world, *Scopus* (Elsevier) or *Web of Science* (Clarivate). These databases contain a certain number of the articles published worldwide in (English-language) academic journals and their citations in other articles. In addition, the respective country of location of each author's institution is documented for every article. By this means, these databases can also be used to analyse the international mobility of academics and researchers since a comparison of the country of location of different articles submitted by an author allows conclusions to be drawn about their mobility biography. The strengths of this source largely correspond to those of publicly available statistics, that is, no data collection effort on the part of researchers and their respondents, large samples or full surveys, and comparability with other analyses that draw on the same publication database as a data basis.

Despite the comprehensive data sets on which bibliometric analyses can be based, they are subject to several significant limitations. Firstly, access to existing international publication databases entails high costs. Secondly, only those academics and researchers who have (already) published in academic journals are included, which are covered in turn by the publication databases used. These are primarily English-

language journals from the natural sciences and economics. This means that academics and researchers from disciplines where monographs and edited volumes still play an important role as publication media (i.e. primarily the humanities and social sciences) are strongly under-represented. Since there are also marked differences between countries with regard to these publication cultures and non-English language publications are also systematically under-represented in most international publication databases, country comparisons based on bibliometric analyses can only be of limited value. Moreover, a complete survey of mobility biographies in bibliometric studies is not possible as mobility is only recorded if a publication (in publication databases) was published before and after the mobility from the respective country of location. Furthermore, academics and researchers are only included in the sample from the date of their first publication. (Potential) mobility before this first publication is therefore excluded, which may lead to a false determination of the mobility status and the respective country of origin. Thus, academics and researchers who published in different countries during the period under review are usually considered mobile, whereby their first country of residence during the period under review is regarded as the country of origin. It is therefore conceivable that prior mobility may not be excluded and that the presumed country of origin is actually a host country. Ultimately, at least two publications during the period under review are required to determine mobility. Accordingly, young researchers who have no or only one academic journal article to show for the period under review are excluded from the analysis.

In contrast to the two methods described above, **surveys** are characterised in particular by their systematic collection of new data on academics' and researchers' mobility. This has the advantage that the researchers themselves can determine who is to be interviewed and which questions are to be asked or which attributes surveyed. The number of variables available for the analysis of the mobility of academics and researchers is therefore generally much higher than in public statistics and publication databases, thus allowing for more in-depth or explanatory analyses (e.g. on the mobility motives or obstacles of academics and researchers). Furthermore, researchers who are not covered by publication databases or public statistics (e.g. researchers in companies) can also be included in the analysis. Finally, surveys of academics and researchers that are conducted internationally guarantee a high degree of cross-border comparability of the data from the different countries. However, surveys entail considerable time and effort, and therefore also high costs. These limitations mean that regular surveys are relatively infrequent and therefore not suitable for use as a basis for obtaining ongoing statistics on academics' and researchers' mobility. The only exception in this respect is the EU-funded study "Mobility Patterns and Career Paths of EU Researchers" (MORE), which has been conducted every three years since 2010, most recently in 2019/2020 (MORE4).

Data sources used

Wissenschaft weltoffen draws from different data sources to produce as comprehensive a picture as possible of the mobility of academics and researchers in Germany and other countries. The official statistics of the Federal Statistical Office relating to foreign academic staff at state-recognised universities and non-university research institutes and to (registered) international doctoral students are used to record **foreign academics and researchers in Germany**. In addition, data are analysed on short-term visits from the Erasmus statistics (Erasmus guest lecturers) and from a survey conducted by the DAAD and the DZHW on sponsored foreign guest researchers in Germany at relevant funding organisations. With regard to the official statistics relating to academic staff, it should be noted that the international academics and researchers recorded are not necessarily actually mobile in all cases as only information on their citizenship, not on their educational and research biographies, is collected here. Differentiation between international academics and researchers and *Bildungsinlaender*, as in the case of foreign students, is therefore not possible at this point.

The data basis for recording **German academics and researchers abroad** has so far been very patchy, particularly with regard to longer-term stays (qualification- or job-related international mobility). Short-term visits abroad are covered by Erasmus statistics on Erasmus guest lecturers and by the abovementioned surveys of relevant funding organisations. These data are supplemented by a further survey carried out by the DAAD and the DZHW for *Wissenschaft weltoffen* at the respective statistical offices on German university staff in major host countries of German academics and researchers. The job-related international mobility recorded here is subject to country-specific definitions and restrictions.

Finally, to illustrate the **international mobility of academics and researchers**, *Wissenschaft weltoffen* uses OECD data on international doctoral students worldwide, national official data on international academics and researchers at universities and public research institutes in major host countries, funding data from the contract database for the EU's Research Framework Programmes as well as bibliometric data from the Elsevier Scopus database (edited and analysed by the DZHW).

GLOSSARY

Academic and artistic university staff
According to the higher education statistics published by the Federal Statistical Office, academic and artistic university staff refer to professors (including visiting, honorary and adjunct professors), lecturers and assistants, academic and artistic staff, specialised teaching staff, emeritae and emeriti, assistant lecturers, private lecturers, student research assistants (with a degree) and tutors.

Academics and researchers
In the context of *Wissenschaft weltoffen*, academics and researchers are persons who work in a professional capacity on formulating and publishing new insights and who develop or refine theories, models, instruments, IT programs or methods as part of their concepts.

Academic year
Used here as a reference value to determine the number of students and → First-year students. In most cases, the number of students in a winter semester is regarded as the number of students in the academic year. For first-year students, the total number of first-year students in a summer semester and the following winter semester is regarded as the number of first-year students in a specific academic year. The first-year students of the 2021 academic year are thus the first-year students of the 2021 summer semester and the 2021/22 winter semester.

Bildungsauslaender
Students with foreign citizenship (or stateless persons) who have obtained their university entrance certificate at a school abroad. Since the 2020 edition of *Wissenschaft weltoffen*, → international students, a term widely used around the world, has been employed instead of *Bildungsauslaender*.

Bildungsinlaender
Students with foreign citizenship (or stateless individuals) who obtained their university entrance certificate at a German school.

Bridge mobility
Study-related visits abroad between two study cycles (e.g. between a bachelor's degree and a master's programme or a master's programme and a doctorate).

Credit mobility
→ Temporary study-related visits abroad

Degree mobility
→ Degree-related international mobility

Degree-related international mobility
A study period at a university in another country with the intention of acquiring a degree. Also referred to as → Degree mobility.

First-year students
First-year students in Germany are students in their first university semester. In most countries, students who appear in student statistics for the first time on the date of the survey are counted as German first-year students abroad, regardless of what semester they are currently enrolled in. In some cases, therefore, they may be students in later semesters.

Foreign students
All students with foreign citizenship including stateless students and those holding dual citizenship, in other words, both → *Bildungsauslaender* and → *Bildungsinlaender*.

Funded groups
Funded groups here include:
- Postgraduates: persons with a university degree who receive funding to work on their dissertations as foreign citizens in Germany or as German nationals abroad, as well as graduates who have been awarded a mobility scholarship, despite not intending to embark on doctoral studies.
- Postdocs: doctorate holders whose visits to Germany or abroad are funded to enable them to obtain further qualifications by conducting research. They include university lecturers and experienced academic staff at universities or research institutes (e.g. professors or heads of research groups).

Graduation year
A graduation year includes the graduates of a winter semester and the following summer semester. The number of graduates in 2021 is the total number of graduates in the 2020/21 winter semester and the 2021 summer semester.

International students/internationally mobile students
Students who are internationally mobile for study-related purposes, in other words, who enrol in a university outside the country in which they obtained their university entrance certificate. Since the 2020 edition of *Wissenschaft weltoffen*, international students, a term widely used around the world, has been employed instead of → *Bildungsauslaender*.

Students in later semesters
Different definitions are used, depending on the study. In the DSW/DZHW Social Surveys, all students in the 9th to 14th semesters at universities and all students in the 7th to 11th semesters at universities of applied sciences are considered students in later semesters. In the new DZHW "Student Survey in Germany" (Studierendenbefragung in Deutschland, SiD), students in later semesters refer to those from the sixth university semester on bachelor's programmes, from the fourth study programme semester in master's programmes and from the ninth university semester in state examination programmes.

Study programme semester
The name given to semesters during which students are enrolled in a specific degree programme.

Temporary study-related visits abroad
Study-related visits abroad as part of a domestic degree programme (e.g. semester abroad, placement visit abroad, summer school, language course). Also referred to as → Credit mobility.

Transnational education projects (TNE)
Transnational education projects are study programmes for which a university abroad bears the main academic responsibility. These projects only refer to TNE study programmes, TNE faculties, branch campuses – i.e. spin-offs or branches of universities abroad – and binational universities, in other words, not double degree programmes or distance learning courses.

Types of study
Types of study include:
- First degree programme: a study course leading to a first university degree.
- Postgraduate degree programme: study course on completing a first degree programme; postgraduate degree programmes include second degree programmes, complementary and supplementary courses, contact/further education courses, non-consecutive and consecutive master's programmes.
- Doctoral studies: a degree or academic activity with the goal of gaining a doctorate.

University semester
The name given to semesters during which students are enrolled at a German university. Thus, university semesters also comprise all → Study programme semesters in a degree programme as well as those semesters spent in another degree programme after changing programmes, for example. They also include semesters with leave of absence and any semesters completed as part of a second degree programme.

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STRUCTURE OF THE WORLD REGIONS

Since the 2017 edition, the regional classification of *Wissenschaft weltoffen* has adopted the DAAD regional classification:

Western Europe
Andorra, Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, United Kingdom, Vatican City

Central and South Eastern Europe
Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kosovo, Latvia, Lithuania, Montenegro, Northern Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey

Eastern Europe and Central Asia
Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

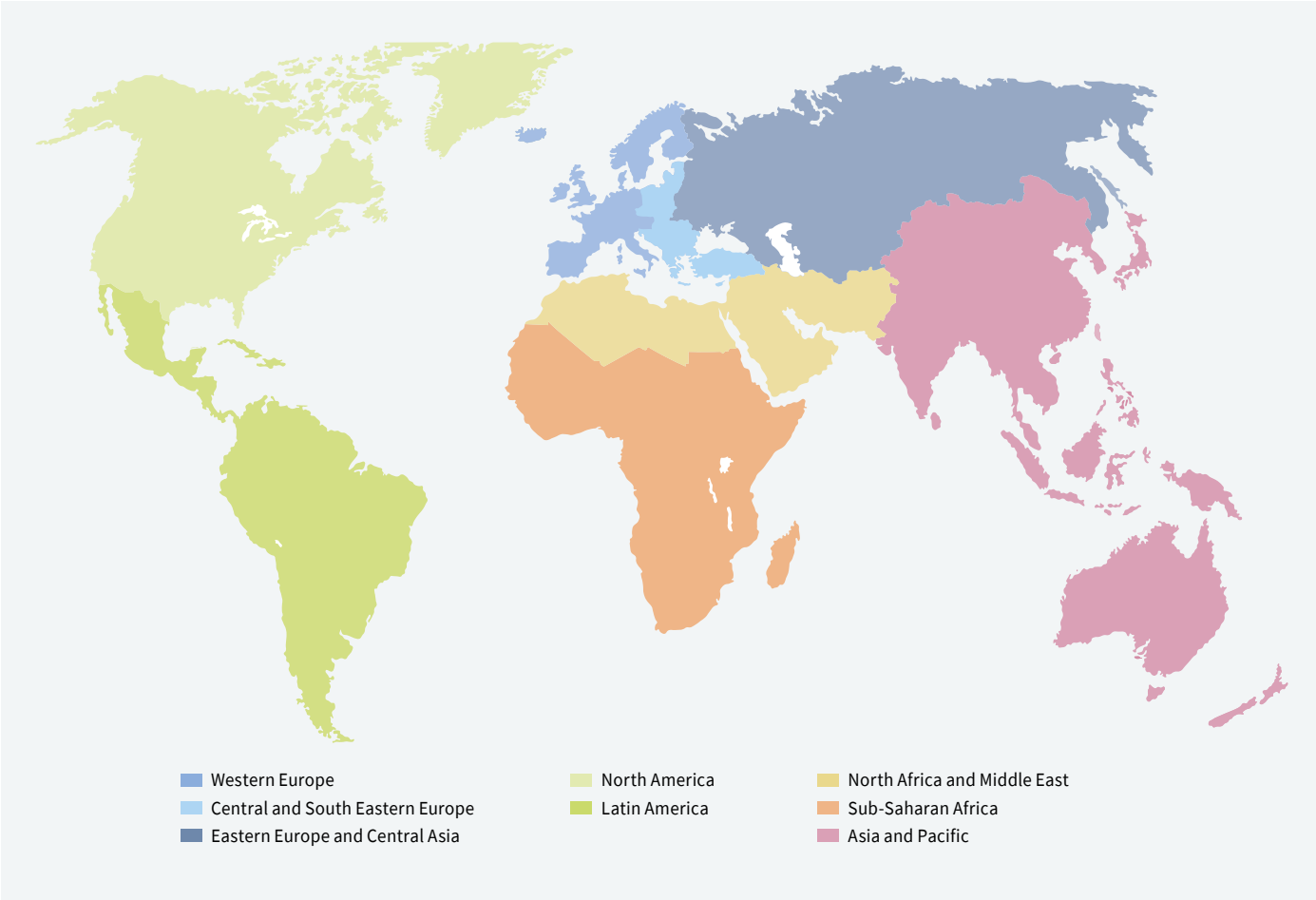
North America
Canada, United States of America (US)

Latin America
Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela

North Africa and Middle East
Afghanistan, Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestinian territories, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen

Sub-Saharan Africa
Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Congo/Democratic Republic, Djibouti, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Asia and Pacific
Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Cook Islands, Federal States of Micronesia, Fiji, Hong Kong (CN), India, Indonesia, Japan, Kiribati, Laos, Macao (CN), Malaysia, Maldives, Marshall Islands, Mongolia, Myanmar, Nauru, Nepal, New Zealand, Niue, North Korea, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, South Korea, Sri Lanka, Taiwan, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, Vietnam



Wissenschaft weltoffen 2023

The internationalisation of research and teaching is a decisive factor in Germany's successful development as a hub of science, higher education and business. Therefore, continuously monitoring the relevant indicators is vital in formulating and implementing adequate support measures. Against this backdrop, *Wissenschaft weltoffen* has become established as the **central source of information on student, academic and researcher mobility.**

For the first time, this 23rd edition of *Wissenschaft weltoffen* includes a **spotlight** that explores how international students prepare before embarking on a degree programme in Germany. To this end, central data were compiled to provide a detailed overview of international preparatory and language centres, or *Studienkollegs*, in Germany, and of participants in the preparatory courses they offer for university admission. The analysis focuses on the scope and success of the courses on offer, which enable prospective international students without a direct university entrance certificate to apply for a degree in Germany. It also highlights the differences between the various types of *Studienkollegs* and core courses.

Two other **spotlights** present new results on the retention of international students in their respective host countries.

Based on the latest OECD findings, Chapter A looks at the retention of international students in key host countries around the world. Moreover, Chapter B contains a separate, detailed investigation into the retention of international students, specifically for Germany, that was based on OECD analyses by the OECD, the German Federal Statistical Office and the DAAD.

Lastly, a fourth **spotlight** in Chapter C is devoted to study-related international mobility among domestic students at German universities. Drawing on the findings of the DZHW's new "Student Survey in Germany", it traces the overall development in their study-related international mobility between 2012 and 2021. The representations of the level and type of mobility underline the differences between the various subject groups, types of university and types of degree.

The *Wissenschaft weltoffen* **website** also has a number of new features. Apart from a wide range of **blog** posts, the website now offers an interactive tool for the analysis and evaluation of international student mobility, enabling users to customise data representations and data export according to individual specifications and filters. Over the next few months, this interactive section of the website will be extended to include additional diagrams on student mobility in Germany.

DAAD

The **German Academic Exchange Service (DAAD)** is the world's largest funding organisation for the international exchange of students and scholars. It emerged from a student initiative and was founded in 1925. It is supported by German universities and their students: in 2022, 242 universities and 105 student councils were registered members.

The DAAD is mainly funded by the Federal Foreign Office, the Federal Ministry of Education and Research, the Federal Ministry for Economic Cooperation and Development and the European Union. Other sponsors are foreign governments, companies, foundations and the "Stifterverband für die Deutsche Wissenschaft". The DAAD is headquartered in Bonn with an additional office in Berlin that includes the renowned Artists-in-Berlin Program. A worldwide network of 57 foreign offices, around 400 lectureships and 77 long-term lecturers and German Studies teachers maintains contact with partner countries across all continents and provides advisory service on the ground.

www.daad.de/en

DZHW

Headquartered in Hannover and Berlin, the **German Centre for Higher Education Research and Science Studies (Deutsches Zentrum für Hochschul- und Wissenschaftsforschung (DZHW))** is a research institute funded by the federal and state governments. As an international competence centre for research on higher education and science studies, the DZHW collects data and carries out analyses, provides research-based services for policy-makers in higher education and science and serves the scientific community as a research infrastructure in the field of higher education and science studies.

Research conducted by the DZHW is theory-based and application-oriented. The particular strength of the DZHW's studies lies in their long-term observation of developments in higher education and the scientific sector, sometimes also from the perspective of an international comparison. The DZHW has gained a reputation for its unique nationwide surveys of individuals with university entrance qualifications, students and graduates. Its research activities focus on educational careers and graduate employment, research system and science dynamics, governance in higher education and science, and methods of empirical social research.

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