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

wissenschaft-weltoffen.de

All figures include a download option for data and figure files (see notes on p. 4).

DZHW German Centre for Higher Education Research and Science Studies

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

2022

DZHW German Centre for Higher Education Research and Science Studies

Published by
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service
Kennedyallee 50, D-53175 Bonn
Strategic Planning – S1

DZHW
Deutsches Zentrum für Hochschul- und Wissenschaftsforschung GmbH
German Centre for Research on Higher Education and Science Studies
Lange Laube 12, D-30159 Hannover
Educational Careers and Graduate Employment

Autorinnen und Autoren
Dr. Ulrich Heublein (DZHW)
Christopher Hutzsch (DZHW)
Dr. Jan Kercher (DAAD)
Naomi Knüttgen (DAAD)
Alexander Kupfer (DAAD)

Data preparation
Configuration and evaluation of the *Wissenschaft weltoffen* web information system: Inessa Fuge, Dr. Ulrich Heublein, Christopher Hutzsch (DZHW)

Overall production
wbv Publikation
A division of wbv Media GmbH & Co. KG,
Postfach 10 06 33, D-33506 Bielefeld

Layout
zaydesign, Christiane Zay, Passau

Translation
Caroline Hörl, Great British Translations, Forstern

Photo credits
P. 3 Dr. Kai Sicks: DAAD/Saenger
P. 3 Prof. Dr. Monika Jungbauer-Gans: Ute Boeters
P. 48 Dr. Susanne Falk: Fotostudio Photogenika
P. 48 Theresa Thies: Fotostudio klassisch-modern
P. 48 Dr. Julia Zimmermann: Fotostudio Knipper
P. 48 Hüseyin Hilmi Yildirim: FernUniversität in Hagen/ Hardy Welsch

This publication is available for free download at
wbv-open-access.de

Printed in Germany

Number of copies: September 2022 – 200

ISBN: 978-3-7639-7279-1
DOI: 10.3278/7004002uew
Order no. 7004002ue

Bibliographical information of the German National Library
The German National Library catalogues this publication in the German National Bibliography; detailed bibliographical data are available online at https://www.dnb.de/EN/Home/home_node.html.

SPONSORED BY THE

Federal Ministry of Education and Research

Federal Foreign Office

The project on which this brochure is based and the publication thereof were funded by the Federal Ministry of Education and Research and the Federal Foreign Office.

This publication was printed in sustainable ink on 100% recycled paper using a carbon-neutral process (certified with the German "Blue Angel" environmental label).

klimaneutral gedruckt
www.klima-druck.de
ID-Nr. 2088764
bvdm.

FOREWORD

Internationalisation is one of the key prerequisites for the successful development of teaching and research at universities. Therefore, an empirical review of the international status of the German higher education system is carried out on a regular basis to provide a comprehensive overview for politics and society. Against this backdrop, *Wissenschaft weltoffen* has become established as the **central source of information on student, academic and researcher mobility**.

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, thereby ensuring the contents are adjusted flexibly in response to current events. Once again, therefore, this edition takes a special look at the **implications of the global pandemic for the internationalisation of universities**. Central to this review are the data and findings that permit an assessment of the short-term impact of Covid-19 on certain areas of international academic mobility, particularly with regard to Germany.

Three **spotlights** in this 22nd edition of *Wissenschaft weltoffen* explore the repercussions of the global pandemic for the international mobility of students and teachers. Chapter A traces the development of international student mobility in the key host countries around the world during the first year of the pandemic. Based on the current data, Chapter B presents a special, in-depth analysis for Germany of the evolution of the number of international students in 2021. Chapter C subsequently considers the development in the degree-related international mobility of German students in major host countries during the first year of the pandemic.

Moreover, a fourth spotlight, also part of Chapter B, is devoted to the research project on the "Success and withdrawal of international students in Germany" (SeSaBa), which has since been completed. The spotlight addresses the question of to what extent their sense of belonging to the respective university in Germany determines the academic success of international students in Germany. Finally, Chapter D includes a fifth spotlight on the employment situation and quantitative development of international doctoral students at German universities. It is based on the data from the DZHW's National Academics Panel Study (Nacaps).

Once again, this edition of *Wissenschaft weltoffen* has a number of **new features**. For the first time, it presents an analysis of data on the situation regarding fixed-term contracts for international university staff (Chapter D) and on the benefits of visits abroad and obstacles to mobility from the point of view of German doctoral students undertaking temporary doctoral-related visits abroad (Chapter E).

Other important additions are the two new functions and contents on the *Wissenschaft weltoffen* website, which can be found as usual at www.wissenschaft-weltoffen.de/en. In future, a **blog** will offer interested readers the opportunity to obtain the latest data on and reviews of the international nature of studies and research and find out about international academic mobility between the publication dates of the major annual editions of *Wissenschaft weltoffen*. Moreover, the website will shortly offer an **interactive tool for the analysis and evaluation of international student mobility** that enables users to customise data representations and data export according to individual specifications and filters. This interactive section of the website is to be extended in the future.

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 Federal Statistical Office, the scientific community and funding organisations, research institutes and other agencies who provided information and data for *Wissenschaft weltoffen 2022*, along with the Federal Foreign Office and the Federal Ministry of Education and Research, who helped fund this publication.

Dr. Kai Sicks
DAAD Secretary General

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

CONTENTS

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

Covid-19 and its impact on international student mobility

The onset of the pandemic in early 2020 proved to be a profound turning point in the development of the international mobility of students, academics and researchers. Although it is still too early to fully appreciate the long-term effects of the restrictions, it is possible to draw preliminary conclusions with regard to the direct impact or, to be more precise, the short-term repercussions of Covid-19 (see the three pandemic-related spotlights in Chapters A, B and C).

> “The total number of international students in Germany did not decline, neither in the first nor the second year of the pandemic, but actually rose slightly in both years.

It is now evident that the total number of international students in Germany did not decline, neither in the first nor the second year of the pandemic; quite the opposite, it actually rose slightly in both years. Nonetheless, there was a marked downturn in international first-year students in both years. 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. Moreover, the effects of the decline were 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 preliminary review of the development in the degree-related international mobility of German students during the first year of the pandemic (as a follow-on to the previous edition of *Wissenschaft weltoffen*, which traced the development of temporary study-related visits abroad). 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 Austria, the Netherlands and Switzerland, with some unexpectedly significant increases in German students. By contrast, in other major host countries such as the US, the United Kingdom and France, the numbers of German students plunged dramatically. However, in the case of the United Kingdom, this was obviously due to Brexit rather than to the restrictions introduced to cope with the pandemic.

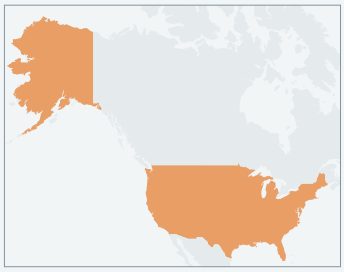
Finally, a look at the development in the overall number and re-enrolments of international students in the four key host countries – the US, the United Kingdom, Australia and Germany – shows that Covid-19 only had a minor impact on these statistics in Germany and particularly in the United Kingdom. Conversely, there was a significant slump in the numbers of international students in the US and Australia.

International academic mobility and transnational education (Chapter A)

According to UNESCO, around 6.1 million students were enrolled outside their home country in 2019, an increase of approximately 382,000 international students, or 7%, compared to the previous year. Since 2009, the number of internationally mobile students has risen by roughly 2.5 million or 71%. The US is way out in front as the key host country for international students. In 2019, around 977,000 students from abroad were enrolled at universities in the US, representing approximately 16% 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 2019, a total of over one million students from China were enrolled at universities abroad, alone accounting for around 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 137,000 international academics and researchers at US universities, followed by the United Kingdom (roughly 68,000), Germany (roughly 51,000), Switzerland (roughly 30,000) and France, whose universities and non-university research institutes only employ about 15,000 foreign researchers.

2 German students in major host countries, 2019–2020



German students	Host country: US[1]		
	2019/20	2020/21	Evolution in %
Total	9,242	5,364	–42.0

German students	Host country: United Kingdom		
	2019/20	2020/21	Evolution in %
Total	12,875	12,250	–4.9
First-year students only	6,385	5,960	–6.7

German students	Host country: Netherlands		
	2019/20	2020/21	Evolution in %
Total	23,015	24,551	+6.7
First-year students only	6,904	7,542	+9.2

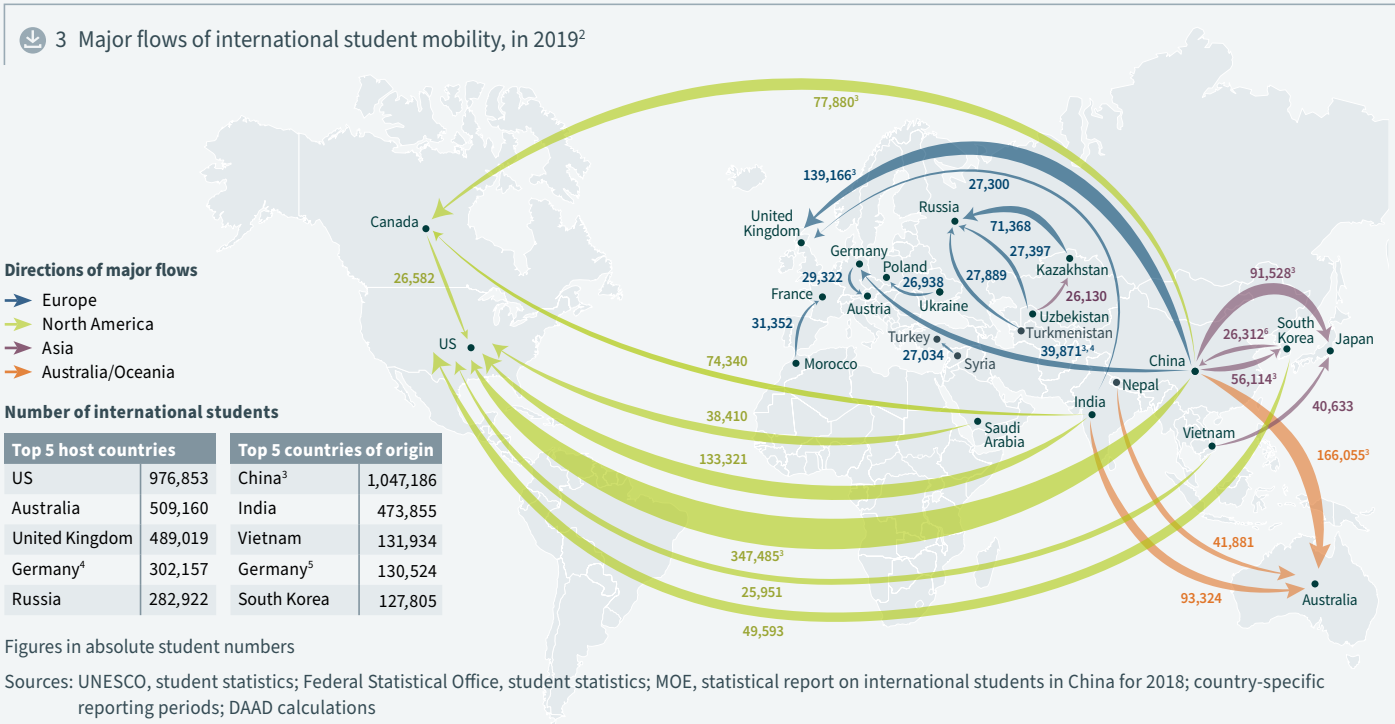
German students	Host country: Austria		
	2019/20	2020/21	Evolution in %
Total	38,874	42,532	+9.4
First-year students only	9,563	11,190	+17.0

German students	Host country: France[1]		
	2019/20	2020/21	Evolution in %
Total	4,585	3,613	–21.2

German students	Host country: Switzerland		
	2019/20	2020/21	Evolution in %
Total	12,521	13,114	+4.7
First-year students only	3,665	3,944	+7.6

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); Federal Statistical Office, "Deutsche Studierende im Ausland" (Hungary); DAAD calculations

3 Major flows of international student mobility, in 2019[2]



Number of international students

Top 5 host countries		Top 5 countries of origin	
US	976,853	China[3]	1,047,186
Australia	509,160	India	473,855
United Kingdom	489,019	Vietnam	131,934
Germany[4]	302,157	Germany[5]	130,524
Russia	282,922	South Korea	127,805

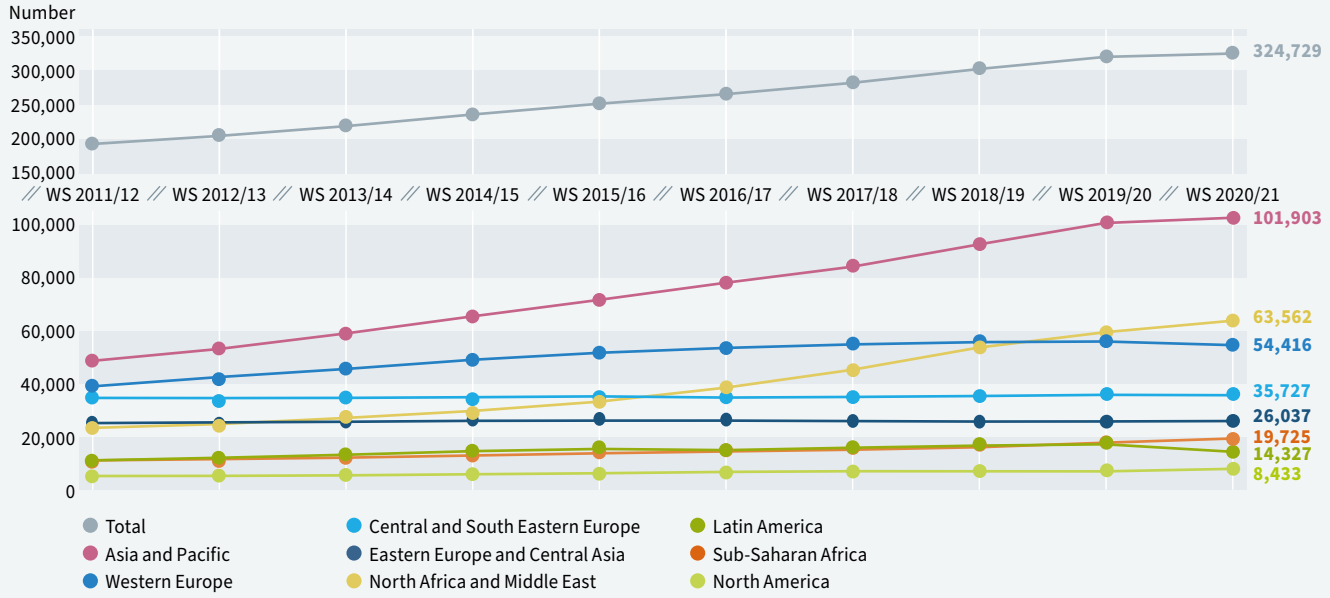
Figures in absolute student numbers

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

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 aimed at prospective students from that country. German universities are represented worldwide with transnational education projects at 54 locations in 35 countries and with 349 study programmes. Between 2015 and 2022, the number of students enrolled in German TNE projects increased from around 26,000 to around 36,000, with a slight temporary decline of about 1% in 2020. The regional focus of the German TNE projects is on South Eastern Europe, Central Asia, North Africa and the Middle East (Turkey, Egypt, Jordan, Oman, Kazakhstan, Kyrgyzstan) as well as on Asia and Pacific (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 winter semester 2011/2012



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 2021/22 winter semester, with approximately 349,400 international students enrolled in Germany during this time, a year-on-year increase of 8%. They made up 11% of all students in the 2020/21 winter semester. This figure is 12.6% at universities and 8.6% at universities of applied sciences. To begin with, there was a significant decline in international first-year students in 2020. However, in 2021, the number rises again to around 102,500.

> “According to UNESCO, around 6.1 million students were enrolled outside their home country in 2019, a year-on-year rise of approximately 7%.

In the 2020/21 winter semester, Asia and Pacific is the key region of origin for international students with a share of 31%, followed by students from North Africa and Middle East with 20% and Western Europe with 17%. At the same time, the number of students from North Africa and the Middle East has increased by 42% in the last three years, significantly faster than that of other regions. No growth can be observed in Central and South Eastern Europe or Eastern Europe and Central Asia. The key country of origin is China, with around 40,100 students, or 12% of all international students, enrolled in Germany. In second and third place are India with approximately 28,500 (9%) and Syria with approximately 16,900 students (5%). At the same time, the number of Syrian students has skyrocketed by 96% in the last three years.

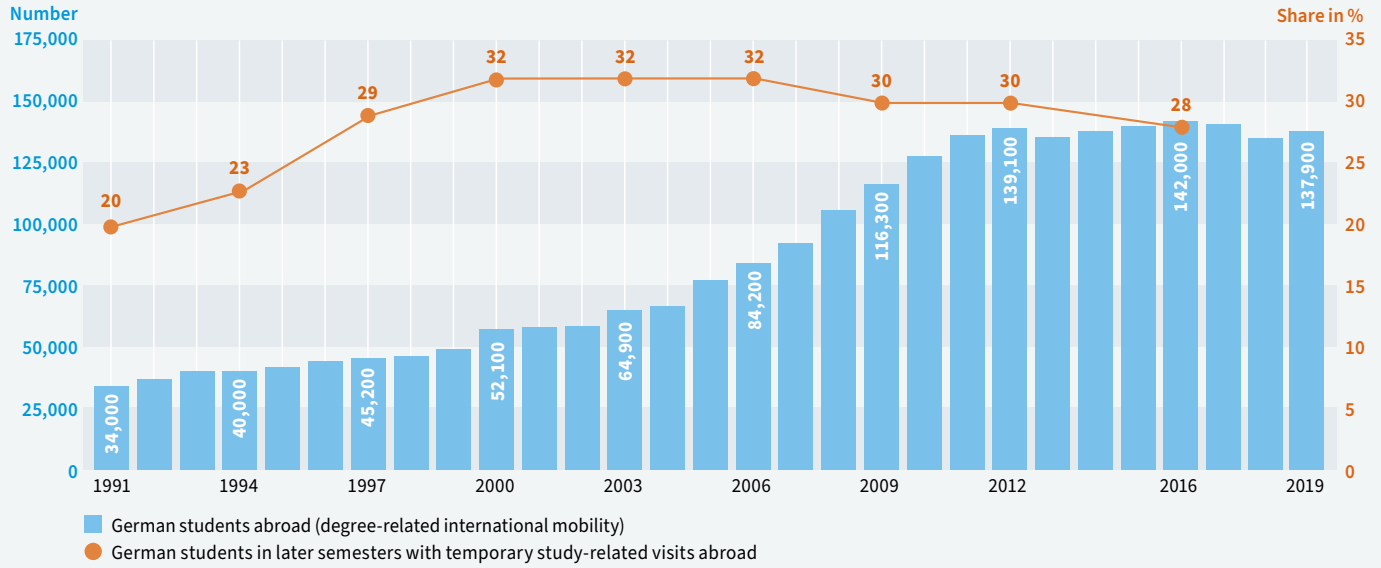
4% of international students in the 2020/21 winter semester are exchange or other visiting students who do not intend to graduate in Germany. Thus, their number dropped by half to 12,400 from 25,000 in the 2019/20 winter semester. This is another serious consequence of Covid-19 for German universities. Nevertheless, the vast majority – 96% – of international students are working towards a degree at German universities, 39% for a bachelor’s and 42% for a master’s degree. International students represent a share of roughly 21% of all master’s students, while 7% of those in bachelor’s programmes are from abroad. Some 25% of doctoral students are international junior researchers.

The largest group of international students, 42%, are enrolled in engineering study programmes, whereas approximately 25% are studying law, economics and social sciences. Consequently, these two subject groups also account for the majority of the around 47,200 international graduates (38% and 28% respectively) who were awarded a degree in 2020. Overall, 10% or thereabouts of all university graduates are from abroad.

German students abroad (Chapter C)

In 2019, around 138,000 German nationals were studying abroad, with this figure dwindling by roughly 3% (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 30,000 students or 22% of all students abroad), the Netherlands (22,000 or 16%), the United Kingdom (14,000 or 10%) and Switzerland (12,000 or 9%). A closer look at the trend in overall figures 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 in one year. During this period, the proportion

5 Degree-related and temporary study-related international mobility of German students, since 1991



Figures in absolute numbers and ratios

Sources: Federal Statistical Office, "Deutsche Studierende im Ausland"; country-specific reporting periods; DZHW Social Surveys 1991–2016

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 to currently 5.1% due to the steady growth in the number of students in Germany up to 2015.

> "The number of international students increased by 2% to around 324,700 in the 2020/21 winter semester, compared to the previous year.

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, there has been a steady decline, to 28% in the most recent survey to date in 2016. 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 was Spain (12%), followed by the United Kingdom and France (10% each) and the US (9%).

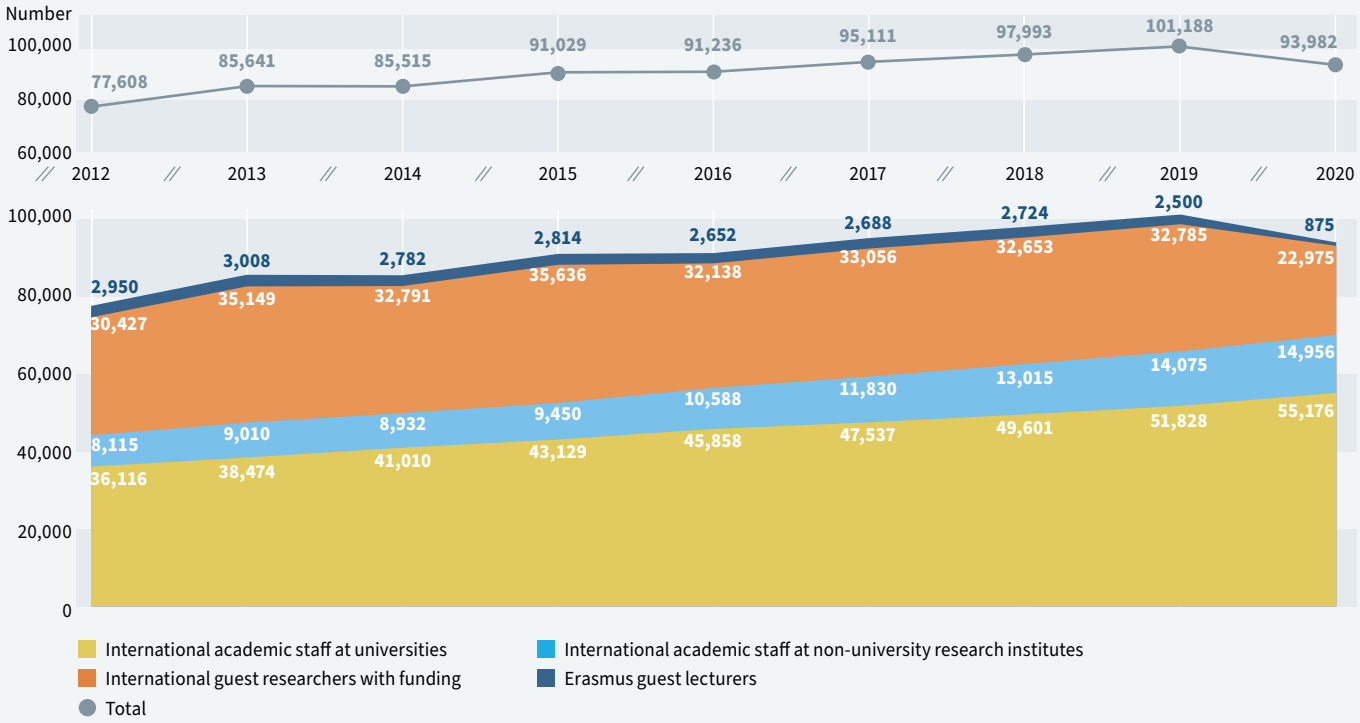
International academics and researchers in Germany (Chapter D)

In 2020, around 55,200 academic and artistic staff of foreign nationalities were employed at German universities, including roughly 3,600 international professors. Thus, international personnel accounted for 13.3% of the entire academic staff, while the corresponding percentage of professors was just 7.2%. Since 2007, the number of all international academic staff at German universities has continued to grow, by 16% in the last three years alone. Among international professors, this increase was 10% over the same period. Western Europe is the key region of origin for international academic staff. 35% of the entire international academic staff and a remarkable 67% of international professors come from Western European countries. The key countries of origin are Italy, India, China and Austria. Most international professors are from the two German-speaking countries of Switzerland (9%) and Austria (20%).

In 2020, around 15,000 academics and researchers of foreign citizenship were contractually employed by the four largest non-university research institutes (NURI). Their number has more than doubled since 2010 (+120%), with approximately 28% of all academics and researchers coming from abroad in 2020. EU countries account for 41% of foreign academics and researchers, the remaining European countries for 12%. The key countries of origin are China, India (9% each) and Italy (8%). Around two thirds of international academic staff are

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

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



Sources: Federal Statistical Office, university staff and NURI staff statistics; information from funding organisations; DAAD Erasmus statistics

engaged in the field of mathematics and natural sciences, one seventh in engineering.

Besides contractually employed international academics and researchers, international guest researchers also work and teach in Germany, their visits funded by domestic and foreign organisations.

> In 2019, around 138,000 German nationals were studying abroad, thereby dwindling by roughly 4,000 or 3% since 2016.

This constituted 23,000 visits or thereabouts in 2020. Since 2019, the pandemic has led to a 30% decrease in the number of temporary guest visits undertaken by international academics and researchers. Of these guest visits, 53% were funded by the DFG alone and 30% by the DAAD. With shares of 25% and 22% respectively, Western Europe and Asia and Pacific are the key regions of origin for international guest researchers, whereas China (8%), India (7%) 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 6,400 international guest researchers, 44% fewer than the previous year. 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 Austria, the Netherlands, Switzerland and the United Kingdom. Most German academics and researchers are employed in Switzerland (around 9,400), Austria (around 5,800) and the United Kingdom (around 5,500). This corresponds to the number of German professors; here again, Switzerland leads the field with 1,300, followed by Austria with 890 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 2019, approximately 14,000 German nationals were enrolled in doctoral studies at foreign universities. The vast majority, 78%, complete their doctorate in Western Europe. Most German doctoral students conduct research in Switzerland (24%), Austria (15%), 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. Of the doctoral students embarking on their doctorate in 2017/18, as many

as 28% had undertaken at least one doctoral-related temporary visit abroad by 2019. 53% of the visits were to Western Europe. Nonetheless, the key host country was the US (13%), followed by the United Kingdom (8%) and France (7%).

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 5,300 visits in 2020. Compared to the previous year, funding activities plummeted by 61% due to the pandemic.

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 (21%) and Asia and Pacific (13%). By a clear margin, the key host country for German guest researchers abroad was the US (19%), followed by the United Kingdom (8%) 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 Including students from Hong Kong and Macao.

4 Data from the Federal Statistical Office since, unlike other host countries, the UNESCO data for Germany on the countries of origin of international students do not include international doctoral students.

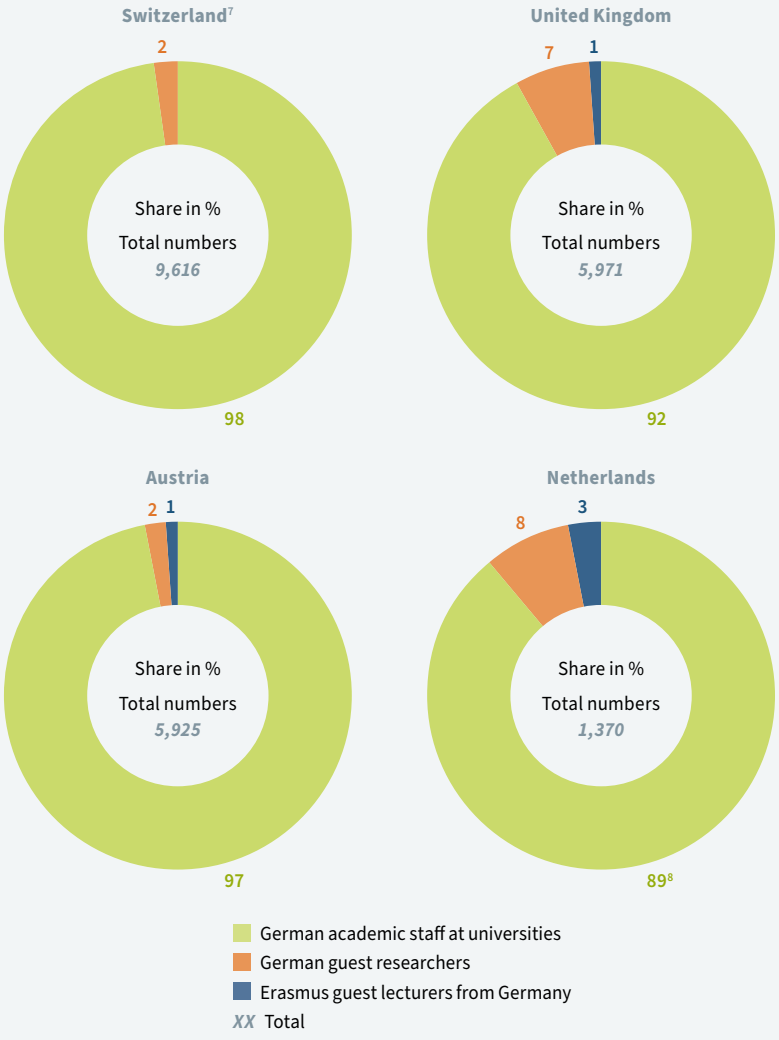
5 The UNESCO statistics were supplemented by data from the Federal Statistical Office to include the number of German students in China. They have not been included in the UNESCO statistics to date.

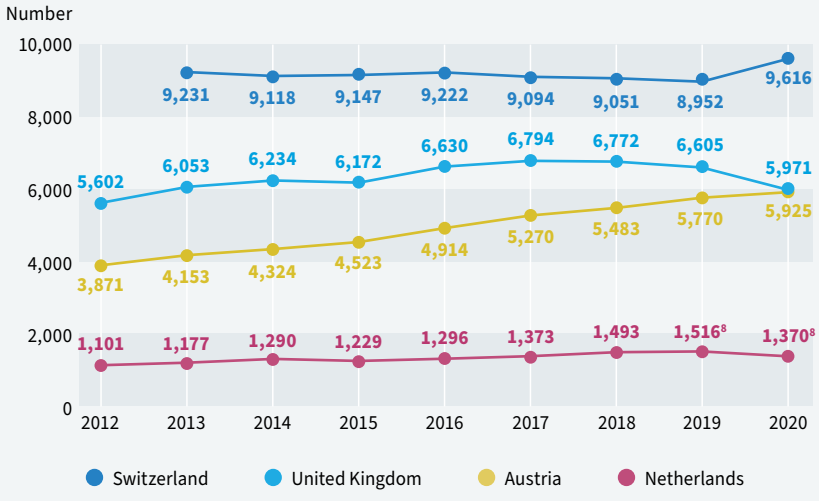
6 To obtain as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from China's Ministry of Education (MOE) on the countries of origin of international students in China in 2018. They have not yet been included in the UNESCO statistics. The proportion of 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. The reduction in the number of international students to China compared to the previous year is therefore for statistical reasons.

7 Switzerland has not been a programme country in the Erasmus+ programme since 2014.

8 Figure estimated.

7 German academics and researchers in selected countries, by type of mobility, in 2020 and total numbers since 2012





Sources: National data from respective statistical agencies; data from funding organisations; DAAD, Erasmus statistics; DZHW calculations

1.1 Mobility trends and mobility flows

According to UNESCO, around 6.1 million students were enrolled outside their home country in 2019, an increase of approximately 382,000 international students, or 7%, compared to the previous year. Since 2009, the number of internationally mobile students has leaped up by roughly 2.5 million, or 71%, only about half of which can be explained by the parallel rise in the number of all students worldwide during the same period (+34%). 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 combined with insufficient capacities in the higher education system, poor quality teaching, the lack of reputation of universities and research, and low 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.

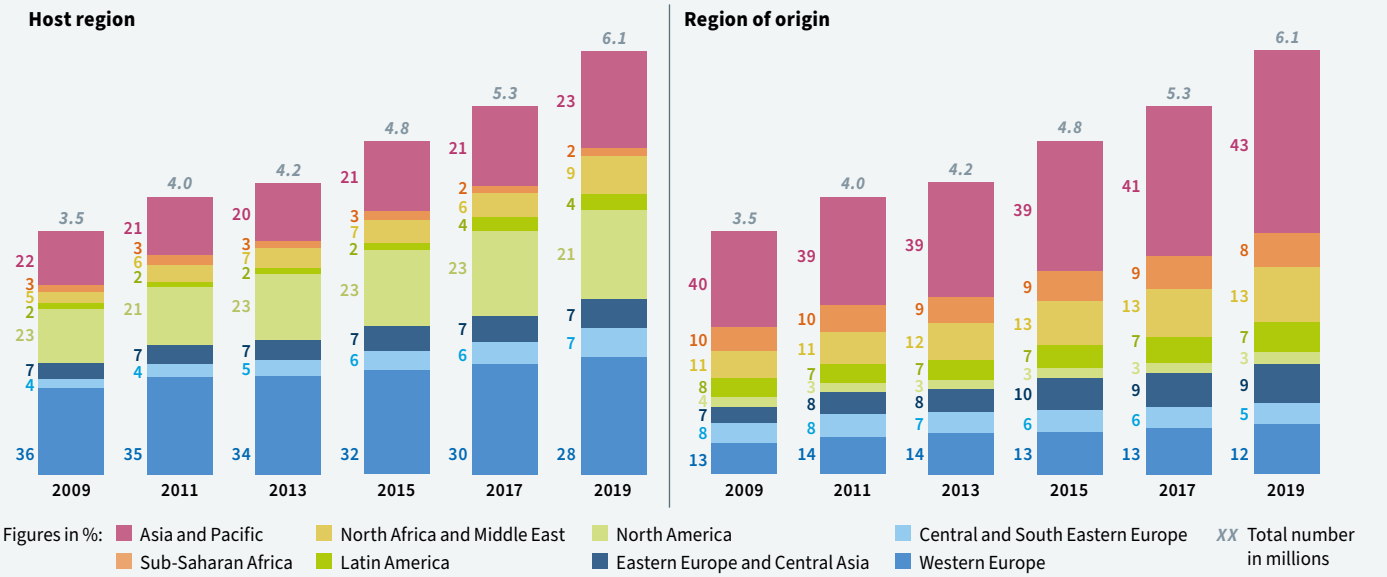
The importance of most host regions and regions of origin of international students fluctuated only slightly between 2009 and 2019. Western Europe continues to dominate the host regions (28%), followed by Asia and Pacific (23%) and North America (21%). However, Western Europe's share has fallen by eight percentage points since 2009. 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%).

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.

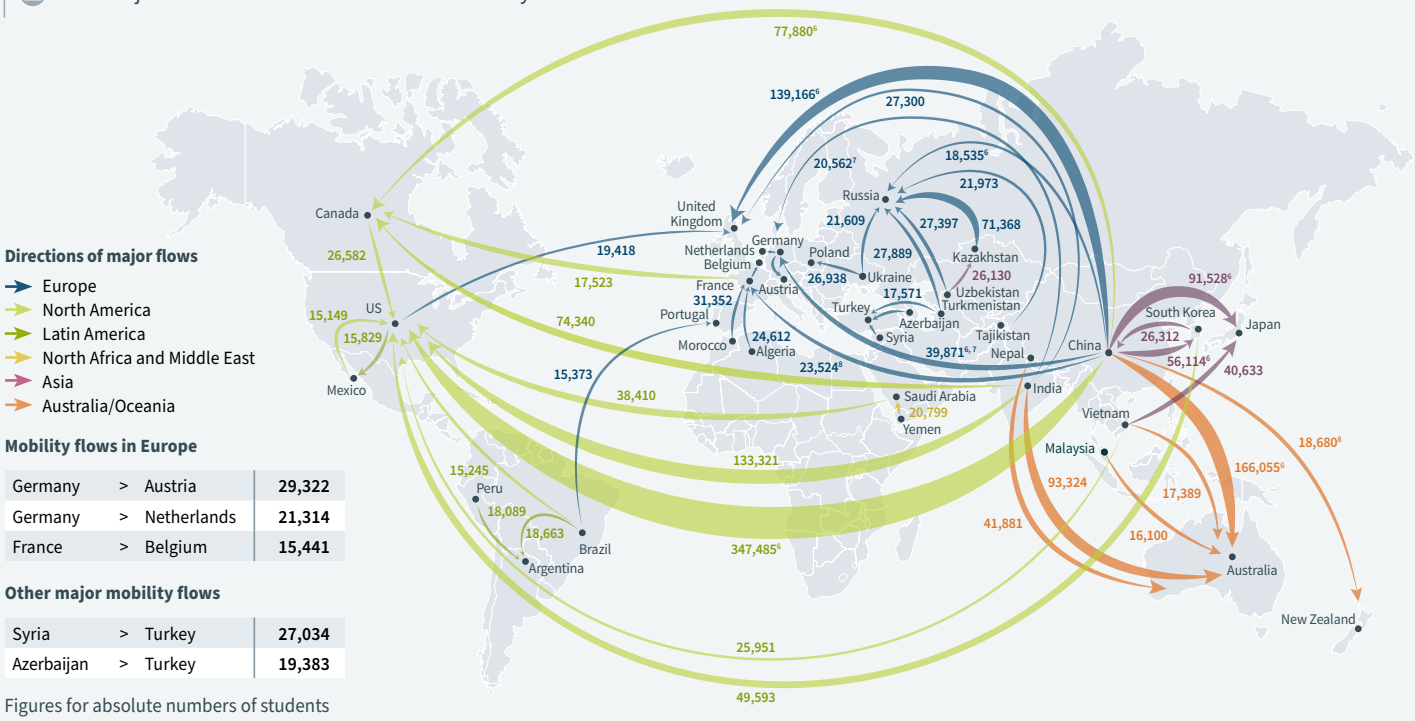
When interpreting the data presented here, it should also be noted that the vast majority of cases of student mobility recorded by UNESCO involve degree-related international mobility (degree mobility) and only a very small proportion are temporary study-related mobility (credit mobility). The data are 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 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 or regions of origin being underestimated.

A1.1 International students worldwide, by host region and region of origin, since 2009[1,2]



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

A1.2 Major flows of international student mobility in 2019[3, 4, 5]



Directions of major flows

- Europe
- North America
- Latin America
- North Africa and Middle East
- Asia
- Australia/Oceania

Mobility flows in Europe

Germany	>	Austria	**29,322**
Germany	>	Netherlands	**21,314**
France	>	Belgium	**15,441**

Other major mobility flows

Syria	>	Turkey	**27,034**
Azerbaijan	>	Turkey	**19,383**

Figures for absolute numbers of students

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

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 been included in the UNESCO statistics to date. 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. The reduction in the number of international students to China compared to the previous year is therefore for statistical reasons.

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

6 Including students from Hong Kong and Macao.

7 Data from the Federal Statistical Office since, unlike other host countries, the UNESCO data on the countries of origin of international students for Germany do not include international doctoral students.

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.

The largest flows of international student mobility lead from China, the most important country of origin by a clear margin, to the US, Australia, the United Kingdom and Japan as host countries. In 2019, a rough total of 1,047,000 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 6% year-on-year, shooting up by 74% in the last decade. Approximately 347,000 Chinese students were enrolled at universities in the US alone in the 2019 academic year. Representing 6% of global student mobility, this figure has grown by 2% compared to the previous year. For 2019, UNESCO lists around 166,000 Chinese students in Australia (+8%), around 139,000 in the United Kingdom (+12%) and around 92,000 in Japan (+9%). Other significant student mobility flows are from India to the US (133,000, –2% year-on-year), from India to Australia (93,000, +27%), from China to Canada (78,000, +6%) and from India to Canada (74,000, +114%).

Within Europe, the principal student flows are from Germany to Austria (29,000, +1%) and the Netherlands (21,000, –6%), from Ukraine to Poland (27,000, +/–0%), and from France to Belgium (15,000, +4%).

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, the number of international students in the US – by far the most important host country – in 2019 was in the region of 977,000. However, a closer look at the US share of all students shows that the figure

> “The diversity of the countries of origin is significantly higher in Germany and France than in Australia and the US.

is only around 5%. On the other hand, roughly 225,000 international students studied in the United Arab Emirates in the same year, yet the share of all students here is 76%. Other countries with high percentages of international students are Qatar (35%), Australia (28%), Singapore (27%) and Cyprus (26%). By contrast, Japan, ranked tenth among the key host countries, has a mere 5%, and in France, which hosts a similar number of international students to the UAE, the figure is just 9%.

A1.3 Host countries with the highest number and the highest proportion of international students in 2019[1]

Host country	Number of international students
US	976,853
Australia	509,160
United Kingdom	489,019
Germany[2]	302,157
Russia	282,922
Canada	279,168
France	246,378
United Arab Emirates	225,339
China[3]	208,542
Japan	202,907

Host country[4]	Proportion of international students in %
United Arab Emirates	76.2
Qatar	35.3
Australia	28.4
Singapore	26.8
Cyprus	26.1
New Zealand	20.8
United Kingdom	18.7
Switzerland	17.8
Austria	17.6
Canada	16.2

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

The United Arab Emirates as an education hub[8]

The high proportion of international students in the United Arab Emirates (UAE) is primarily 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, Australia, United Kingdom, Germany and Canada. While these two countries alone account for approximately half of all international students in the US (49%), Australia (51%) and Canada (55%), their share

Footnotes

1 Total number of domestic students from OECD figures where not included in UNESCO data.

2 Data from the Federal Statistical Office as they contain all registered international doctoral students, a total of 27,107 persons, while the UNESCO data, with 24,700 international doctoral students in Germany, are based on underestimates from surveys conducted by the Federal Statistical Office.

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 Only countries with at least 10,000 international students.

5 Including Hong Kong and Macao.

6 Data from the Federal Statistical Office since, unlike other host countries, the UNESCO data on the countries of origin of international students for Germany do not include international doctoral students.

7 See Preiss (2012).

8 See Halsey/Al Shamisi (2014).

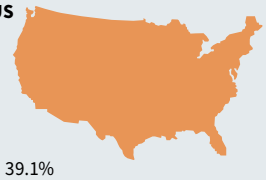
is considerably lower in Germany (20%). The countries of origin are thus significantly more diverse in Germany than in Australia, the US or Canada. A comparatively low level of diversity can also be observed in the United Kingdom, where Chinese and Indian students make up 34% of all international students. 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 enormous 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 less than 10,000 students.[7]

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 Russia can certainly also be attributed in part to strong economic and cultural ties. With 20% of all internationally mobile students from Russia, Germany is also their key host country.

In Russia, moreover, the profile of origin of international students is strongly influenced by regional factors. The five key countries of origin – Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan and Ukraine – currently account for two thirds of all international students. With a combined share of 11%, China and India do not figure prominently in this regard, unlike all other major host countries. 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, 2019

Host country: US



Other countries 39.1%

Country of origin	Number	in %
China[5]	347,485	35.6
India	133,321	13.6
South Korea	49,593	5.1
Saudi Arabia	38,410	3.9
Canada	26,582	2.7

Host country: Germany[6]

Other countries 68.4%

Country of origin	Number	in %
China[5]	40,111	13.3
India	20,562	6.8
Syria	13,032	4.3
Austria	11,495	3.8
Russia	10,439	3.5

Host country: Australia

Other countries 34.3%

Country of origin	Number	in %
China[5]	166,055	32.6
India	93,324	18.3
Nepal	41,881	8.2
Vietnam	17,389	3.4
Malaysia	16,100	3.2

Host country: Russia

Other countries 39.8%

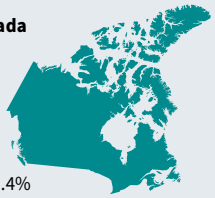
Country of origin	Number	in %
Kazakhstan	71,368	25.2
Turkmenistan	27,889	9.9
Uzbekistan	27,397	9.7
Tajikistan	21,973	7.8
Ukraine	21,609	7.6

Host country: United Kingdom

Other countries 56.2%

Country of origin	Number	in %
China[5]	139,166	28.5
India	27,300	5.6
US	19,418	4.0
Italy	14,412	2.9
Malaysia	14,094	2.9

Host country: Canada



Other countries 33.4%

Country of origin	Number	in %
China[5]	77,880	27.9
India	74,340	26.6
France	17,523	6.3
US	9,111	3.3
Vietnam	7,161	2.6

Sources: UNESCO/Federal Statistical Office, 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 1,047,000, and India, with around 474,000 internationally mobile students. These are followed – by a wide margin – by Vietnam (132,000), Germany (131,000) and South Korea (128,000), whereby Vietnam 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. This has led to significant decreases in several countries of origin, such as South Korea, compared to *Wissenschaft weltoffen 2020*, and thus to changes in the countries' ranking, most of which are due to statistics, however. 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 2019, with some 1,047,000 internationally mobile students, they account for just 2% of all Chinese students. In India, the second key country of origin, the

> "44% of internationally mobile students from India are enrolled in North America, while just 26% 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 2019[2]

Country of origin	Number of internationally mobile students
China[3]	1,047,186
India	473,855
Vietnam	131,934
Germany[4]	130,524
South Korea	127,805
US	113,164
France	108,722
Kazakhstan	95,420
Nepal[5]	93,921
Brazil[5]	81,882

Country of origin[6]	Proportion of internationally mobile students in %
Luxembourg[5]	63.1
Turkmenistan[5]	49.1
Cyprus[5]	34.3
Moldova[5]	17.8
Nepal[5]	17.7
Kuwait[5]	17.2
Azerbaijan[5]	16.8
Bosnia and Herzegovina[5]	14.5
Slovakia[5]	13.5
Laos	13.5

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; Federal Statistical Office, "Deutsche Studierende im Ausland"; 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 significantly 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 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. The reduction in the number of international students to China compared to the previous year is therefore for statistical reasons.

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. They have not yet been included in the UNESCO statistics.

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 the Federal Statistical Office since, unlike other host countries, the UNESCO data on the countries of origin of international students for Germany do not include international doctoral students.

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.

11 Data from the Federal Statistical Office on the number of German students in China (apart from Hong Kong and Macao) as they are not included in the UNESCO statistics nor in the statistical report of China's Ministry of Education (MOE). Data from the Federal Statistical Office, supplemented by the UNESCO data on German students in Hong Kong and Macao.

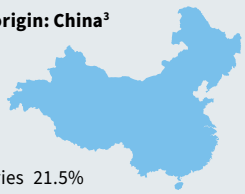
share of internationally mobile students is a mere 1%. By contrast, several other countries report markedly higher shares of internationally mobile students in relation to the total number of students. In particular, they include countries with limited study capacities or an underdeveloped higher education system by global standards: Luxembourg (63%), Turkmenistan (49%), Cyprus (34%), Moldova, Nepal (18% each), Kuwait, Azerbaijan (17% each), Bosnia and Herzegovina and Slovakia (14% each). 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 pp. 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 bring about a strongly regional orientation of student mobility.[10] For example, 63% of German students remain within the Western European region when studying abroad, while 59% 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 students, only 33% of whom choose a country in the Asia and Pacific region, while 41% opt to study in North America. The same finding applies to an even greater extent among Indian students. In this case, 44% 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 26%.

A1.6 Preferred host countries of internationally mobile students from the key countries of origin in 2019[2, 7]

Country of origin: China[3]



Other countries 21.5%

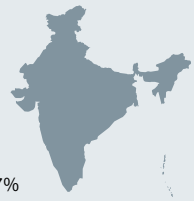
Host country	Number	in %
US	347,485	33.2
Australia	166,055	15.9
United Kingdom	139,166	13.3
Japan	91,528	8.7
Canada	77,880	7.4

Country of origin: Germany

Other countries 36.4%

Host country	Number	in %
Austria	29,322	22.5
Netherlands	21,314	16.3
United Kingdom	13,232	10.1
Switzerland	11,020	8.4
China[11]	8,137	6.2

Country of origin: India



Other countries 26.7%

Host country	Number	in %
US	133,321	28.0
Australia	93,324	19.6
Canada	74,340	15.6
United Kingdom	27,300	5.7
Germany[7]	20,562	4.3

Country of origin: South Korea

Other countries 16.9%

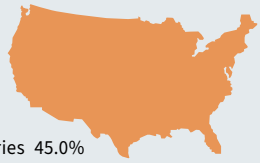
Host country	Number	in %
US	49.593	38.6
China[8]	27.830	21.6
Japan	14.328	11.1
Australia	8.635	6.7
Canada	6.489	5.0

Country of origin: Vietnam

Other countries 22.3%

Host country	Number	in %
Japan	40,633	30.3
US	25,951	19.3
Australia	17,389	12.9
South Korea	13,176	9.8
Canada	7,161	5.3

Country of origin: US



Other countries 45.0%

Host country	Number	in %
United Kingdom	19,418	17.4
Mexico	15,829	14.2
China[8]	11,063	9.9
Canada	9,111	8.1
Germany	6,111	5.5

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; Federal Statistical Office, "Deutsche Studierende im Ausland"; 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). A specific mobility goal was set for all EU countries in 2011 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 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 2019, 14.4% 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, 9.8%, was temporary study-related mobility (credit mobility), while the remaining 4.6% was degree mobility. The EU was thus still relatively far from achieving its 2020 target with one year to go.[1]

A comparison between the individual EU countries shows clear differences with regard to student mobility. Luxembourgish students lead by a clear margin, with an overall mobility rate of around 88%. 76% of Luxembourgish students alone are mobile in relation to their degree and spend their entire period of study abroad. Cyprus (36%), the Netherlands (26%) 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 (23%). All other EU countries are still below the target of 20%, including Germany (16%)[2].

As of 2019, the key student mobility flows within the EHEA, with over 20,000 students each, go from Kazakhstan to Russia, from Germany to Austria and the Netherlands, and from Ukraine to Poland and Russia. The key host country for students from the EHEA is the United Kingdom with around 164,000 international students from other EHEA countries, followed by Russia (129,000), Germany (121,000), Austria (64,000) and the Netherlands (62,000). The key country of origin of students from the EHEA is Germany, with roughly 109,000 internationally mobile students

A1.7 Mobility rates of students in the EU by countries of origin in 2019[3]

Country of origin	Proportion of internationally mobile students in %		
Luxembourg	75.9	12.2	88.1
Cyprus	33.8	2.1	35.9
Netherlands	3.3	23.0	26.4
Slovakia	17.0	4.0	21.1
Finland	4.4	14.7	19.1
France	3.4	14.8	18.3
Lithuania	10.3	6.6	16.9
Italy	4.9	11.7	16.6
Germany	4.7	11.6	16.3
Estonia	10.9	5.4	16.3
Sweden	4.9	10.8	15.6
Austria	6.2	8.9	15.0
Malta	9.3	5.3	14.6
Latvia	8.2	5.5	13.6
Greece[5]	12.7	n.a.	12.7
Czech Republic	5.1	7.4	12.6
Portugal	6.0	6.6	12.5
Denmark	1.8	9.5	11.3
Spain	2.2	8.6	10.9
Belgium	4.2	6.6	10.8
Bulgaria	9.2	1.5	10.7
Hungary	4.7	4.0	8.7
Croatia	4.0	3.6	7.7
Romania	5.6	1.6	7.3
Ireland[5]	6.0	n.a.	6.0
Slovenia[5]	5.6	n.a.	5.6
Poland	1.4	1.5	2.9
Total EU	4.6	9.8	14.4

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

Source: European Commission, Education and Training Monitor 2021

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 three countries (Greece, Ireland and Slovenia). However, since all EU countries are encouraged to expand 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 16.3% 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 area, 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 For the sake of clarity, only mobility flows with at least 5,000 students are shown.

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

6 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 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. The reduction in the number of international students to China compared to the previous year is therefore for statistical reasons.

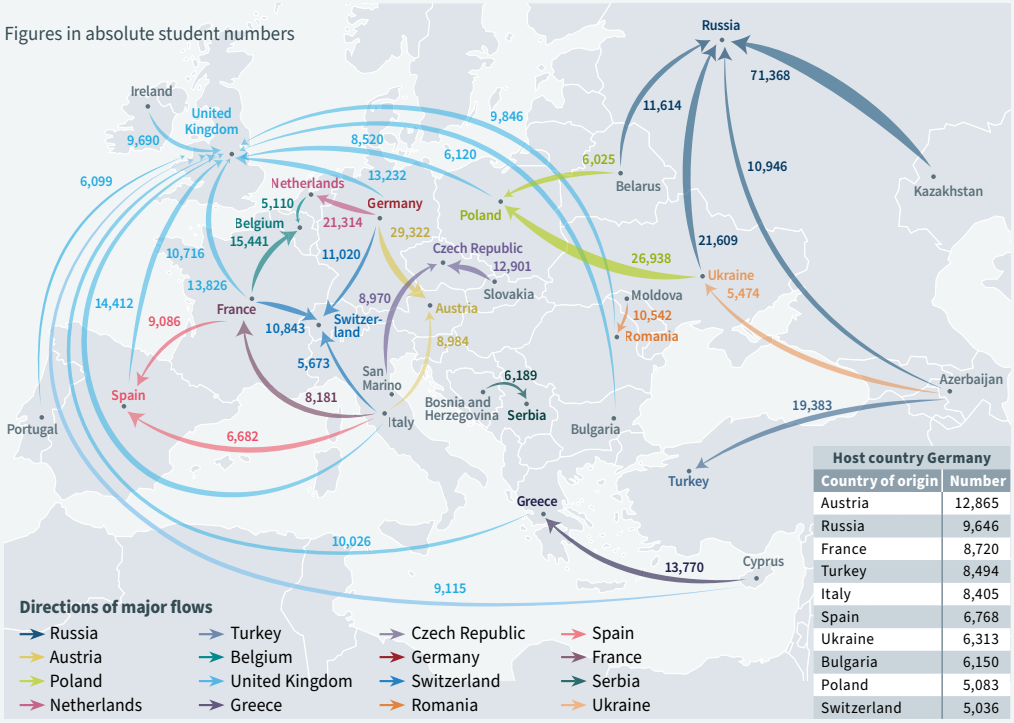
7 The UNESCO statistics were supplemented by data from the Federal Statistical Office to include the number of German students in China. They have not yet been included in the UNESCO statistics.

in other EHEA countries, followed by Kazakhstan (81,000), Ukraine (73,000), France (72,000) and Italy (69,000).

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 (88%), the Czech Republic (87%), Denmark (81%) and Poland (79%). Comparatively low proportions of international students from EHEA countries are found in Portugal (16%), France (18%) and Ukraine (22%), 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 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 (44%), France (32%), Turkey (31%) and Russia (30%). 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 2019[4]



Host country Germany

Country of origin	Number
Austria	12,865
Russia	9,646
France	8,720
Turkey	8,494
Italy	8,405
Spain	6,768
Ukraine	6,313
Bulgaria	6,150
Poland	5,083
Switzerland	5,036

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, 2019

	Number of incoming students				
	From EHEA countries			From non-EHEA countries	
Host country	Number	Ratio in %			Number
Austria	64,327	88		12	8,637
Czech Republic	39,640	87		13	6,088
Denmark	26,225	81		19	6,144
Poland	43,591	79		21	11,448
Netherlands	62,262	76		24	19,305
Switzerland	40,385	76		24	12,662
Belgium	28,005	74		26	9,586
Romania	21,540	71		29	8,738
Hungary	18,918	53		47	16,549
Sweden	12,158	50		50	12,253
Russia	128,729	47		53	145,737
Germany	120,538	42		58	164,181
Spain	29,647	39		61	46,826
Italy	20,189	38		62	32,775
United Kingdom	164,413	34		66	324,540
Ireland	6,561	27		73	17,607
Turkey	41,171	27		73	112,651
Ukraine	12,188	22		78	43,138
France	42,929	18		82	195,892
Portugal	5,810	16		84	29,935

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, 2019[6]

	Number of outgoing students				
	To EHEA countries			To non-EHEA countries	
Country of origin	Number	Ratio in %			Number
Cyprus	25,656	98		2	493
Belarus	22,301	98		2	517
Azerbaijan	42,653	98		2	1,026
Slovakia	21,291	97		3	741
Bulgaria	23,725	96		4	989
Ukraine	72,576	95		5	3,867
Greece	36,669	93		7	2,871
Austria	20,438	93		7	1,630
Portugal	18,955	92		8	1,538
Poland	23,011	92		8	1,946
Italy	69,388	90		10	7,705
Kazakhstan	81,133	86		14	13,100
Romania	29,771	85		15	5,277
Germany[7]	109,024	84		16	20,807
Spain	32,643	83		17	6,726
Netherlands	15,913	81		19	3,746
Russia	38,169	70		30	16,377
Turkey	31,666	69		31	13,898
France	72,415	68		32	34,858
United Kingdom	21,508	56		44	16,595

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; DAAD calculations

SPOTLIGHT

International student mobility during the pandemic – developments in the key host countries

Up-to-date national[1] data are now available in the four key host countries for international students; therefore, it is possible to measure the impact of the first year of the pandemic on the number of international students in these countries. However, these observations may only be regarded as a preliminary review of the short-term, direct effects of Covid-19. What cannot be predicted at this time are the longer-term repercussions, some of which are also indirect, that are based for example on the national pandemic management or changed entry regulations in the various countries and their concrete implementation.

Marked downturn in the number of international students in the US and Australia

The most noticeable fallout of the pandemic on the development in the numbers of international students can be seen in two host countries, the US and Australia. According to data published by the US Institute of International Education (IIE), the total number of international students at US universities dropped by 15% in the 2020/21 academic year, compared to the previous year, from approximately 1.1 million to roughly 914,000. This negative Covid-19 effect becomes even more apparent among international first-year students, where a slump of 46% was recorded.

Statistics released by the Australian Trade Commission (Austrade) on the total number of international students in Australia indicate a comparatively minor decline of just 5% between 2019 and 2020. Nonetheless, among international first-year students enrolling for the first time in 2020, there is also a substantial drop of approximately 23%. Given the draconian entry restrictions to Australia, this downturn would probably have been a great deal more extreme, had the travel ban not only been enforced from 20 March 2020. Consequently, some of the students who were newly enrolled for 2020 had already entered Australia beforehand.

The Covid-19 effect is relatively minor by comparison in the United Kingdom and Germany

Official student data on the United Kingdom published by the Higher Education Statistics Agency (HESA) for the 2020/21 academic year reveal a surprising finding: rather than a reduction in the total number of international students compared to the 2019/20 academic year – as in the two other major Anglophone host countries – there is an increase of around 9%. Even the numbers of international first-year students, enrolled for the first time in the United Kingdom in the 2020/21 academic year, are up by approximately 4%. Consequently, by closing its borders for a relatively short period and thanks to the exceptional commitment shown by British universities in recruiting international students during the coronavirus crisis – for example by organising special charter flights from major countries of origin – the United Kingdom has obviously succeeded in bucking the pandemic-related trend of declining numbers of international students found in other major host countries.

Database

The evaluations considered here are based on the national statistics available on the number of international and first-year students in each case. The UNESCO statistics on which the regular analyses on international student mobility in Chapter A1 are based are not applicable for this purpose as, at the time of preparing this edition of *Wissenschaft weltoffen*, they were still at the level of the 2019 reporting year and thus did not reflect the impact of Covid-19. When interpreting these national student data, it should be noted that the definitions of international students thus recorded differ from country to country, as well as from the corresponding UNESCO definition. As a result, the figures may deviate significantly from the UNESCO data presented in Chapter A1.

Finally, a closer look at the key non-English speaking host country Germany shows that the shift in student numbers can be placed somewhere between the decreases and increases described above. Year-on-year, the total number of international students rose by roughly 2% in the 2020/21 winter semester, while approximately 22% fewer international students enrolled for the first time in German universities in the 2020 academic year (the 2020 summer semester plus the 2020/21 winter semester), compared to the 2019 academic year. Arguably, the pandemic's fairly negligible impact on the total number of international students in Germany can be chiefly attributed to the fact that Germany's borders were only closed for a relatively short time – at least for international students. After the first wave of Covid-19 in 2020, exceptions were introduced to allow international students to enter the country, who then commenced their studies in Germany during the 2020/21 winter semester.

Outlook: what developments are emerging for 2021?

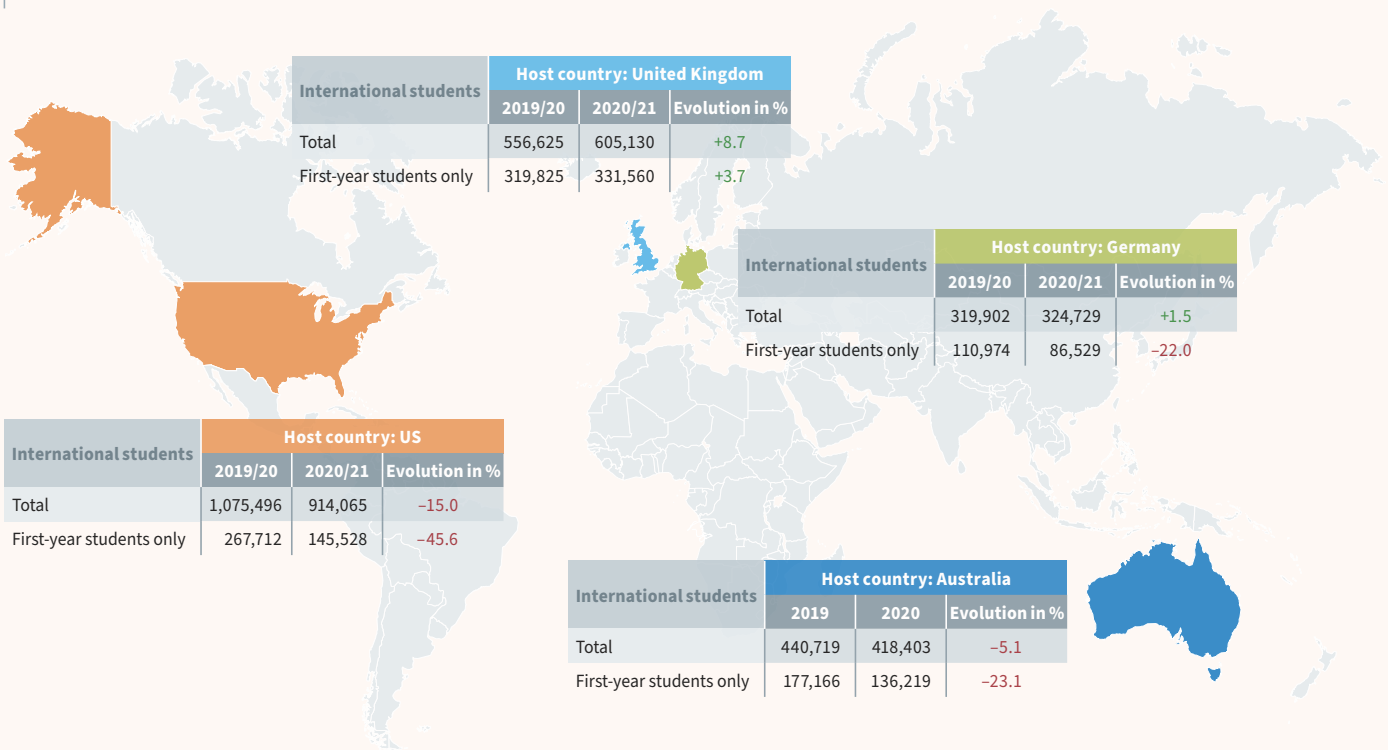
The question now is how the numbers will continue to develop in the above host countries after any restrictions due to the pandemic are phased out (particularly with regard to border closures). In the US, an upwards trend is beginning to emerge for the 2021/22 academic year. According to a survey conducted by IIE among more than 860 US universities (at which the overwhelming majority of international students in the US are enrolled), the 2021/22 academic year saw an upswing of 68% in international first-year students.[2] The survey also found a rise of 4% in the total number of international students.

Footnotes

1 See also the database info box.

2 See IIE (2021).

AS1 Evolution of the number of international students in major host countries, 2019–2020



International students	Host country: United Kingdom		
	2019/20	2020/21	Evolution in %
Total	556,625	605,130	+8.7
First-year students only	319,825	331,560	+3.7

International students	Host country: Germany		
	2019/20	2020/21	Evolution in %
Total	319,902	324,729	+1.5
First-year students only	110,974	86,529	–22.0

International students	Host country: US		
	2019/20	2020/21	Evolution in %
Total	1,075,496	914,065	–15.0
First-year students only	267,712	145,528	–45.6

International students	Host country: Australia		
	2019	2020	Evolution in %
Total	440,719	418,403	–5.1
First-year students only	177,166	136,219	–23.1

Sources: Institute of International Education (US); Higher Education Statistics Agency (UK); Australian Trade Commission Immigration (Australia), Federal Statistical Office (Germany); DAAD calculations

By contrast, no turnaround is in sight in Australia: at roughly 21%, the decrease in international students enrolling for the first time in 2021 is almost at the same level as the year before, while the total number of international students is also continuing to fall (–12%).

The United Kingdom has not yet released any official student data for the 2021/22 academic year. Nevertheless, the figures of the Universities & Colleges Admissions Service (UCAS) can be analysed instead; if nothing else, they record all international undergraduate and bachelor's students registering for the first time and intending to graduate in the United Kingdom. Surprisingly, the number of international bachelor's students newly enrolling in 2021 dropped by 18% compared to the previous year. This decline clearly has nothing to do with the pandemic, however. It is the aftermath of Brexit, which took effect in early 2021, and the end to the right of free entry for students from the EU. As a result, the number of newly enrolled bachelor's students from EU countries plummeted by approximately 50%, while an increase of 2% was recorded from non-EU countries of origin.

Lastly, in Germany, the number of applications received by uni-assist, an association that helps around half of all German universities evaluate applications from abroad, for the 2021 academic year shows that there is virtually no year-on-year change in the number of international applicants (see also pp. 44/45). As in the United Kingdom, no data are available on the total number of students here.

In summary, therefore, at this point in time, it appears that, for both the first and the second year of the pandemic, the development in the numbers of international students varies enormously in the key Anglophone host countries and the key non-English speaking host country for international students. For the most part, the differences can be explained by the varying rigour of the entry restrictions enforced in these countries. At present, it is not clear what impact these short-term changes and other effects of the pandemic will have on medium and long-term developments in the host countries under review.

2.1 Mobility trends and mobility flows

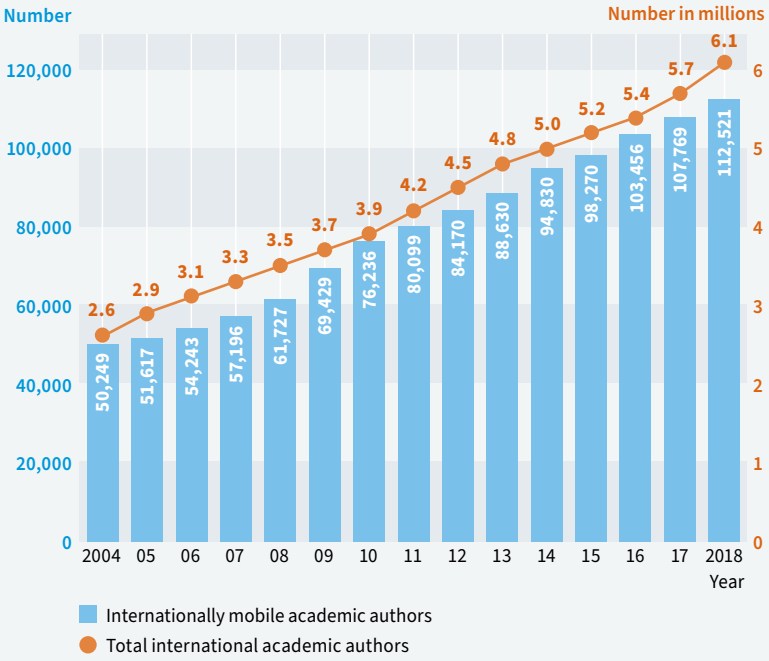
A bibliometric analysis carried out for *Wissenschaft weltoffen* on the basis of Scopus data found approximately 113,000 internationally mobile academic authors around the world for 2018 (see the methodology info box). This represents a year-on-year increase of roughly 4% (around 108,000). Since 2008, the number of internationally mobile academics and researchers has almost doubled (+82%). Nonetheless, the share of internationally mobile academics and researchers of all academics and researchers recorded worldwide – 1.8% or 1.9% – has scarcely changed since the survey was first conducted in 2004.[1] In other words, the increase in internationally mobile academics and researchers shown here may be primarily attributed to the fact that the number of academics and researchers worldwide who contribute to academic journals has continued to rise since 2004 and not to a growing propensity for mobility among these academics and researchers.

Without 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 2018–2020).[2,3] The highest numbers of mobile academics and researchers can be found in both directions between the US and China, Canada and the United Kingdom. A new development compared to the previous year is the fact that, for the first time, the two mobility flows between the US and China (and vice versa) are those with the most mobile researchers. The largest

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. 118/119). 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 The Elsevier Scopus database was launched in 2004. Comparable time series data are thus only available for the years following 2004. As the absolute number of internationally mobile academic authors recorded for the years 2019 and 2020 in particular may change drastically after this publication goes to print, the time series is only shown here until 2018 to avoid misinterpretations or misconceptions regarding the development thereof over time.

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 plan to return after their visit abroad.

4 Please refer to the data table for Fig. A2.2 for data on the most important mobility flows during the period 2015–2017.

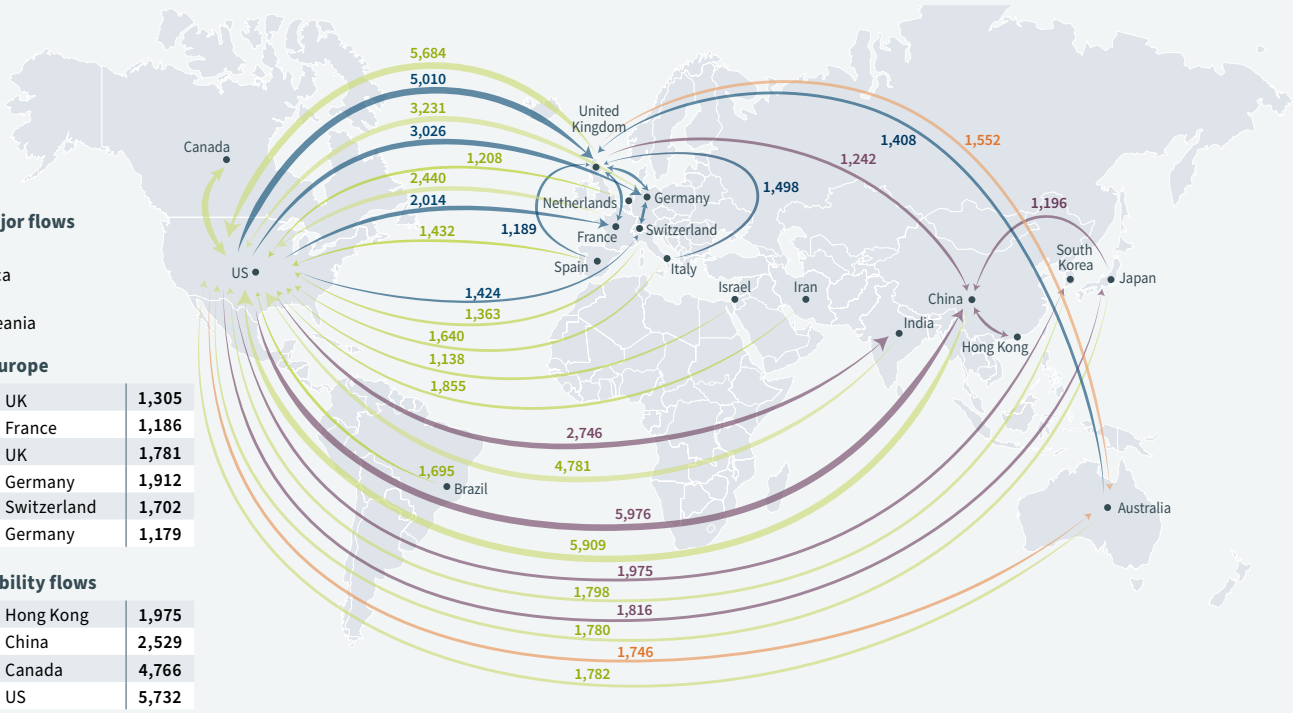
5 Due to its unique significance in China, China's special administrative region Hong Kong was included as a separate destination or origin.

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.

8 Deviations from 100% are due to rounding.

A2.2 Key mobility flows of international academic authors from 2018–2020[5, 6]



Directions of major flows

- Europe
- North America
- Asia
- Australia/Oceania

Major flows in Europe

France	> UK	1,305
UK	> France	1,186
Germany	> UK	1,781
UK	> Germany	1,912
Germany	> Switzerland	1,702
Switzerland	> Germany	1,179

Other major mobility flows

China	> Hong Kong	1,975
Hong Kong	> China	2,529
US	> Canada	4,766
Canada	> US	5,732

Figures in absolute numbers of academic authors

Source: Scopus database (Elsevier); DZHW calculations

increases by far compared to the period 2015–2017[4] can be observed in the mobility flows from Hong Kong to China (+43%) and vice versa (+26%), from the United Kingdom to China (+30%), and from India (+24%) and Brazil (+21%) to the US.[5] By contrast, substantial declines are found in the flows from the US to South Korea (–21%), from Japan to the US (–18%) and vice versa (–18%), and from Spain to the United Kingdom (–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 the Netherlands 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 (2018–2020). By contrast, certain trends are emerging in one direction for major destination countries and countries of origin: while inbound mobility clearly predominates in Sweden, Switzerland, China, the US and Australia, outgoing mobility is equally pronounced in South Korea, Japan, France, Spain and Italy. This disparity is even more noticeable in countries such as Saudi Arabia, Brazil, India, Malaysia and Iran.

A2.3 Mobility parity regarding internationally mobile academic authors in selected destination countries and countries of origin, 2018–2020[7, 8]

	Internationally mobile academic authors				
		Incoming		Outgoing	
Country	Number	Share in %			Number
Saudi Arabia	4,616	64		36	2,567
Sweden	5,178	58		42	3,785
Switzerland	9,240	58		42	6,808
China	20,920	55		45	16,826
US	61,234	53		47	53,588
Australia	10,687	53		47	9,353
Canada	14,325	52		48	13,429
Netherlands	7,095	51		49	6,838
Germany	18,836	51		49	18,239
United Kingdom	25,513	48		52	27,659
Russia	2,717	48		52	2,982
South Korea	4,765	47		54	5,484
Japan	6,491	46		54	7,550
France	12,998	46		54	15,348
Spain	7,309	43		57	9,605
Italy	6,814	40		60	10,208
Brazil	3,789	39		61	5,971
India	7,599	36		64	13,607
Malaysia	2,235	32		68	4,677
Iran	1,882	24		76	6,047

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 13 destination countries around the world that represent at least 2% of all internationally mobile academic authors primarily include European and Anglo-American countries. The sole exceptions are China, India and Japan.

The US is by far the most important destination country for internationally mobile academic authors. The bibliometric analysis found that the United States accounts for some 19% of the total inbound mobility during the period 2018–2020. Lagging behind in second and joint third place are the United Kingdom (8%), China and Germany (6% each).[1] Compared to the previous period 2015–2017, shares are down slightly in almost all major destination countries with the largest declines occurring in the US (–1.1 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.

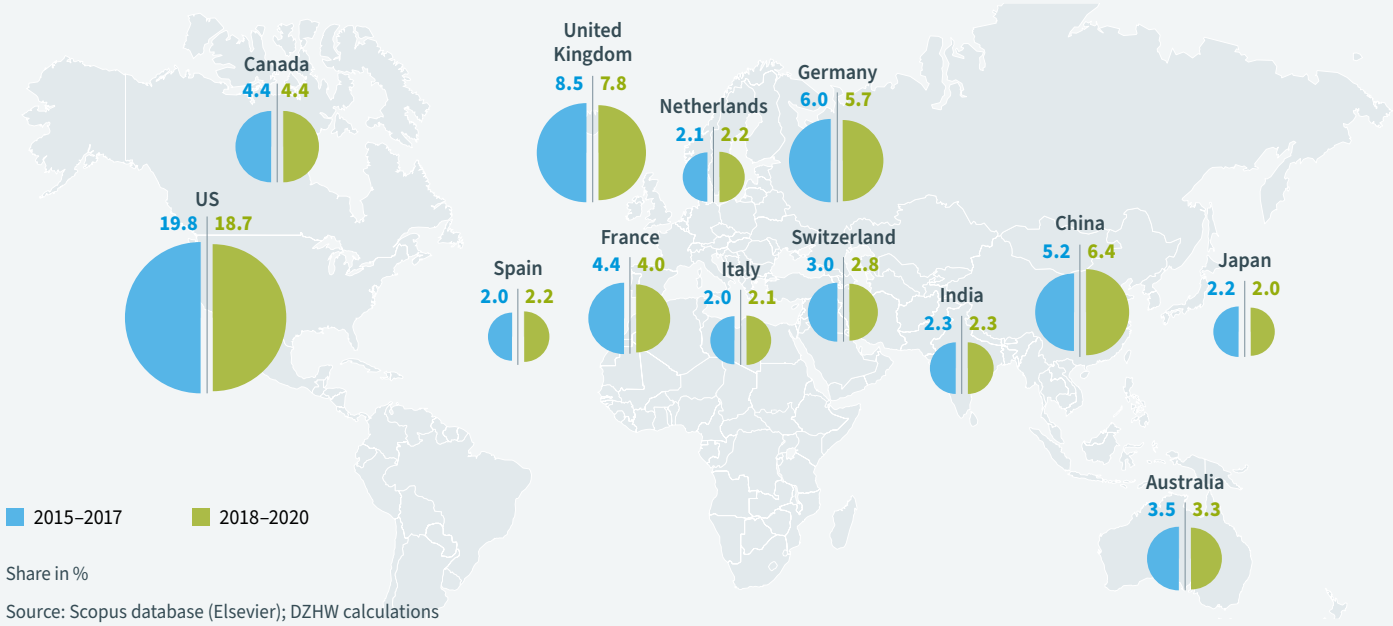
> “The significance of the US as a country of origin has dwindled in all destination countries under review, particularly in China.

The proportion of incoming academics and researchers (including returnees) of all academics and researchers in the 30 key destination countries in 2020 is highest in Hong Kong and Saudi Arabia at roughly 12% each[3], followed by 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 28% of incoming academics and researchers, while the proportion is appreciably higher in destination countries like Canada (49%) and China (47%) 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 seventh 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 fourth 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. Moreover, a glance at the key destination countries and countries of origin of mobile academics and researchers from or in China (see also pp. 27) clearly shows a lively intensive academic exchange between Hong Kong and mainland China.

Comparing the periods 2015–2017 and 2018–2020, a downward trend can be observed in the share of the ten key countries of origin in all destination countries under review. 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 the United Kingdom (+5 and +3 percentage points respectively).

A2.4 Share of internationally mobile academic authors of all internationally mobile academic authors worldwide by key destination countries, 2015–2017 and 2018–2020[2]



Share in %

Source: Scopus database (Elsevier); DZHW calculations

A2.5 Key countries of origin of internationally mobile academic authors in the six key destination countries, 2015–2017 and 2018–2020

Destination country: US

Origin: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
China	6,209	10.2	5,909	9.6
Canada	6,046	9.9	5,732	9.4
UK	5,898	9.7	5,684	9.3
India	3,861	6.3	4,781	7.8
Germany	3,634	5.9	3,231	5.3
France	2,736	4.5	2,440	4.0
Iran	1,827	3.0	1,855	3.0
South Korea	1,956	3.2	1,798	2.9
Australia	1,838	3.0	1,782	2.9
Japan	2,171	3.6	1,780	2.9
Other	**24,951**	**40.8**	**26,242**	**42.9**

Destination country: United Kingdom

Origin: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	5,602	21.4	5,010	19.6
Germany	1,966	7.5	1,781	7.0
Italy	1,605	6.1	1,498	5.9
Australia	1,406	5.4	1,408	5.5
France	1,401	5.4	1,305	5.1
Spain	1,430	5.5	1,189	4.7
Canada	1,094	4.2	1,028	4.0
China	741	2.8	891	3.5
Netherlands	924	3.5	848	3.3
Ireland	813	3.1	843	3.3
Other	**9,174**	**35.1**	**9,712**	**38.1**

Destination country: Germany

Origin: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	3,188	17.3	3,026	16.1
UK	1,733	9.4	1,912	10.2
Switzerland	1,309	7.1	1,179	6.3
France	1,071	5.8	1,074	5.7
Italy	849	4.6	899	4.8
Netherlands	862	4.7	878	4.7
Austria	977	5.3	876	4.7
China	753	4.1	798	4.2
Spain	797	4.3	696	3.7
India	487	2.6	556	3.0
Other	**6,405**	**34.8**	**6,942**	**36.6**

Destination country: China

Origin: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	5,496	34.2	5,976	28.6
Hong Kong[3]	1,771	11.0	2,529	12.1
UK	954	5.9	1,242	5.9
Japan	1,321	8.2	1,196	5.7
Singapore	728	4.5	932	4.5
Taiwan	643	4.0	925	4.4
Germany	672	4.2	886	4.2
Australia	521	3.2	772	3.7
Canada	584	3.6	715	3.4
Pakistan	350	2.2	687	3.3
Other	**3,040**	**18.9**	**5,060**	**24.2**

Destination country: Canada

Origin: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	4,513	33.4	4,766	33.3
UK	1,041	7.7	1,100	7.7
Iran	899	6.7	1,077	7.5
France	980	7.3	858	6.0
China	714	5.3	626	4.4
India	412	3.1	508	3.5
Germany	416	3.1	435	3.0
Australia	408	3.0	415	2.9
Brazil	261	1.9	378	2.6
Italy	211	1.6	208	1.5
Other	**3,650**	**27.0**	**3,954**	**27.6**

Destination country: France

Origin: top 10	2015–2017		2018–2020	
	Number	in %	Number	In %
US	2,272	16.9	2,014	15.5
UK	1,108	8.2	1,186	9.1
Germany	962	7.2	912	7.0
Italy	967	7.2	911	7.0
Spain	831	6.2	701	5.4
Canada	642	4.8	686	5.3
Switzerland	629	4.7	583	4.5
Belgium	528	3.9	555	4.3
Brazil	298	2.2	350	2.7
China	337	2.5	321	2.5
Other	**4,867**	**36.2**	**4,779**	**36.7**

Source: Scopus database (Elsevier); DZHW calculations

Finally, it is remarkable that, compared to the period 2015–2017, the significance of the US as a country of origin has dwindled in all destination countries under review, particularly in China. Over the same period, China has become less important as a country of origin in the US, and especially in Canada, although it remains the key country of origin in the US, slightly ahead of Canada. Furthermore, 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, 2020[4,5]

Destinations	Incoming academic authors in %
Hong Kong[3]	11.7
Saudi Arabia	11.5
Switzerland	8.6
Ireland	8.3
Singapore	6.8
Belgium	5.3
Canada	5.2
Austria	5.1
UK	5.0
Sweden	4.8
Pakistan	4.8
Netherlands	4.7
Denmark	4.6
Norway	4.5
Australia	4.4

Destinations	Incoming academic authors in %
Israel	3.7
Germany	3.7
France	3.4
Mexico	2.9
US	2.6
Spain	2.2
Indonesia	1.8
Italy	1.7
South Korea	1.5
India	1.4
Turkey	1.3
Japan	1.2
Brazil	1.0
China	0.8
Russia	0.7

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 2020 were taken into consideration.

5 Share of all (incoming and non-mobile) academic authors in the respective destination country.

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 2018–2020, 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 2000) 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. Trailing some way behind are the United Kingdom (8%), Germany (6%), France and China (5% each). Compared to the previous period 2015–2017, the key countries of origin mainly indicate declining shares of inbound mobility worldwide, particularly the US (–1.3 percentage points) and Germany (–0.4 percentage points).

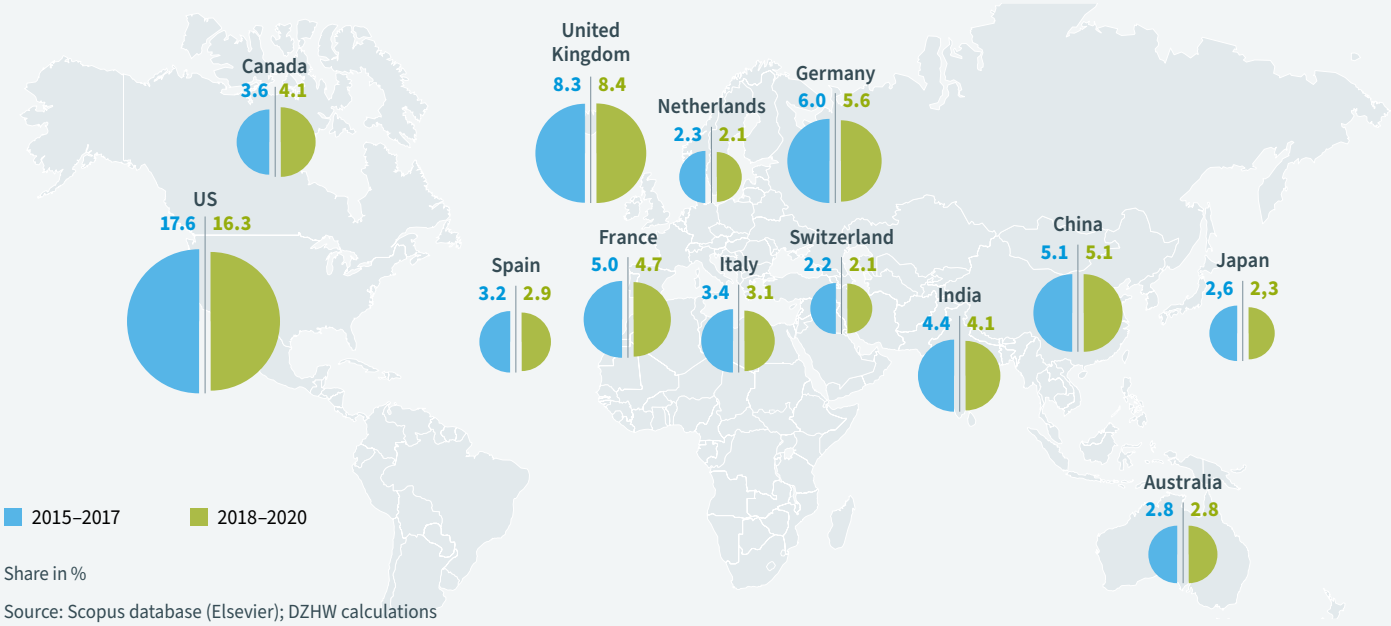
> “China now figures more prominently as a destination country for all countries of origin under review, most notably for Germany and Canada.

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. 24/25). Scoring around 17%, Hong Kong has by far the highest share of outgoing academics and researchers, followed by Singapore (8%), Switzerland and Saudi Arabia (7% each).[3] Placing fifth to tenth are the United Kingdom (6%), then Belgium, Malaysia, Pakistan, Canada and South Africa (5% each). With around 4%, Germany is in 17th place, behind France and the Netherlands (also with roughly 4% each), yet ahead of the US (2%), Japan and China (1% each).

Similar to its country of origin profile (see pp. 24/25), 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 29% of all outgoing academics and researchers from the US. By comparison, the share of the three key destination countries of academics and researchers from China (52%) and Canada (56%) is considerably 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 Switzerland and Austria. Hong Kong, Japan, Taiwan and Singapore are particularly popular destinations for academics and researchers from China.

A glance at the key destination countries and countries of origin of mobile academics and researchers from or in China (see also pp. 24/25)

A2.7 Share of internationally mobile academic authors of all internationally mobile academic authors worldwide by key countries of origin, 2015–2017 and 2018–2020[2]



Share in %

Source: Scopus database (Elsevier); DZHW calculations

A2.8 Key destination countries of internationally mobile academic authors from the six key countries of origin, 2015–2017 and 2018–2020

Country of origin: US

Destinations: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
China	5,496	10.2	5,976	11.2
UK	5,602	10.4	5,010	9.3
Canada	4,513	8.3	4,766	8.9
Germany	3,188	5.9	3,026	5.6
India	2,780	5.1	2,746	5.1
France	2,272	4.2	2,014	3.8
South Korea	2,496	4.6	1,975	3.7
Japan	2,207	4.1	1,816	3.4
Australia	1,887	3.5	1,746	3.3
Switzerland	1,453	2.7	1,424	2.7
Other	**22,231**	**41.1**	**23,089**	**43.0**

Country of origin: United Kingdom

Destinations: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	5,898	23.1	5,684	20.6
Germany	1,733	6.8	1,912	6.9
Australia	1,803	7.1	1,552	5.6
China	954	3.7	1,242	4.5
France	1,108	4.3	1,186	4.3
Canada	1,041	4.1	1,100	4.0
Ireland	702	2.8	1,016	3.7
Spain	676	2.7	897	3.2
Netherlands	677	2.7	884	3.2
Italy	696	2.7	877	3.2
Other	**10,234**	**40.1**	**11,309**	**40.8**

Country of origin: Germany

Destinations: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	3,634	19.6	3,231	17.7
UK	1,966	10.6	1,781	9.8
Switzerland	1,895	10.2	1,702	9.3
Austria	1,082	5.9	1,048	5.7
France	962	5.2	912	5.0
China	672	3.6	886	4.9
Netherlands	735	4.0	820	4.5
Italy	509	2.8	580	3.2
Spain	433	2.3	497	2.7
Sweden	478	2.6	475	2.6
Other	**6,137**	**33.2**	**6,307**	**34.6**

Country of origin: China

Destinations: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	6,209	40.2	5,909	35.1
Hong Kong[3]	1,574	10.2	1,975	11.7
UK	741	4.8	891	5.3
Australia	731	4.7	839	5.0
Germany	753	4.9	798	4.7
Japan	740	4.8	697	4.1
Canada	714	4.6	626	3.7
Singapore	586	3.8	595	3.5
Pakistan	235	1.5	535	3.2
Taiwan	409	2.7	485	2.9
Other	**2,770**	**17.9**	**3,476**	**20.8**

Country of origin: Canada

Destinations: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	6,046	44.5	5,732	42.7
UK	1,094	8.0	1,028	7.7
China	584	4.3	715	5.3
France	642	4.7	686	5.1
Australia	491	3.6	504	3.8
Germany	454	3.3	411	3.1
Saudi Arabia	286	2.1	362	2.7
India	259	1.9	272	2.0
Switzerland	262	1.9	246	1.8
Iran	213	1.6	213	1.6
Other	**3,268**	**24.0**	**3,260**	**24.2**

Country of origin: France

Destinations: top 10	2015–2017		2018–2020	
	Number	In %	Number	In %
US	2,736	17.5	2,440	15.9
UK	1,401	9.0	1,305	8.5
Germany	1,071	6.9	1,074	7.0
Switzerland	1,043	6.7	960	6.3
Canada	980	6.3	858	5.6
Italy	549	3.5	637	4.2
Belgium	577	3.7	622	4.1
Spain	511	3.3	540	3.5
China	432	2.8	519	3.4
Netherlands	314	2.0	336	2.2
Other	**6,007**	**38.5**	**6,057**	**39.3**

Source: Scopus database (Elsevier); DZHW calculations

clearly shows a lively intensive academic exchange between Hong Kong and mainland China. Lastly, compared to the previous period 2015–2017, 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 Germany and Canada. 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 2020[4, 5]

Origin	Outgoing academic authors in %
Hong Kong[3]	16.9
Singapore	8.3
Switzerland	6.7
Saudi Arabia	6.6
UK	6.0
Belgium	5.3
Malaysia	5.0
Pakistan	4.9
Canada	4.8
South Africa	4.8
Austria	4.5
Netherlands	4.4
France	4.1
Australia	4.1
Denmark	4.0
Sweden	3.7
Germany	3.7
Iran	3.5
Mexico	2.9
Spain	2.7
India	2.5
US	2.4
Italy	2.3
Taiwan	2.1
Turkey	1.9
South Korea	1.9
Brazil	1.6
Japan	1.3
Russia	0.8
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 pp. 12).

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 with the highest numbers of outgoing academic authors worldwide in 2020 were taken into consideration.

5 Share of all (outgoing and non-mobile) academic authors from the respective country of origin.

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 primarily 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 2019, around 153,000 junior researchers from abroad were intending to gain a doctorate at US universities, as opposed to those in the United Kingdom (46,000), Germany (27,000), France (25,000) and Australia (20,000). However, 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 (87%), Switzerland (56%), New Zealand (50%) and the Netherlands (44%). 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 2019[4, 5, 6]

Host country	Number of intl. doctoral students
US	153,271
United Kingdom	46,310
Germany	27,107
France	25,376
Australia	20,019
Canada	18,678
Spain	16,511
Japan	16,005
Switzerland	14,353
South Korea	10,782

Host country	Share of intl. doctoral students in %
Luxembourg	87.2
Switzerland	56.4
New Zealand	49.9
Netherlands[7]	44.0
US	42.9
United Kingdom	41.1
France	37.9
Denmark	37.2
Australia	35.7
Austria	35.5

Sources: OECD, student statistics; Federal Statistical Office, 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 2019. Corresponding national data were collected for 16 of the 23 countries meeting this definition; however, this was not possible for Australia, Argentina, China, Canada, New Zealand, Russia and the Czech Republic.

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 or not 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 2018/19; United Kingdom: foreign academic staff at universities in 2018/19; Germany: full-time foreign academic staff at universities and non-university research institutes in 2019; Switzerland: foreign university staff in 2019; 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 2019; Netherlands: foreign academic staff at universities in 2018; Austria: foreign academics and researchers at universities in 2019; South Korea: foreign professors, academics and researchers in 2019; Spain: foreign teaching and research staff at public universities (PDI/PEI) in 2018/19; Turkey: foreign teaching staff at universities in 2018/19; Sweden, Finland, Portugal: foreign academic staff in 2019; data for Italy are from 2016 as no current data available ("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) and internationally mobile doctoral students (Fig. A2.11).

5 International doctoral students in the US: as the 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: March 2019).

6 International doctoral students in Germany: data from the Federal Statistical Office Germany (Destatis) as they include almost all registered doctoral students (27,107 persons), whereas the (too low) extrapolation from a survey of doctoral students by the Destatis is used for the UNESCO data (24,700 persons).

7 Data from 2018 as no OECD figures were available for 2019.

8 Including data on international doctoral students in the US and Germany from the SEVIS statistics and/or those provided by the Federal Statistical Office (see footnotes 5 and 6).

9 Including Hong Kong and Macao.

10 Data from 2018 as no UNESCO data are available on the number of domestic, in-country doctoral students for 2019.

11 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 96,000 Chinese doctoral students conducted research at universities abroad in 2019, followed by India (33,000), Iran (21,000) and Germany (14,000) trailing some way behind. With around 8,000 doctoral students, Canada ranks 10th. 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 Ecuador (92%), Kuwait (91%), the Palestinian territories (76%) and Vietnam (52%). The conspicuously strong representation in Ecuador may be explained by the country's limited doctoral opportunities, with doctoral studies currently offered at just six universities.

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 collected, the US turns out to be the key host country by a clear margin, with around 136,600 international academics and researchers at US universities. It is followed by the United Kingdom (67,600), Germany (51,100), Switzerland (30,000) 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.

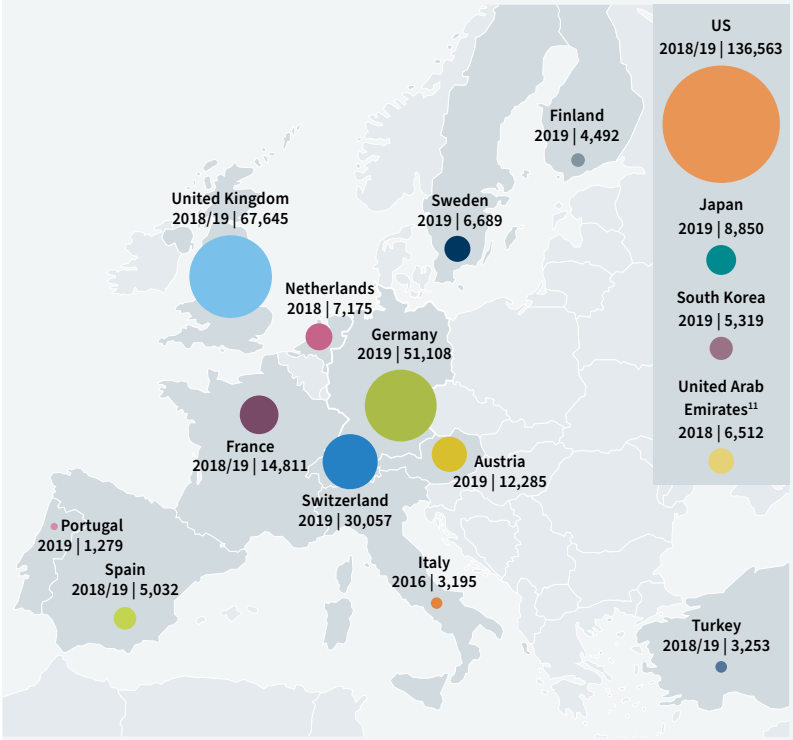
A2.11 Countries of origin with the highest number and the highest proportion of internationally mobile doctoral students in 2019[4, 8]

Country of origin	Number of internationally mobile doctoral students
China[9]	95,932
India	33,339
Iran	20,744
Germany	14,187
Italy	13,937
South Korea	13,506
Brazil	9,842
Saudi Arabia	8,650
US	7,877
Canada	7,641

Country of origin	Share of internationally mobile doctoral students in %
Ecuador	92.1
Kuwait	91.3
Palestinian territories	75.6
Vietnam[10]	52.4
Ghana	48.7
Costa Rica	48.6
Colombia	45.3
Saudi Arabia	45.1
Bangladesh[10]	42.2
Sri Lanka	40.8

Sources: OECD/UNESCO, student statistics; Federal Statistical Office, 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

3 Transnational education projects at 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 is what distinguishes TNE from the primarily individual, international mobility of students, academics and researchers. In 2022, German universities are represented worldwide with transnational education projects at 54 locations in 35 countries and with 349 study programmes, 21 more than in 2021. 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 36,380.[1, 2]

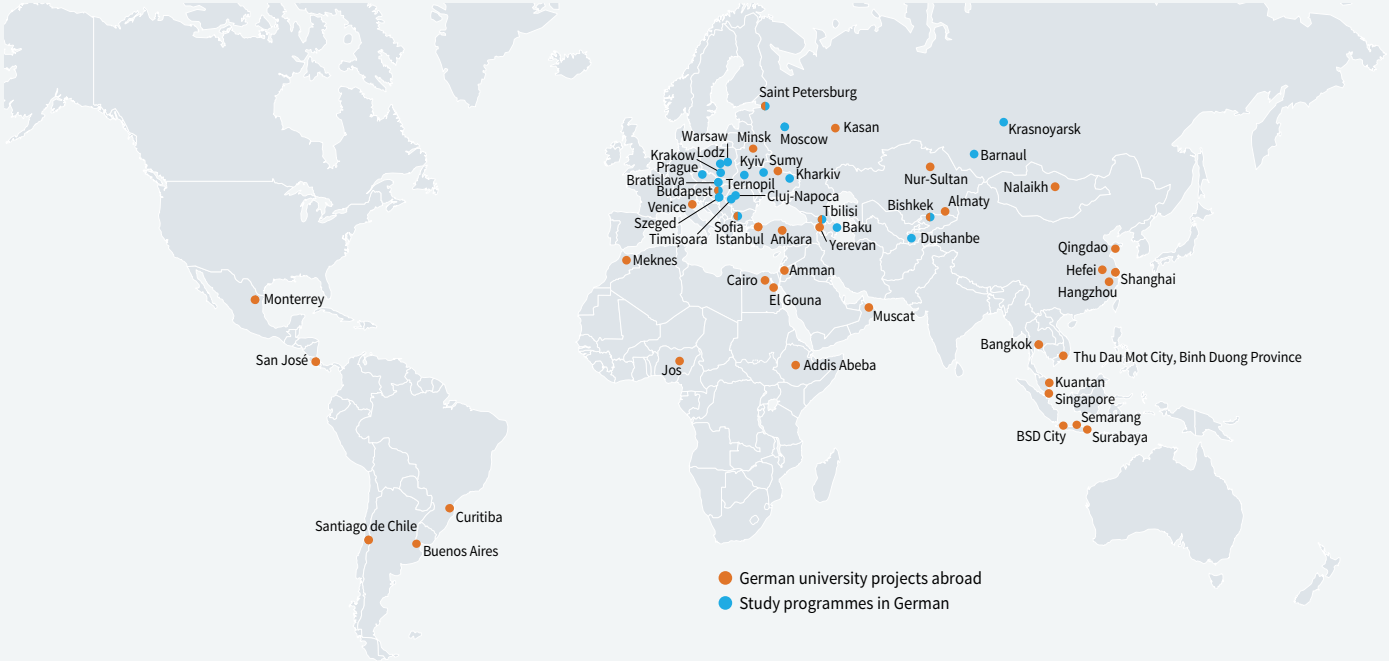
The regional focus of the German TNE projects is on North Africa and the Middle East (Egypt, Jordan, Oman) and the Asia and Pacific region (China, Vietnam, Singapore). Binational higher education projects are of particular importance here: 41% of the students in German TNE projects alone are at the German University in Cairo (GUC). In addition, a further 19% of TNE students are in the North Africa and Middle East region, with 13% 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 9% 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 (and also funded by the DAAD from federal funds).[4] 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 can be assumed that the data presented here reflect the majority of the overall TNE activities of German universities.

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, it is not possible to make meaningful comparisons between TNE projects offered by different countries at national and international level. A TNE classification framework for International

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

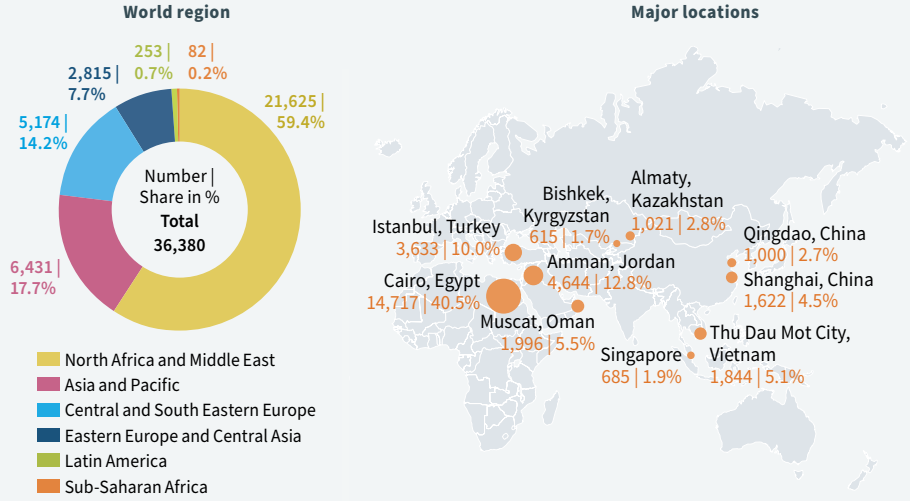


Source: DAAD, TNE statistics

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.[3] 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, 94% are within the framework of collaborative study programmes or binational universities. They account for 97% of the total number of enrolled students.

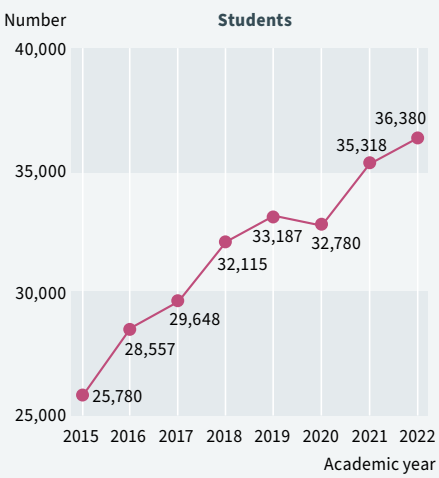
> "Despite the pandemic, the number of students in German TNE projects has increased by roughly 11% since 2020.

A3.2 Students in German TNE projects with current or previous DAAD funding, by world region and major locations, 2022[6]



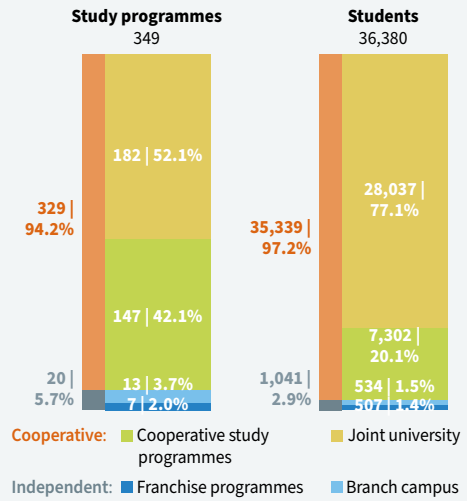
Source: DAAD, TNE statistics

A3.3 Students in German TNE projects with current or previous DAAD funding since 2015[1, 2]



Source: DAAD, TNE statistics

A3.4 German TNE projects according to the joint IPPM classification framework, 2022[5, 6]



Number and share in %

Source: DAAD, TNE statistics

Footnotes

1 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.

2 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).

3 See Knight/McNamara (2017).

4 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.

5 IPPM = International Programme and Provider Mobility.

6 Deviations from 100% are due to rounding.

3.2 Features of the 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:

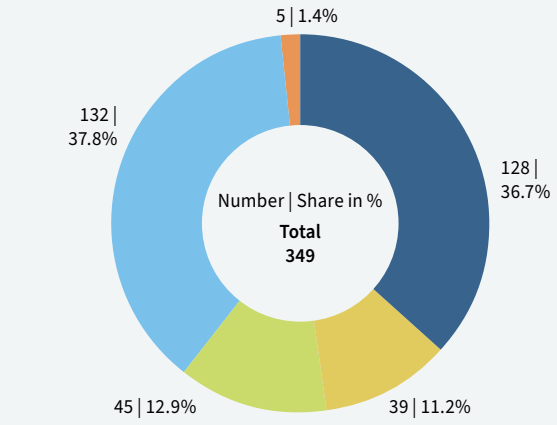
- German universities, whose commitment and assumption of academic responsibility are instrumental in shaping the field of German TNE;
- the universities and university policy players in the respective host country, whose regional competence is pivotal to successfully structuring the TNE projects to meet the needs of the target groups;
- the financing ministries (BMBF, AA, BMZ), whose TNE funding addresses issues of foreign science policy, university internationalisation and research and development in equal measure;[1]
- the DAAD, which acts as a mediator and coordinator to ensure that TNE projects are implemented in a way that accommodates the interests of all parties.

> “ 76% of TNE students are enrolled in study programmes that include compulsory German language instruction, a further 15% 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) complement each other.

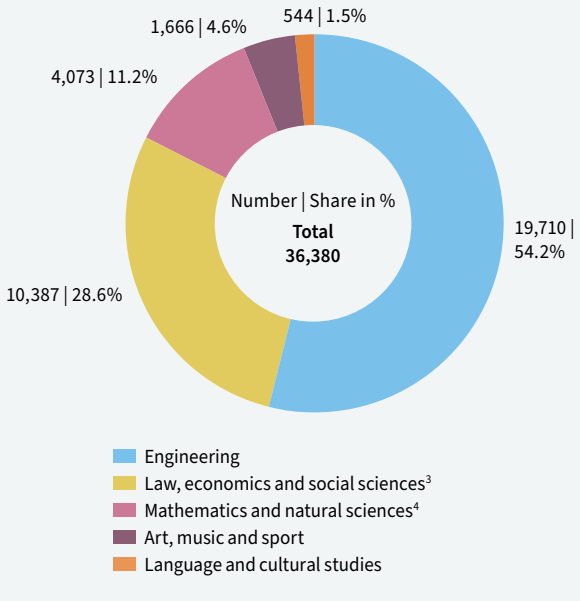
The TNE study programmes support the connection to Germany in various ways. First and foremost is the curricular responsibility borne by German universities, which leads to the award of German degrees or a combination of German and foreign degrees. In just under half of the TNE study programmes considered (48%), a German university degree is awarded as the sole degree or in combination with a foreign degree as a double or joint degree.[2] 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 13% 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



Source: DAAD, TNE statistics

A3.6 Students in German TNE projects with current or previous DAAD funding, by subject group, 2022[5]

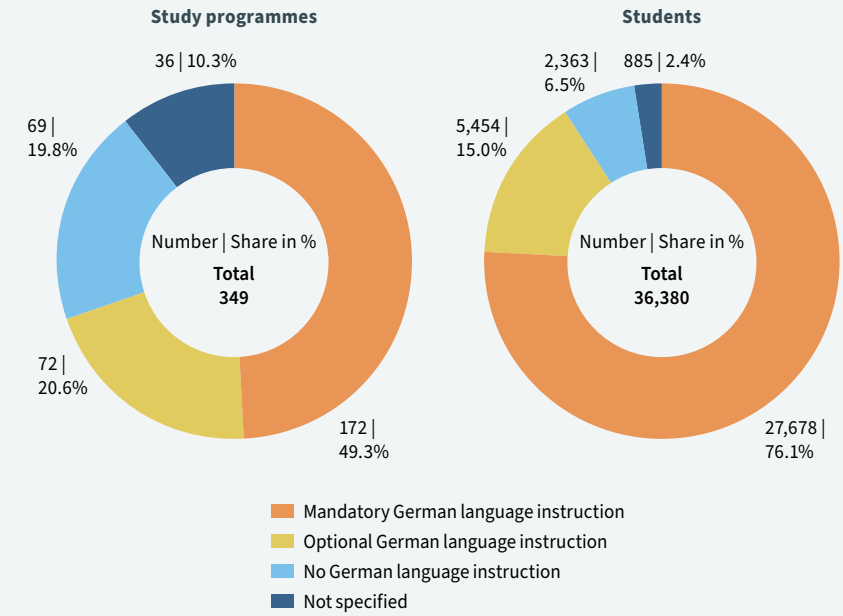


Source: DAAD, TNE statistics

Moreover, the clear majority of TNE students (76%) are enrolled in study programmes that include compulsory German language instruction, while a further 15% 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 (25%). 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.

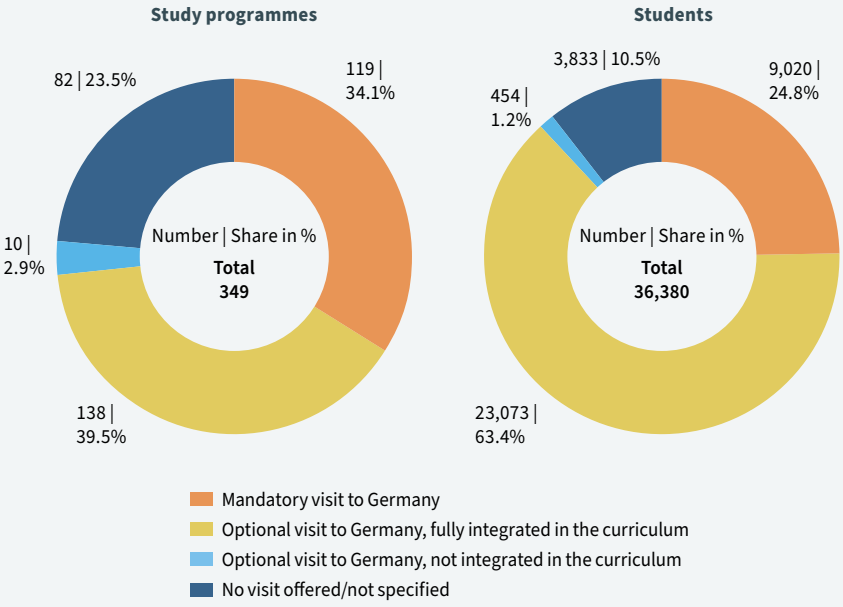
As in previous years, more than half (54%) of TNE students are enrolled in engineering study programmes. This predominance can be viewed as a further characteristic of the German TNE projects. Law, economics and social sciences (29%) and mathematics and natural sciences (11%) are considerably further behind. Other subject groups only play a subordinate role. The overwhelming majority (83%) of students in the TNE projects surveyed are aiming for an undergraduate degree, that is, a bachelor's or comparable first degree, and 16% for a master's degree. Doctorates are only offered at a small number of the registered TNE institutions and are not fully recorded statistically (1%).

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



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[5]



Source: DAAD, TNE statistics

Footnotes

1 BMBF: Federal Ministry of Education and Research; AA: Federal Foreign Office; BMZ: Federal Ministry for Economic Cooperation and Development.

2 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.

3 Incl. 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 2020/21 winter semester, approximately 416,400 students with foreign citizenship were studying at German universities. The majority of these foreign students, around 324,700 or 78%, gained their university entrance certificate abroad and only came to Germany afterwards to study. In contrast to pre-2020 editions of *Wissenschaft weltoffen*, these students will be referred to in the following as "international students". Unlike "Bildungsauslaender", which is used only in Germany, this term follows standard international usage.

Despite the pandemic, which started in 2020, the number of international students in Germany in the 2020/21 winter semester rose by around 4,800 (2%), compared to the 2019/20 winter semester. As a result, even 2020, the first year of Covid-19, did not disrupt the quantitative increase in international students over the last ten years, now totalling 76%. With the rise in the number of international students, German universities were part of a corresponding global development in international student mobility until 2019.[1] It remains to be seen what trends will emerge among international students at German universities under global pandemic conditions by comparison with other countries. In some countries, such as the United Kingdom and France, similar shifts can be observed to that in Germany, however (see pp. 20/21).[2]

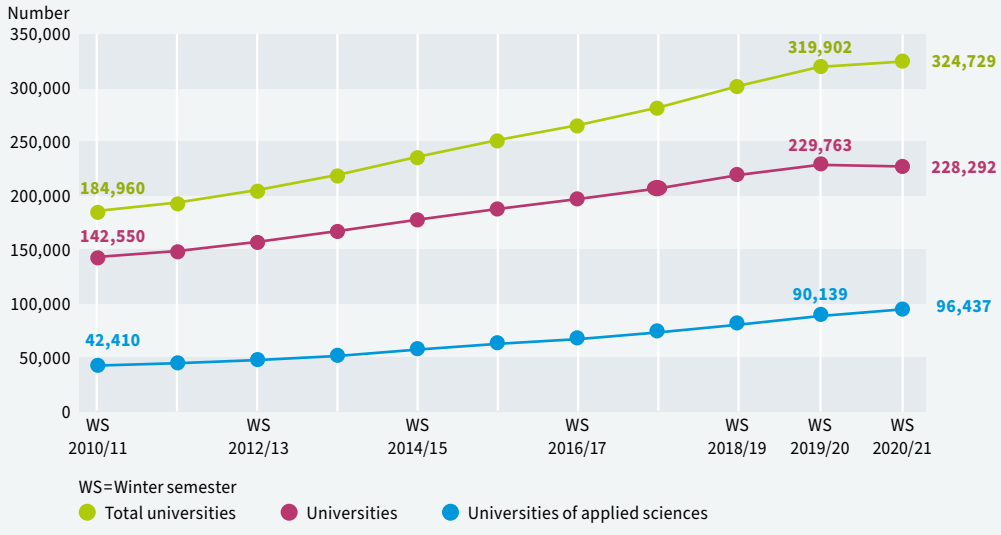
The majority (70%) of international students in Germany were enrolled at universities in the 2020/21 winter semester, numbering approximately 228,300 students. The percentage of German students in the same period was 61%. Although the number of international students at universities of applied sciences is significantly lower than at universities, these figures reflect different developments: while the number of international students at universities dropped by 1% within one year, universities of applied sciences have seen a rise of 7%. The situation is similar among German students (university: 0%, universities of applied sciences: +4%).

These contrasting dynamics currently also apply to international students at private and public universities. Although only about 28,300 (9%) of international students were enrolled at private universities in the 2020/21 winter semester, their number has shot up by 20% in one year and by 397% over ten years.[4] By contrast, the vast majority – approximately 296,400 international students – attended public universities. Their number did not change appreciably year-on-year, yet increased by 65% compared to 2011.

> "The number of international first-year students fell by 27% at universities and by 10% at universities of applied sciences.

In the 2020 academic year, around 86,500 international first-year students began their studies in Germany, some 22% below the previous year.[5] Therefore, the pandemic brought the rise in the number of international first-year students, persisting now for some years, to an abrupt halt. The growth in the number of international students was thus solely due to the extension of the study period at German universities (see pp. 46/47). Nonetheless, there are marked differences in the decline in first-year students: while the number of international first-year students at universities plummeted by 27% within one year, their numbers only fell by 10% at universities of applied sciences. Overall, 35% of international first-year students enrolled at universities of applied sciences for the 2020/21 winter semester.

B1.1 International students in Germany by type of university since the 2010/11 winter semester[3]



Source: Federal Statistical Office student statistics

The generally positive development in both the number of international students and of German students meant that the share of international students among all students in Germany did not change materially between the 2019/20 winter semester and that of 2020/21, at 11%, compared to 11.1% the previous year. At universities, this figure dwindled from 12.7% to 12.6%, yet rose from 8.4% to 8.6% at universities of applied sciences. The percentages also increased at private universities, where the share of international students went from 7.9% to 8.4%, with public universities remaining at 11.4%. The highest rates are found

at public colleges of art and music, with 28.5%, and private universities at 23.2%.

Differences – some of them considerable – can be observed between the various federal states. Measured in absolute numbers, around half of all international students study in the three federal states of North Rhine-Westphalia, Bavaria and Baden-Wuerttemberg alone. However, particularly high proportions can also be found in other federal states. Topping the list are Berlin (18%), Saxony (15%) and Brandenburg (15%). Although the above-average figures in the former East German states are also a result of reduced enrolment figures among German students, these federal states have nevertheless managed not only to prevent a decline in international students but to achieve significant increases in enrolment in some cases. The greatest increases over five years were recorded by the universities in Thuringia (+114%) Mecklenburg-Western Pomerania (+51%) and Bavaria (+50%). On the other hand, the number of international students has fallen in Baden-Wuerttemberg (–8%). Compared to the previous year, there were no significant changes in most federal states, in line with the general trend; only Thuringia (+24%)[6] and Bavaria (+6%) reported much higher and Baden-Wuerttemberg (–10%) considerably lower enrolment figures among international students.

Footnotes

1 See OECD (2021).

2 www.studying-in-uk.org/international-student-statistics-in-uk, www.studying-in-france.org/international-student-statistics-france/.

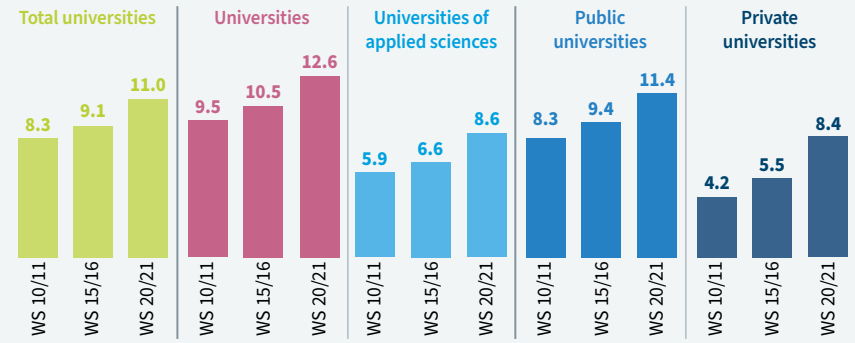
3 Figures for universities, including colleges of art, music, education and theology.

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. First-year students in the 2020 academic year = summer semester 2020 + winter semester 2020/21.

6 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.

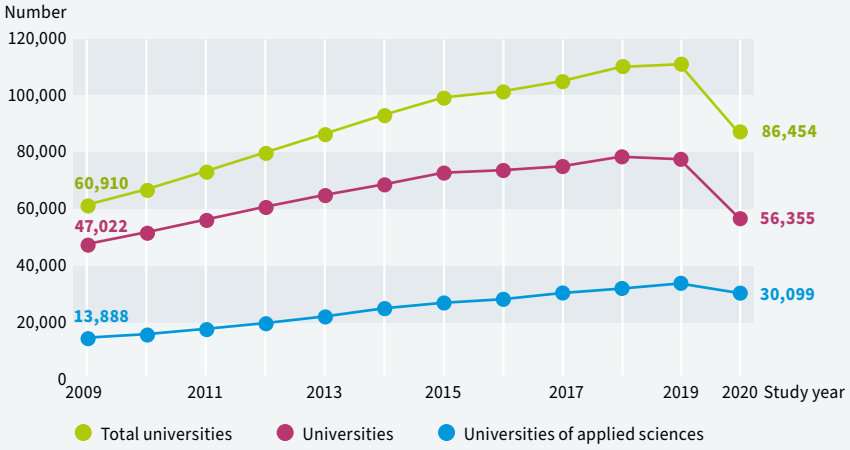
B1.2 Share of international students of all students, by type of university and funding body, in the winter semesters 2010/11, 2015/16 and 2020/21[3, 4]



Share in % of all students; WS=Winter semester

Sources: Federal Statistical Office student statistics; DZHW calculations

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



Source: Federal Statistical Office student statistics

B1.4 International students by federal state in the winter semesters 2015/16 and 2020/21, plus the development from the 2015/16 to the 2020/21 winter semester

	WS 2015/16		WS 2020/21		Development WS 2015/16–WS 2020/21
Federal states	**Number**	**Share in %**	**Number**	**Share in %**	**in %**
Baden-Württemberg	35,842	10.0	33,073	9.2	–8
Bavaria	32,510	8.7	48,625	12.0	+50
Berlin	25,441	14.8	36,056	18.1	+42
Brandenburg	6,142	12.4	7,437	14.7	+21
Bremen	3,999	11.0	5,252	14.0	+31
Hamburg	7,972	8.1	11,244	9.7	+41
Hesse	21,681	8.9	27,060	10.1	+25
Mecklenburg-Western Pomerania	2,387	6.2	3,603	9.2	+51
Lower Saxony	14,735	7.4	20,647	9.9	+40
North Rhine-Westphalia	55,114	7.9	73,881	9.5	+34
Rhineland-Palatinate	9,076	7.5	12,998	10.5	+43
Saarland	3,519	11.4	4,014	12.8	+14
Saxony	15,066	13.3	16,556	15.4	+10
Saxony-Anhalt	6,088	11.1	7,822	14.2	+29
Schleswig-Holstein	3,424	6.0	4,267	6.4	+25
Thuringia[6]	5,707	11.4	12,194	12.6	+114
States total (D)	**251,542**	**9.1**	**324,729**	**11.0**	**+29**

Number and share in % of all students

Sources: Federal Statistical Office student statistics; DZHW calculations

1.2 Regions and countries of origin

Asia and Pacific is the key region of origin for international students at German universities, continuing to represent 31% of all international students. Since the 2017/18 winter semester, the number of students originating from this region has seen above-average growth of 22%, with this figure dropping to just 1% year-on-year, however. With a share of 20%, students from North Africa and Middle East are in second place. They show the strongest growth of the last three years, namely 42%. Compared to the 2019/20 winter semester, their number rose by 7%, thereby relegating students from Western Europe to third place. Barely changing over the last three years, their number fell by 3% compared to the previous year to a share of 17%. Furthermore, hardly any variation in enrolment figures can be observed for students from Central and South Eastern Europe, and Eastern Europe and Central Asia, who make up 11% and 8% of international students respectively. Lastly, Sub-Saharan Africa and Latin America account for shares of 6% and 5% respectively. However, while the number of international students from Latin America is stagnant year-on-year in the 2020/21 winter semester, Sub-Saharan Africa shows the greatest growth during this period at 10%. The smallest group, 2%, is made up of students from North America, whose number plummeted by 22% over the last year.

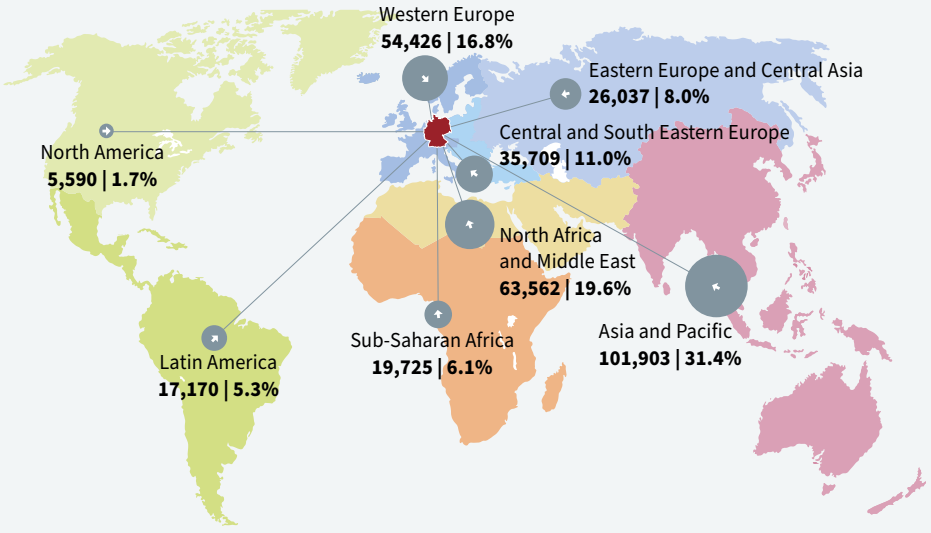
> “Since the 2019/20 winter semester, the number of students from North America has plummeted by 22%.

The enormous relevance of students from Asian-Pacific countries of origin is consistent with corresponding developments in global student mobility (see pp. 12/13 and pp. 16/17). Students from this region account for 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.

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. On the other hand, the increase in the number of internationally mobile students from North Africa and Middle East, even during the first year of the pandemic, must be viewed in the context of the political and social changes in this region.

Regional developments in international student mobility are also reflected in the ranking of countries of origin. Students from China

B1.5 International students by region of origin in the 2020/21 winter semester



Total international students at German universities 324,729
(including 607 students who cannot be allocated to a country of origin).

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

Footnotes

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

2 Only countries with at least 100 international students in winter semester 2020/21 (increase) and/or winter semester 2019/20 (decrease).

Sources: Federal Statistical Office student statistics; DZHW calculations

have been in first place at German universities for over 20 years. With a share of 12%, they account for more than one in ten international students. In the last three years, their number has risen by a further 9% to approximately 40,100. Compared to the previous year, however, this equates to 1,000 or 3% fewer students. Students from India are in second place in the rankings. Since the 2017/18 winter semester, their number has risen by 65% to around 28,500 – and by 15% since the 2019/20 winter semester alone. However, the strongest growth in the period since the 2019/20 winter semester, and thus the first year of Covid-19, can be observed for students from North Korea (+291%), with Mauritius and Guatemala (+31% each), and Mauritania (+30%) trailing far behind. No above-average rise is discernible for Syrian students (+6%), which corresponds to the dwindling numbers of applicants (see pp. 44/45). The sharpest declines since the 2019/20 winter semester can be observed for Australia (–34%) and Japan (–32%).

The key Western European countries of origin are Austria (around 13,600 students), Italy (around 8,600 students) and France (around 6,500 students). While the number of Austrian students has jumped by 13% year-on-year, the corresponding figures have fallen for Italy (–9%) and France (–5%). In the Eastern Europe and Central Asia region, Russia (around 10,600 students) and Ukraine (around 6,600 students) are out in front, although the number of students from Russia has dropped by 2% and from Ukraine by 7% over the last three years. Compared to the previous year, however, there were very little changes. The key countries in Central and South Eastern Europe are Turkey (around 10,000 students) and Bulgaria (around 5,800 students). Finally, in the regions of North Africa and Middle East and Sub-Saharan Africa, most students – with the exception of those from Syria – come from Iran (around 10,600 students) and Cameroon (around 8,000 students).

B1.6 Key countries of origin by share of international students in the 2020/21 winter semester and the development from the 2017/18 to the 2020/21 winter semester

Country of origin	Number	Figures in %	Development WS 2017/18–WS 2020/21 in %
China	40,122	12.4	+9
India	28,542	8.8	+65
Syria	16,931	5.2	+96
Austria	13,612	4.2	+22
Russia	10,573	3.3	–2
Iran	10,561	3.3	+40
Turkey	10,018	3.1	+31
Italy	8,576	2.6	–4
Cameroon	7,970	2.5	+9
Tunisia	6,729	2.1	+24
Ukraine	6,572	2.0	–7
France	6,532	2.0	–9
Pakistan	6,403	2.0	+30
Morocco	6,195	1.9	+17
Egypt	6,050	1.9	+58
Vietnam	5,808	1.8	+21
Bulgaria	5,752	1.8	–11
South Korea	5,462	1.7	–7
Indonesia	5,393	1.7	+9
Spain	5,305	1.6	–14

Sources: Federal Statistical Office student statistics; DZHW calculations

B1.7 Countries of origin with the greatest increase and decrease in percentages of international students, 2019/20 winter semester – 2020/21 winter semester[2]

Country of origin	Development WS 2019/20–WS 2020/21 in %
North Korea	+291
Mauritius	+31
Guatemala	+31
Mauritania	+30
Uganda	+28
Bangladesh	+27
Guinea	+24
Nigeria	+23
Myanmar	+20
Afghanistan	+19
Canada	–18
New Zealand	–19
Slovenia	–20
Norway	–20
US	–22
Finland	–22
Sweden	–23
Ireland	–24
Japan	–32
Australia	–34

Sources: Federal Statistical Office student statistics; DZHW calculations

1.3 Types of degree and subject groups

In the 2020/21 winter semester, 39% of international students at German universities were aiming for bachelor's and 42% for master's degrees. By way of comparison, 64% of German students were studying for bachelor's and 19% for master's degrees.

Compared to the previous winter semester, the number of international students on bachelor's programmes has increased by 5% and by 10% for master's programmes. Therefore, the number of master's degree students is rising faster than that for bachelor's degrees. Overall, 4% of international students do not plan to complete a degree in Germany as they are exchange students or other students on temporary visits. Owing to the changed conditions for temporary mobility throughout the world during the pandemic, their number tumbled over the course of a year by 50% (see p. 52/53). The regions of origin show different objectives concerning the type of degree aimed for. While international students from North Africa and Middle East (48%), Central and South Eastern Europe (46%) and Sub-Saharan Africa (45%) showed a particular tendency to enrol in bachelor's programmes, students from Asia and Pacific (57%) and North America (60%) were more likely than average to aim for a master's degree.

> "The number of international exchange and visiting students has halved over the course of one year.

There are considerable differences between universities and universities of applied sciences concerning the intentions of graduates. At universities, significantly more international students were on master's (46%) than on bachelor's programmes (29%), while 12% intended to complete a doctorate in Germany. At universities of applied sciences, this situation is reversed, with 63% aiming for a bachelor's and 33% hoping to obtain a master's degree. Although fewer students study for master's degrees at universities of applied sciences, it remains the case that master's degrees at both types of university are particularly attractive to international students. 23% of all master's students at universities came from abroad; at universities of applied sciences, this figure was 17%. It was only among doctoral students that international students made up a higher share, at 25%. However, while not all German doctoral students are also enrolled at universities, residence permit requirements mean that this is invariably the case for at least approximately two thirds of international doctoral students. As a result, official enrolment statistics overestimate international doctoral students as a percentage of all doctoral students and the reality is probably somewhat lower. Overall, international students represent 7% of all bachelor's students at both universities and universities of applied sciences.

The keen interest shown by international students in the master's programmes offered by German universities is partly the result of a growing number of relevant study opportunities, especially those offered in English. However, it is also in line with "the international norm" of completing a bachelor's programme in the respective home country as the first phase of academic education and then feeling prepared for a master's programme abroad. In all host countries and countries of origin, the higher the desired level of education, the greater the proportion of internationally mobile students.[1]

B1.8 International students by type of university and degree in the 2020/21 winter semester

Type of degree	Number			Figures in %		
	Total institutions	Universities	Universities of applied sciences	Total institutions	Universities	Universities of applied sciences
Bachelor's	127,241	66,842	60,399	39.2	29.2	62.6
Master's	137,261	105,457	31,804	42.3	46.2	33.0
Doctorate	27,613	27,544	69	8.5	12.1	0.1
Other type of degree	20,251	18,742	1,509	6.2	8.2	1.6
Not studying for a degree	12,363	9,707	2,656	3.8	4.3	2.8
Total	**324,729**	**228,292**	**96,437**	**100**	**100**	**100**

Sources: Federal Statistical Office student statistics; DZHW calculations

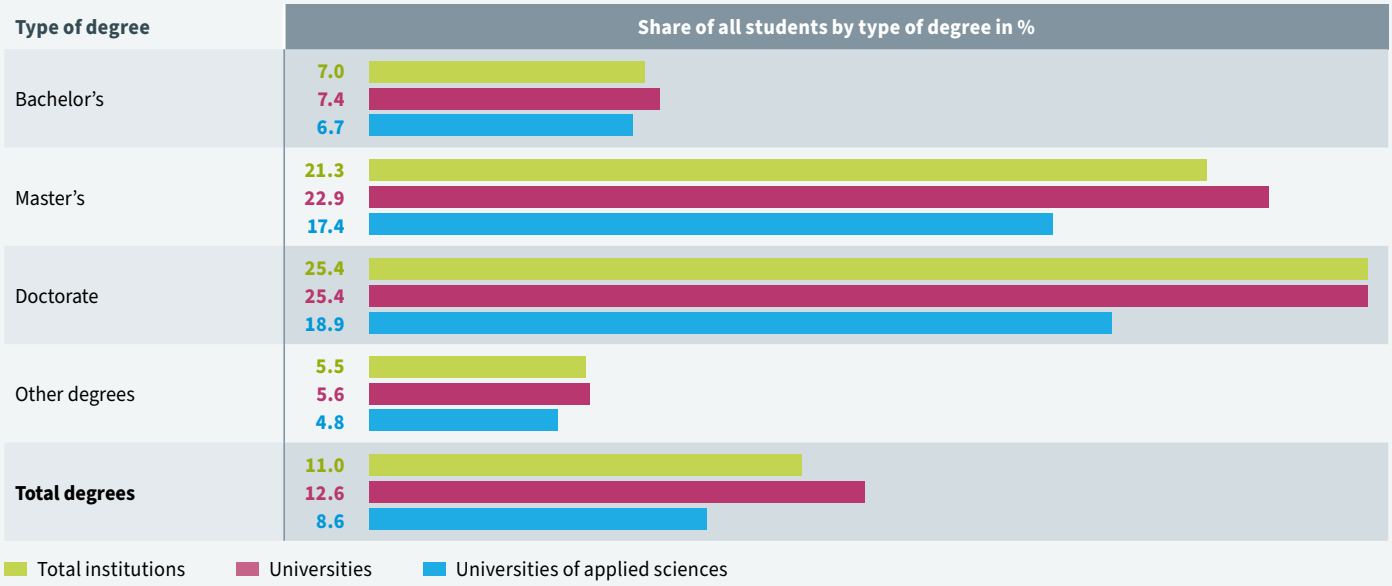
An analysis of the enrolment figures by individual subject groups shows that international students place greater emphasis on engineering, in particular. One in three international students is now enrolled in an engineering subject at universities (37%) and over half at universities of applied sciences (55%). Law, economics and social sciences also account for a large share (universities: 21%, universities of applied sciences: 33%) and, at universities, the humanities (13%), albeit decreasingly, and mathematics and natural sciences

Footnotes

1 See OECD (ed.) (2020), p. 252 ff.

2 Deviations from 100% are due to rounding.

B1.9 Share of international students of all students by type of university and degree, in the 2020/21 winter semester



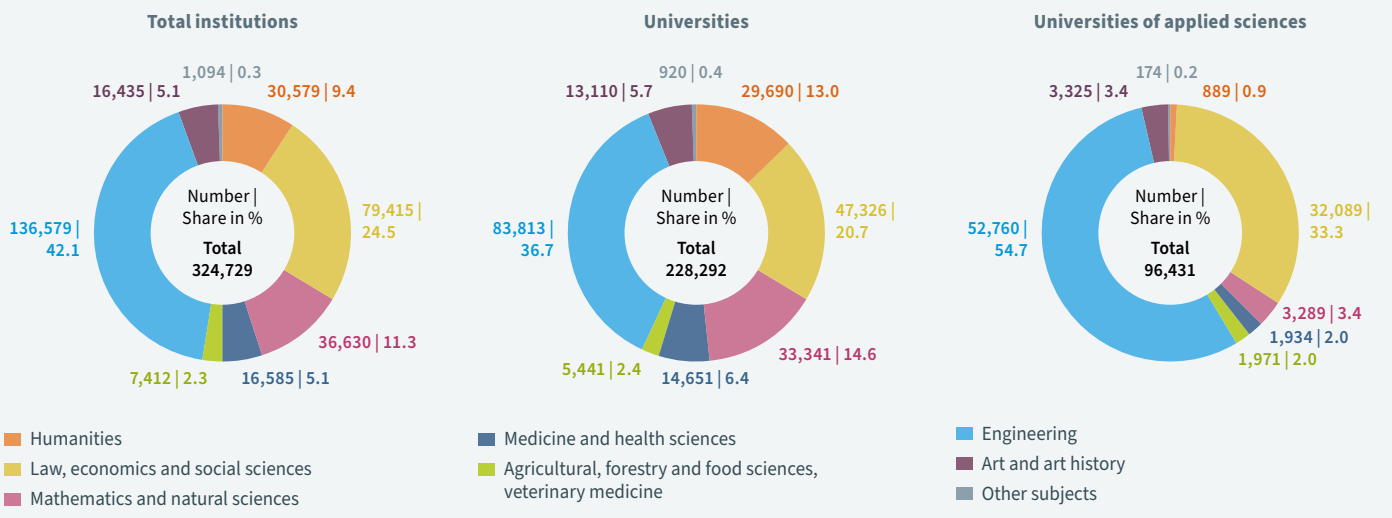
Sources: Federal Statistical Office student statistics; DZHW calculations

(15%). By comparison, a higher proportion of German students are enrolled in law, economics and social sciences, but also in the humanities, mathematics and natural sciences, and a lower percentage in engineering, art and art history.

In line with this level of interest, international students represent an above-average share of students of engineering at both universities (23%) and universities of applied sciences (12%). This also applies to degree programmes in art and art history at universities (20%) and to mathematics and natural sciences (15%) at universities of applied sciences.

However, international students' interest in different subjects also varies according to their region of origin. While students from European regions, North and Latin America are more interested than average in the subject areas of law, economics and social sciences, students from North Africa and Middle East, Asia and Pacific and Sub-Saharan Africa are much more likely to enrol on engineering degrees.

B1.10 International students by type of university and subject group in the 2020/21 winter semester[2]



Sources: Federal Statistical Office student statistics; DZHW calculations

2.1 Mobility trends, types of degree, subject groups and graduates

Approximately 312,400 international students were aiming to graduate from German universities in the 2020/21 winter semester. Their number has surged by 91% over the past ten years, and by 6% since the 2019/20 winter semester alone. Despite the constraints imposed by the pandemic, the development of degree-related international mobility is thus more dynamic than that of temporary study-related mobility (see pp. 52/53). Universities of applied sciences have seen particularly strong growth, where the number of international students intending to graduate has shot up by 136% since the 2010/11 winter semester. The growth rate at universities is only about half that figure, namely 77%. Nevertheless, the vast majority (70%) of international students seeking a degree are still enrolled at universities. As a consequence of these developments, 10.7% of all students at German universities are now international students seeking a degree. This share is 12.1% at universities and 8.4% at universities of applied sciences.

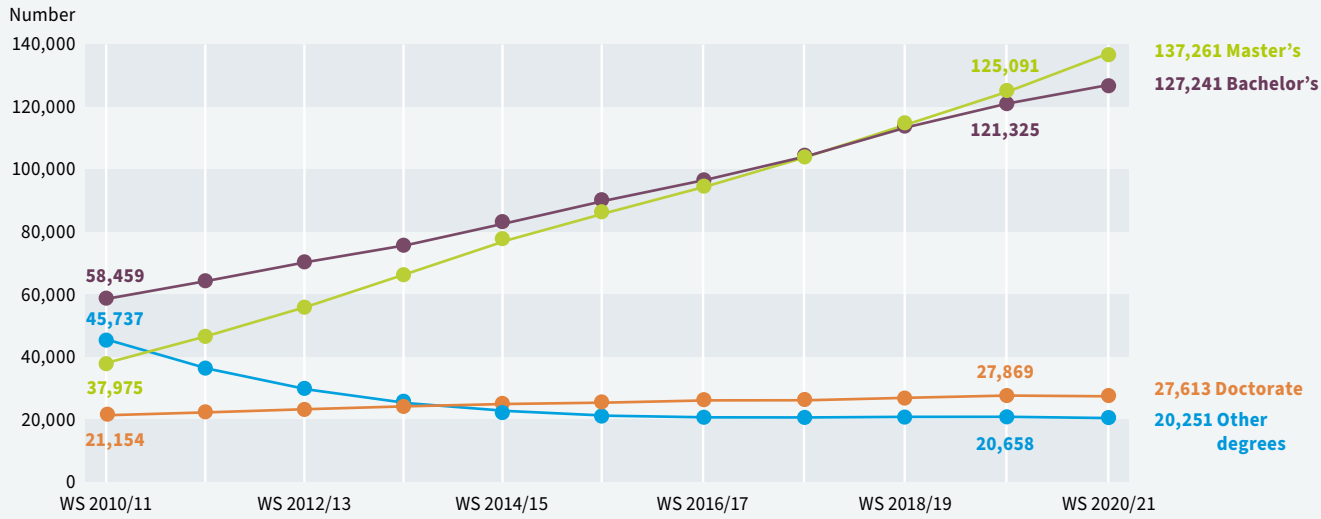
> “ 23% of international students intending to graduate at universities are studying for a degree in engineering.

Interest in master's degrees has grown particularly strongly, up by 59% 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 risen by 41%. Some 27,600 international students are aiming for a doctorate, an increase of 8% over the 2015/16 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 international 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.

Of the international students in the 2021/21 winter semester intending to graduate in Germany, a total of 44% were aiming for a master's degree, 41% 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. At universities, the predominance of the master's degree is even more marked: 48% of the students concerned are enrolled in master's and 30% on bachelor's programmes, while 13% aim to achieve a doctorate. The situation is reversed at universities of applied sciences, where 34% aim for a master's and 64% for a bachelor's degree. While 48% of all international students hoping to achieve a bachelor's degree are studying at universities of applied sciences, this is only true for 23% of those working towards a master's degree. The figures are similar for German students, where 50% of bachelor's and 30% of master's students are enrolled at universities of applied sciences.

International students' strong interest in master's degrees is also reflected in the fact that one fifth (21%) of those enrolled in a master's programme with the intention of obtaining a degree are international students. This share is 22% at universities and 17% at universities of applied sciences. The share of international doctoral students is even higher, at 25%. By contrast, international students in a bachelor's programme with the intention of graduating account for a mere 7% (universities: 7%, universities of applied sciences: 6%).

B2.1 International students intending to graduate, by type of degree, since winter semester 2010/11



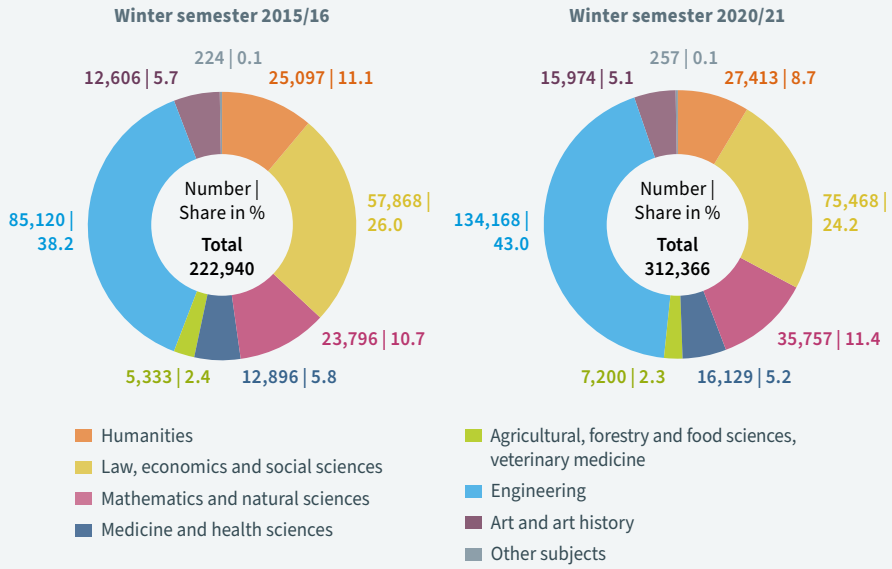
Source: Federal Statistical Office student statistics

The majority of international students are working towards a degree in engineering (43%) or law, economics and social sciences (24%). This applies both to universities and to universities of applied sciences. These two subject groups are also the most important for German students, although the ratio here is reversed: law, economics and social sciences are in first place with 40%, followed by engineering with 24%.

Moreover, engineering has showed the biggest growth in the number of international students intending to graduate, up by 58% since the 2015/16 winter semester. By contrast, no upswing can be observed among German students in the same period. Mathematics and natural sciences show a similar rise in interest among international students with an increase of 50% in enrolment figures. The corresponding number of students in law, economics and social sciences was an additional 30%. Meanwhile, the growth rate in the humanities is below average, at just 9%. As a result, the share of international students intending to graduate in this subject group is a mere 8%.

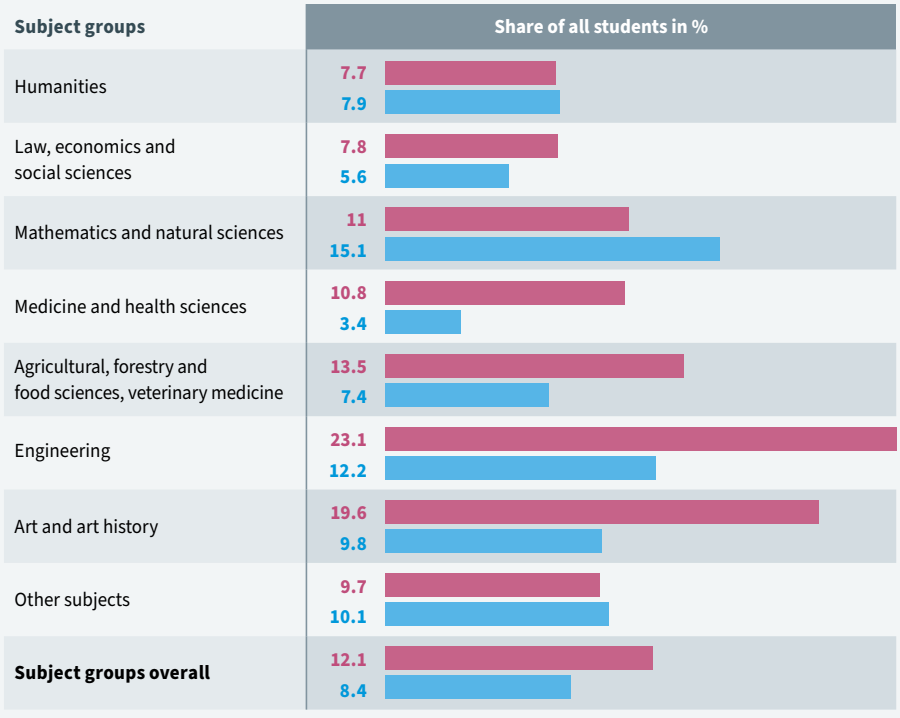
The differing growth rates, depending on the subject group, in international students' interest in graduating from German universities has meant that, at universities with a share of 23% in engineering, almost one in four students hoping to obtain a degree now comes from abroad. This applies to one in five students in art and art history programmes. The lowest proportion of international students with the intention of obtaining a degree, 8% each, can be observed in the humanities and in law, economics and social sciences. At universities of applied sciences, the highest shares are found in mathematics and natural sciences (15%) and engineering (12%). By contrast, lower percentages of international students seeking a degree are typical in medicine and health sciences (3%) as well as law, economics and social sciences (6%).

B2.2 International students intending to graduate, by type of university and subject group, in the winter semesters 2015/16 and 2020/21



Sources: Federal Statistical Office student statistics; DZHW calculations

B2.3 Share of international students intending to graduate of all students, by type of university and subject group, winter semester 2020/21



Figures in %: Universities Universities of applied sciences

Sources: Federal Statistical Office student statistics; DZHW calculations

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%.

> “Approximately two thirds of international students seeking a degree are from European countries.

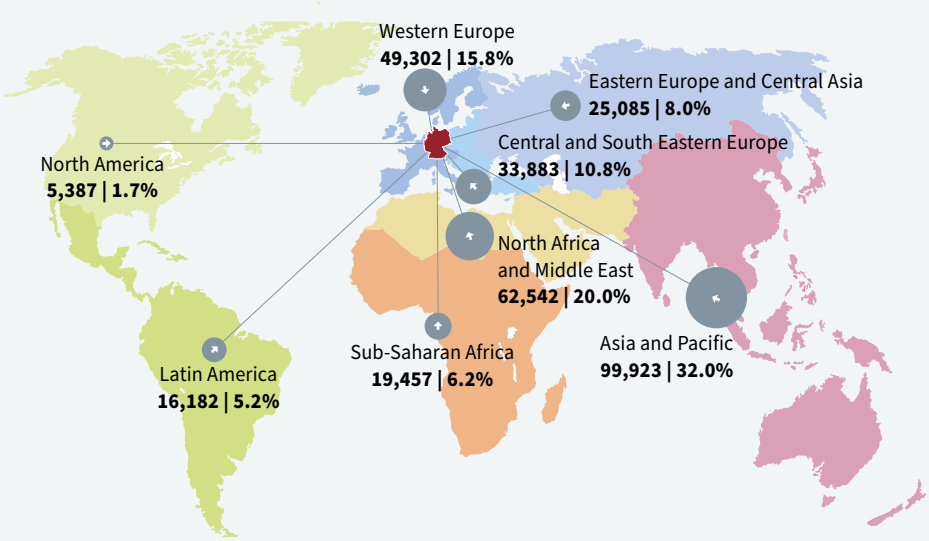
Depending on their region of origin, international students prefer different types of degrees. Approximately half of all students from European regions and North Africa and Middle East aim to obtain a bachelor’s and about one third a master’s degree. This ratio is reversed in the case of North and Latin 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 (14%) are from Latin America.

Since the 2015/16 winter semester, three regions in particular report above-average growth in their student numbers: North Africa and Middle East (+99%), Asia and Pacific (+53%) and Sub-Saharan Africa (+48%). Below-average increases in student numbers can be seen in Central and South Eastern Europe (+11%) 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 2015/16 winter semester, together they accounted for 25% of students intending to graduate, this figure has since fallen to just 19%.

These changes have also had an impact on the distribution of international students across individual subject groups. While the share of international students in engineering is increasing, the percentage of those studying law, economics and social sciences or the humanities is decreasing. This shift can partly be explained by the marked preferences of students from Asia and Pacific and North Africa and Middle East for engineering degree programmes (more than half of the students in these regions choose to study engineering), while students from European regions are disproportionately interested in law, economics and social sciences. About one third each choose to study subjects in this subject group.

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

B2.4 International students intending to graduate, by region of origin, winter semester 2020/21



Total international students intending to graduate at German universities 312,366 (including 605 students who cannot be allocated to a region of origin).

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

Footnote

1 Only countries with at least 100 international students intending to graduate, in winter semester 2020/21 (increase) and/or winter semester 2019/20 (decrease).

Sources: Federal Statistical Office student statistics; DZHW calculations

margin since the early 2000s. With 39,100 students, 13% of students intending to graduate come from this country. Their number has increased by 30% since the 2015/16 winter semester. The number of students from Syria (+384%) and India (+116%) has seen a much sharper rise. These countries of origin are followed in the ranking by Austria and Iran, which were in fourth and eighth place respectively five years ago. Since the 2015/16 winter semester, the number of Austrian students has jumped by 36% and Iranian students by 64%. Other major countries of origin are Russia, Turkey, Cameroon, Italy and Tunisia.

In the first year of the pandemic, between the winter semesters 2019/20 and 2020/21, the number of North Korean students (+1028%) skyrocketed in particular. Countries of origin such as Guatemala (+33%), Mauritius (+32%), Mauritania (+30%) und Bangladesh (+28%) have recorded growth over the last year. In contrast, there has been a fall in student numbers over the same period for Montenegro (–13%), Madagascar (–12%), Ethiopia and Cuba (–11% each), and Saudi Arabia (–10%).[1]

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.

B2.5 International students intending to graduate, by key countries of origin, in winter semesters 2015/16 and 2020/21

	Winter semester 2015/16			Winter semester 2020/21	
Country of origin	Number	Share in %	Country of origin	Number	Share in %
China	30,054	13.5	China	39,052	12.5
India	13,093	5.9	India	28,318	9.1
Russia	10,725	4.8	Syria	16,844	5.4
Austria	9,943	4.5	Austria	13,513	4.3
Cameroon	7,045	3.2	Iran	10,366	3.3
Bulgaria	6,689	3.0	Russia	10,079	3.2
Ukraine	6,686	3.0	Turkey	9,573	3.1
Iran	6,321	2.8	Cameroon	7,935	2.5
Turkey	5,999	2.7	Italy	7,424	2.4
Italy	5,747	2.6	Tunisia	6,614	2.1
France	5,362	2.4	Ukraine	6,374	2.0
Poland	4,840	2.2	Pakistan	6,350	2.0
Morocco	4,681	2.1	Morocco	6,106	2.0
South Korea	4,199	1.9	Egypt	5,999	1.9
Indonesia	4,110	1.8	Vietnam	5,759	1.8
Pakistan	3,792	1.7	Bulgaria	5,690	1.8
Luxembourg	3,790	1.7	Indonesia	5,346	1.7
Spain	3,688	1.7	France	5,309	1.7
Vietnam	3,647	1.6	South Korea	5,305	1.7
Tunisia	3,452	1.5	Bangladesh	5,117	1.6

Sources: Federal Statistical Office student statistics; DZHW calculations

B2.6 Countries of origin with the greatest increase and decrease in percentages of international students intending to graduate, winter semester 2019/20 – winter semester 2020/21[1]

Country of origin	Development WS 2019/20 – WS 2020/21 in %
North Korea	+1,025
Guatemala	+33
Mauritius	+32
Mauretania	+30
Bangladesh	+28
Uganda	+26
Guinea	+24
Nigeria	+23
Afghanistan	+21
Sri Lanka	20
Finland	–7
Senegal	–7
New Zealand	–8
Cyprus	–8
Australia	–8
Saudi Arabia	–10
Cuba	–11
Ethiopia	–11
Madagascar	–12
Montenegro	–13

Sources: Federal Statistical Office student statistics; DZHW calculations

2.3 Applicants

Around half 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 2021, almost exactly the same number of persons applied via uni-assist for admission to a university in Germany as in the previous year. Compared to 2019, the last year before Covid-19, there was a 10% reduction in the number of applicants in 2021.[1] Compared to pre-pandemic years, however, the 20 key countries of origin remain largely unchanged, except that Italy and Jordan have replaced Ghana and Colombia. Most applicants in 2021 came once again from India (18%), followed by China and Turkey (7% each), then Iran and Syria (4% each). For 14 of the 20 key countries of origin, the number of applicants has tailed off compared to 2019, with declines of between 2% (US) and 57% (Syria). Given the 23% decrease in 2019, in other words, before the pandemic, the particularly sharp fall in Syrian applicants comes as no surprise. The majority of Syrians who fled to Germany, most notably in 2015 and 2016, and who were interested in studying here seem to have arrived in the German higher education system, which explains why the number of applicants from Syria continues to ebb. Of the 20 key countries of origin, rising numbers of applicants can be seen in Turkey (+53%), Bangladesh (+21%), Jordan (+13%), Italy (+12%), India (+10%) and Russia (+7%).

What is uni-assist?

uni-assist is a registered association that all state universities in Germany can join. Currently, 150 universities make use of uni-assist's services. The core task of uni-assist is to evaluate international certificates. On behalf of its member universities, 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, 85% of applications were forwarded in 2021. Among the countries with the highest forwarding rates were Belarus (93%), China and India (90% each), while the lowest forwarding rates were found in applicants from the Philippines (50%), France (62%) and Ireland (66%).

The main reasons for uni-assist rejecting an application are incomplete documents (28%), insufficient German language proficiency (21%), falling below a specified minimum grade (11%) and exceeding deadlines (11%). However, the significance of the reasons for rejection varies somewhat, depending on the country of origin. In 2021, incomplete

B2.7 Key countries of origin of international applicants via uni-assist in 2019, 2020 and 2021, plus development from 2019 to 2021[1, 2]

Country of origin	Number			Development of the numbers, 2019–2021 Development in %
	2019	2020	2021	
India	12,600	11,967	13,889	+10
China	6,019	6,024	5,596	–7
Turkey	3,350	3,712	5,133	+53
Iran	4,043	3,807	3,524	–13
Syria	7,441	4,141	3,202	–57
Bangladesh	2,305	2,871	2,797	+21
Pakistan	4,312	2,849	2,730	–37
Russia	2,310	2,296	2,466	+7
Morocco	2,194	1,797	1,959	–11
Egypt	2,281	2,128	1,950	–15
Nigeria	3,815	3,222	1,803	–53
Cameroon	2,333	1,896	1,426	–39
US	1,389	1,414	1,356	–2
Tunisia	1,775	1,316	1,214	–32
Indonesia	1,531	1,418	1,204	–21
Ukraine	1,386	1,147	1,180	–15
South Korea	1,229	1,175	983	–20
Italy	841	901	938	+12
Jordan	802	723	904	+13
Vietnam	1,528	1,125	863	–44
Other countries	**24,188**	**23,058**	**23,436**	**–3**
All countries	**87,672**	**78,987**	**78,553**	**–10**

Source: uni-assist; DAAD calculations

Footnotes

1 A year always includes the applications for the summer semester and the following winter semester. Accordingly, the 2021 academic year includes applications for the 2021 summer semester and the 2021/22 winter semester.

2 The last edition of *Wissenschaft weltoffen* erroneously reported a dramatic drop of 68% in international applicants to German universities in 2020, due to the pandemic. In fact, the number fell by a mere 10%. The calculation of the decrease for 2019 incorrectly only included the applicants in the 2019 summer semester. We apologise for this error.

3 Countries of origin with at least 100 applicants in 2021.

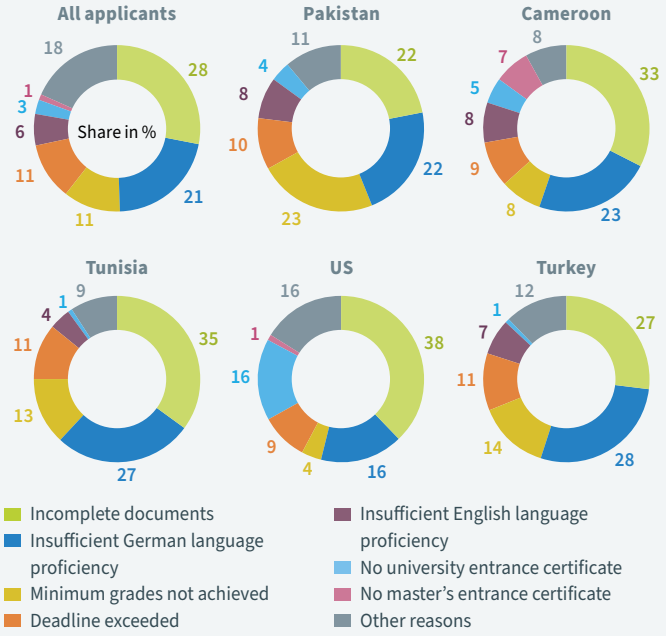
4 Deviations from 100% are due to rounding.

B2.8 Forwarding rate of international applications via uni-assist, by selected countries of origin, in 2021[1, 3]

Country of origin	Forwarding rate in %
Belarus	93
China	90
India	90
Nepal	89
Turkey	88
Georgia	87
Italy	86
Iran	85
Colombia	84
Syria	83
Afghanistan	80
Hungary	78
US	75
South Africa	73
Cameroon	72
United Kingdom	69
Kenya	67
Ireland	66
France	62
Philippines	50

Source: uni-assist; DAAD calculations

B2.9 Major formal reasons for rejection of international applications via uni-assist overall and by selected countries of origin, in 2021[1, 4]

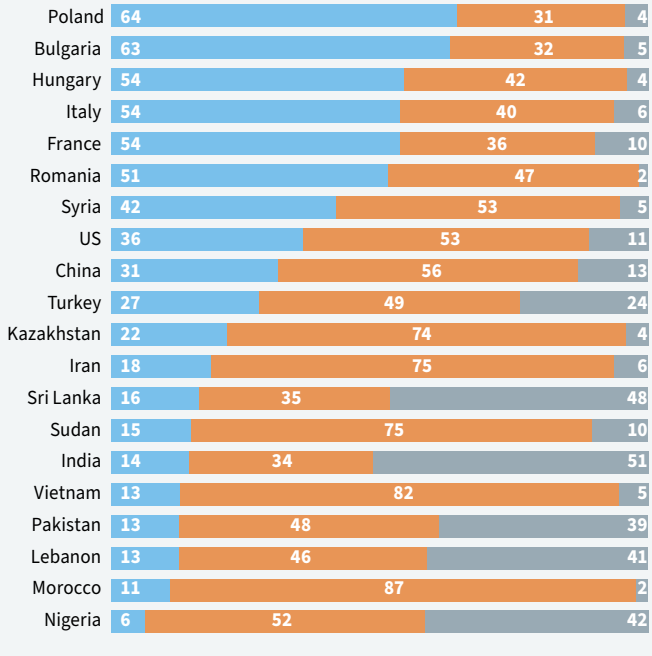


Source: uni-assist; DAAD calculations

documents were more likely than average to lead to the rejection of applications from the US (38%), Italy, Russia (36% each), Tunisia (35%) and Cameroon (33%). The same applies to insufficient German language skills in the case of applicants from Turkey (28%), Tunisia (27%) and Syria (26%). Applications from Pakistan (23%), Jordan (20%), Bangladesh and India (19% each) were more likely than average to be rejected for not having achieved the minimum grade, whereas applications from Nigeria (10%), Cameroon, Morocco and Pakistan (8% 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 (16%), South Korea (12%) and Cameroon (5%), and lacking a master's entrance certificate in the case of Cameroon (7%).

There are also clear differences between the countries of origin concerning 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 2021 academic year are found in Poland (64%), Bulgaria (63%) and Hungary (54%). High percentages of applicants who are independent users (B1/B2) come mainly from Morocco (87%), Vietnam (82%) and Iran (75%). Finally, the highest proportion of applicants from India (51%), Sri Lanka (48%) and Nigeria (42%) only have a basic command of the language (A1/A2).

B2.10 German language proficiency of international applicants via uni-assist by selected countries of origin, in 2021[1, 3, 4]



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

2.4 Graduates and dropouts

The number of international graduates at German universities shot up by 33% between 2015 and 2019. The 2020 graduation year saw a decrease of 2%, approximately 1,100 graduates, for the first time. At 9.9%, the share of international graduates of all graduates is 0.4 percentage points above that of 2019. This means that one in ten graduates comes from abroad. Despite the fall in numbers, this increased share is due to the even greater decline in German graduates (–7%) in 2020.

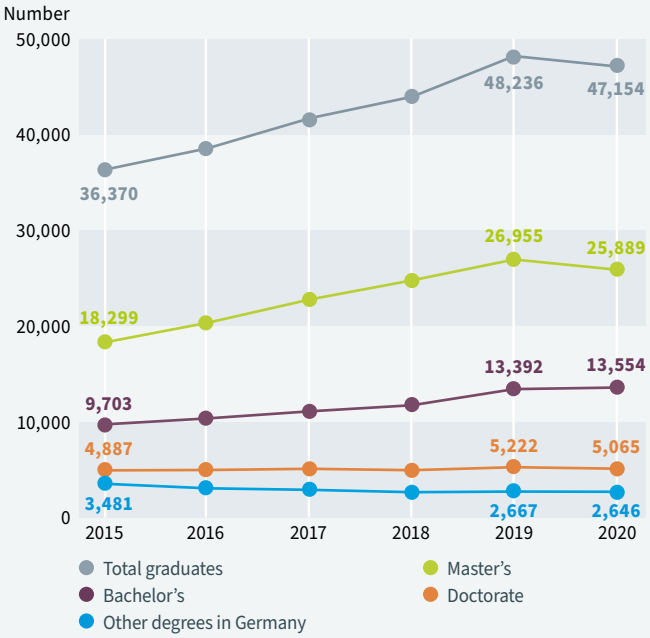
The lower number of international graduates in 2020 may only be attributed to a very limited extent to a higher dropout rate. As a result of the pandemic, most degree programmes saw increased numbers of students extending their period of study in the 2020 summer semester.[2] There was a higher proportion of students in advanced semesters[3] in the 2020/21 winter semester than in the 2019/20 winter semester. This means that some of the students who could have graduated in the 2020 summer semester did not do so but remained enrolled at the university. This can be explained by the uncertainty regarding university closures due to the pandemic and the fact that the shift to digital teaching and online examinations was not always easy. All federal states agreed on the non-accreditation of the 2020 summer semester to the prescribed period of study so it was relatively simple, even for students in advanced semesters, to extend their programmes. The dropout rates are shown below, both with and without taking the extension of the study period into account. It may be assumed that the true dropout rates lie somewhere in between as it cannot be completely ruled out that students who re-enrolled, despite being able to graduate, went on to drop out of their studies.

Calculation of dropout rates

Students dropping out of their studies are former students who leave a first degree programme at a German university without a degree. Students who only change their subject or their university are not considered to have dropped out of their studies. The dropout rate reflects the share of first-year students in a cohort who finish their first degree programme without earning a degree. The dropout rates are calculated using a method based on a comparison of a graduate cohort with the corresponding first-year student cohorts. Visiting students who did not pursue a degree in Germany are not included in the calculations. Students who finish a master's programme without a degree are not considered to have dropped out in the narrower sense as they already hold a first university degree with their bachelor's degree. For the sake of clarity, however, they are referred to here as dropouts.[1]

Moreover, when interpreting the dropout rates for international students, it is important to note that they refer solely to studies completed in Germany. Students who switch during their studies from a German university to a university abroad, for example one in their home country, are therefore counted as having dropped out in Germany, even if they obtain their degree abroad. It can therefore be safely assumed that the reported rates overestimate the number of international students who drop out of their studies.[4]

B2.11 International graduates by type of degree since 2015



Source: Federal Statistical Office, examination statistics

Footnotes

1 Further information on the procedure for calculating dropout rates can found at www.dzhw.eu/pdf/pub_brief/dzhw_brief_05_anhang.pdf. With the amendment of the German Higher Education Statistics Act in 2016, it was decided to introduce a study progress statistics system. Once these statistics contain a sufficient number of study semesters, it will be possible to depict dropout and success rates on the basis of individual courses of study as values in official statistics.

2 Graduates of the 2020 graduation year were either awarded their degrees in the 2019/20 winter semester or the 2020 summer semester.

3 From the seventh semester in the bachelor's and the fifth semester in the master's programme.

4 Students from Western Europe, in particular, could decide to discontinue their studies in Germany and continue them in their home country if their study expectations were not fulfilled, as doing this means students do not have to accept a lower quality of studies or lose out in the job market.

5 Due to a lack of representative findings on subject changes among international students, it is not possible to calculate the dropout rate in the individual subject groups.

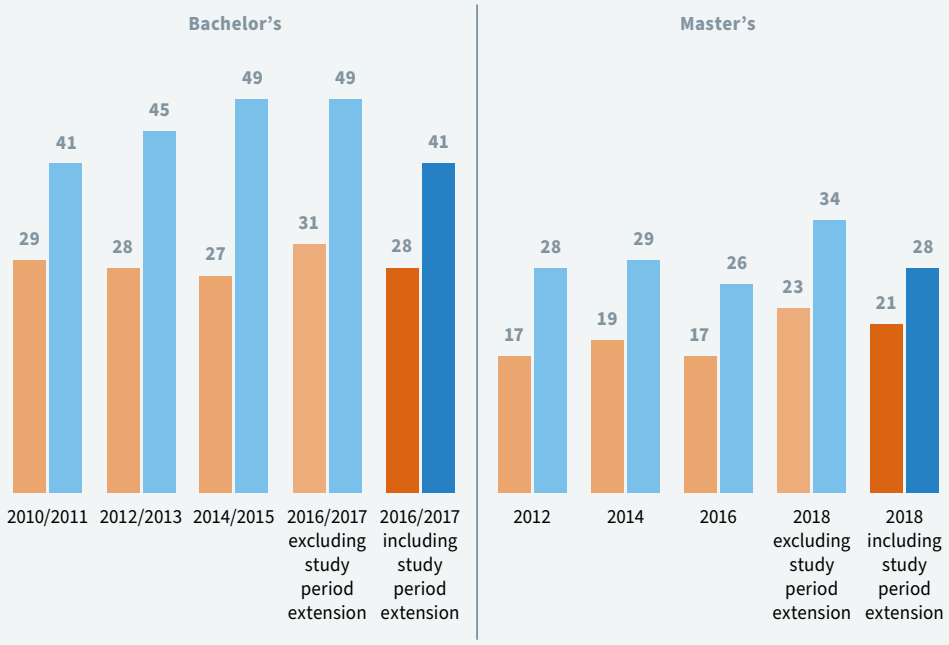
6 In the meantime, a number of findings have been established regarding the dropout rate of international students. They indicate that, apart from key issues that are also of importance in inducing German students to drop out of their studies, such as lack of motivation, the mismatch between preparatory courses at school and study requirements or difficulties in financing the programme, certain specific aspects such as inadequate language skills and acculturation problems due to their backgrounds cause these students to drop out (Pineda et al. [2022], see pp. 48–51).

7 Due to the small number of cases, the dropout rate cannot be calculated for international students from North America.

The number of international students dropping out of a bachelor's programme still clearly exceeds the dropout rate among German students. Based on the 2020 graduate cohort, the dropout rate for first-year students in 2016 and 2017 was 49%, excluding the extension of the study period, and 41% including the extension of the study period. This figure is identical to the calculation for the 2018 graduate cohort (excluding the study period extension) but represents a decline of eight percentage points (including the extension).[5] Among German students, the rate is 28%, taking the study period extension into account.[6] In terms of regions of origin and including the study period extension, above-average rates can be observed for students from Latin America (53%) and Western and Eastern Europe (49% and 46% respectively). By contrast, the figures for Africa (38%), East Asia (33%) and the rest of Asia (30%) are below average.

As is the case for German students, the dropout rate for the 2018 cohort of international first-year students, now in their master's programmes is 34%, excluding the study period extension, and 28%, including the extension, and thus significantly lower than for bachelor's programmes. This is eight percentage points higher (excluding the extension) and two percentage points higher (including the extension) than the last calculation for first-year students in 2016. For German master's students, the corresponding figure is 21%. Taking the extended study period into account, the lowest dropout rate is among students from Latin America (18%) and East Asia (20%). This figure is even below that of their German fellow students. A relatively low dropout rate can also be observed for students from Western Europe (21%). By contrast, the rates for Asian countries excluding East Asia (30%), Eastern Europe (31%) and Africa (45%) are significantly higher.

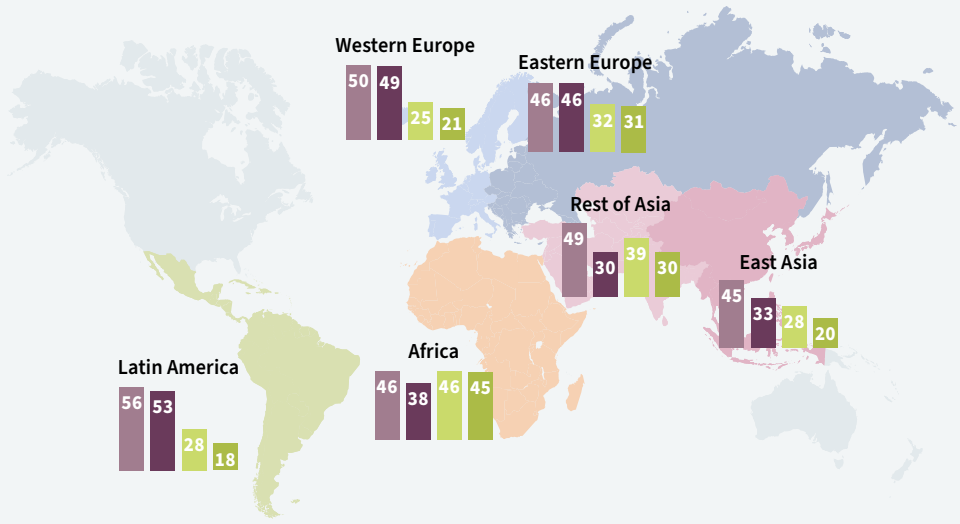
B2.12 Dropout rates of international and German students in bachelor's and master's programmes for selected first-year cohorts



Dropout rates in %: German students International students

Source: DZHW, calculation of dropout rates, 2022

B2.13 Dropout rates of international students in bachelor's and master's programmes by selected regions of origin[7]



Dropout rates in %:
- Bachelor's programme, international first-year students in 2016 and 2017, (excluding study period extension)
- Bachelor's programme, international first-year students in 2016 and 2017, (including study period extension)
- Master's programme, international first-year students in 2018, (excluding study period extension)
- Master's programme, international first-year students in 2018, (including study period extension)

Source: DZHW, calculation of dropout rates, 2022

SPOTLIGHT

International students' sense of university belonging in Germany and the role it plays in their academic success

A guest contribution by Julia Zimmermann, Susanne Falk, Theresa Thies and Hüseyin Hilmi Yildirim

Dr. Julia Zimmermann is a senior researcher in educational psychology at the Faculty of Psychology of the FernUniversität in Hagen, where she is in charge of the psychological subproject, International STEM Students in Germany: The Interaction of Study Success Predictors at the Individual, Subject, University, and Cultural Levels She was also involved in the earlier project SeSaBa as project leader of the psychological subproject.

Dr. Susanne Falk is a senior researcher at the Bavarian State Institute for Higher Education Research and Planning in Munich, where she is in charge of the sociological subproject of InterMINT. Together with her colleagues in the consortium, she carried out the earlier project SeSaBa, in which a study progress panel survey of international students was conducted.

Hüseyin Hilmi Yildirim is a research associate and doctoral student in educational psychology at the Faculty of Psychology of the FernUniversität in Hagen. As part of the psychological subproject SeSaBa, he is writing his doctoral thesis on the academic success of international students in Germany.

Theresa Thies is a research associate at the Bavarian State Institute for Higher Education Research and Planning in Munich. As part of the sociological subproject InterMINT and the earlier project SeSaBa, she is writing her doctoral thesis on the academic success of international students in Germany.

A sense of university belonging is the term given to students' (subjectively) perceived cohesion in and connection to the university community.[1] A key objective of the culture of welcome at German universities is to encourage this sense of belonging to their university among international students. To date, although a sense of university belonging has been established as a crucial factor for students' subjective well-being and academic success,[2] very little is known about the interaction of these factors among international students in Germany. Therefore, this guest commentary will first focus on the question of how international students in Germany develop this sense of university belonging during the first four semesters and whether any differences can be observed with regard to the type of degree studied, the gender of the students and their subject groups. Then it will explore the correlations between the sense of university belonging, subjective well-being and academic success of international students.

Data basis: the national panel survey of international students in Germany

The results presented here are those of the joint research project on "SeSaBa – Success and Withdrawal of International Students in Germany" in both bachelor's and master's programmes. The joint research project SeSaBa was carried out between April 2017 and July 2021 by the German Academic Exchange Service (DAAD), the Bavarian State Institute for Higher Education Research and Planning (IHF) and the FernUniversität in Hagen in the funding project "Academic success and dropout phenomena" of the Federal Ministry of Education and Research (BMBF).

The analysis is based on a national panel survey[3] of international students with the intention of obtaining a degree, who began their bachelor's or master's programme at a university in Germany in the 2017/18 winter semester (see Figure BS1.1). Focal points of the analysis included the study entry phase, the study situation and the determinants of academic success.[4]

To document their sense of university belonging, each person was asked to rate the following three statements: "I feel a sense of belonging to my university", "I am happy to be at my university" and "I see myself as part of my university".[5] The statements were to be rated on a scale of 1 (Strongly disagree) to 5 (Strongly agree). The arithmetic mean of the three assessments was calculated for each individual. Then calculations were carried out as to whether this mean showed a low (scores from 1 to 2.5), medium (scores from 2.5 to 3.5) or strong (scores from 3.5 to 5) sense of belonging to a university. The following section traces the development of the share of students with a strong sense of belonging over the first four semesters. Only scores for students who took part in the survey in all four semesters are taken into account. The fifth and sixth semesters, during which the students were also surveyed, are omitted on account of the first degrees obtained in master's programmes, the significantly lower number of participants and the beginning of the pandemic, plus the resulting reduced comparability with earlier semesters.

BS1.1 Survey frequency and response rate of the panel survey[3] in the SeSaBa project

	First academic year		Second academic year		Third academic year	
	WS 2017/2018	SS 2018	WS 2018/2019	SS 2019	WS 2019/2020	SS 2020
Type of degree	1st survey	2nd survey	3rd survey	4th survey	5th survey	6th survey
Bachelor's	1,544	1,248	883	905	706	736
Master's	2,284	2,022	1,544	1,587	1,125	997
All respondents	**3,828**	**3,270**	**2,427**	**2,492**	**1,831**	**1,733**

Source: SeSaBa project

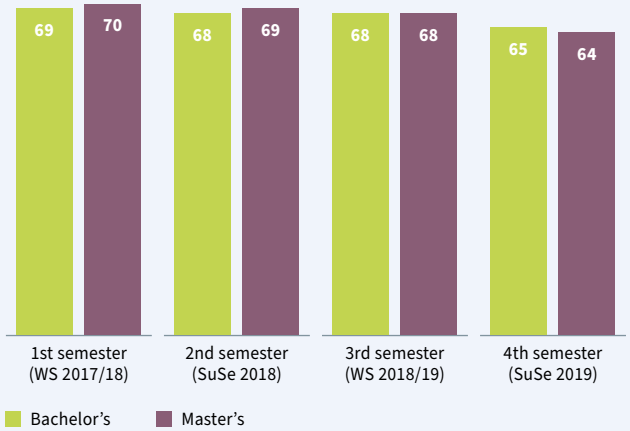
High sense of university belonging at the start of the programme

Figure BS1.2 shows the percentages for a strong sense of university belonging among bachelor's and master's students in the first four semesters. At the end of the first semester, 69% of bachelor's and 70% of master's students indicate a marked allegiance. Over the course of their studies, the share of those reporting a strong sense of university belonging drops slightly. Findings on other aspects of adjusting to a new (cultural) environment suggest that students may experience a greater level of drive in the first few weeks after arriving at the university. This phenomenon should be investigated further by carrying out surveys at shorter intervals. By the first survey at the end of the first semester, however, the share of students with a strong sense of university belonging had evidently plateaued at a more or less stable level.

Slight differences in their allegiance can be observed between women and men (see Figure BS1.3). 72% of male students, compared to just 68% of female students, report a strong sense of university belonging during the first semester. Over time, the proportion of individuals reporting a strong sense of belonging drops for both men and women.

With regard to subject groups (Figure BS1.4), the differences between the humanities, law, economics and social sciences, and mathematics,

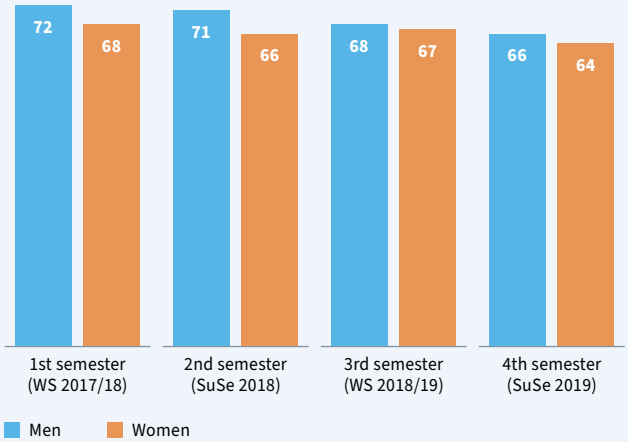
BS1.2 International students with a high sense of university belonging in the first four university semesters, by type of degree



Proportion of all bachelor's and master's students surveyed in %

Source: SeSaBa project, national panel survey

BS1.3 International students with a high sense of university belonging in the first four university semesters, by gender



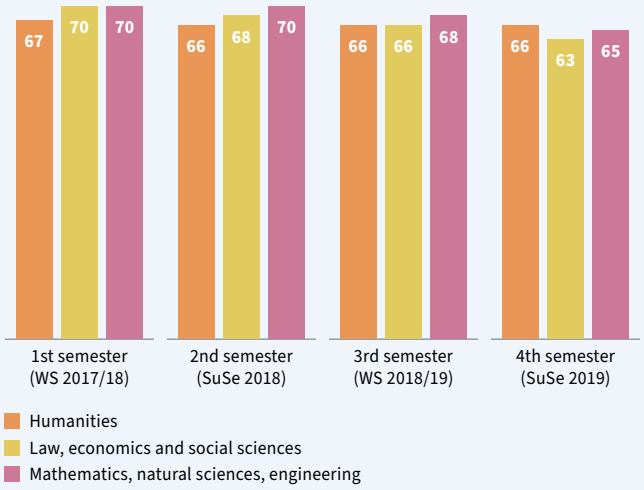
Proportion of all men and women surveyed in %

Source: SeSaBa project, national panel survey

SPOTLIGHT

International students' sense of university belonging in Germany and the role it plays in their academic success

BS1.4 International students with a high sense of university belonging in the first four university semesters, by subject group



Proportion of all students surveyed in the respective subject groups in %

Source: SeSaBa project, national panel survey

natural sciences and engineering (STEM) are negligible. Compared to humanities students, students of law, economics and social sciences, and STEM subjects, are somewhat more likely to indicate a strong sense of university belonging during their first semester. The share of those with high levels of agreement in all three subject groups subsequently declines over the course of their studies, with the greatest decrease between the first and fourth semesters – seven percentage points – found in law, economics and social sciences.

International students' sense of university belonging, study experience and academic success

To close the research gap, the project reflected on the correlations between international students' sense of university belonging, subjective well-being, selected aspects of their study satisfaction and intention to drop out of their studies. The focus was on the study entry phase, in other words, the first two semesters of their study programme. The models used to analyse the data take account both of cross-sectional correlations (i.e. correlations between the attributes of the respondents indicated at the same time in the survey, cf. paths a and b in Figure BS1.5) and of longitudinal correlations (i.e. those between attributes of respondents at different points in time, cf. paths c to f in Figure BS1.5). For example, Figure BS1.5 shows the cross-sectional and longitudinal correlations found between a sense of university belonging and subjective well-being.

The sample group for this analysis was 3,837 international students from the SeSaBa dataset who had participated in at least one of the first two survey waves (during the first and second semesters). Given the different levels of university belonging among male and female students previously identified (see sections above), potential control variables relating to the respondent's gender, type of degree, region of origin, age, previous residence in Germany and self-assessed, study-related language skills were included in the analyses and their potential effects monitored. Therefore, the reported longitudinal correlations between sense of university belonging and well-being, study satisfaction and dropout intention are unaffected by these attributes.[6]

Their subjective well-being was assessed according to the WHO-5 Index.[7] This is an internationally established screening instrument with five statements that respondents must rate on a scale of 1 (At no time) to 5 (All of the time).[8] The results show positive correlations between international students' sense of university belonging and their subjective well-being at both points in time, in other words a stronger sense of belonging was associated with greater well-being (paths a and b in Figure BS1.5). Furthermore, the analysis also found a significant longitudinal correlation between students' sense of university belonging in the first semester and their subjective well-being in the second semester (path e in Figure BS1.5). This means that students with a stronger sense of belonging to the university at the end of the first semester benefited from it in the form of enhanced well-being at the close of the second semester. Accordingly, the feeling of being part of a university community and belonging to the university may be considered conducive to the subjective well-being and mental health of international students. This finding is consistent with psychological theories that regard a sense of belonging as a basic human need, the fulfilment of which is a prerequisite for our well-being.[9] There is also a significant longitudinal correlation with a reverse effect, in other words, enhanced well-being at the end of the first semester coincided with a stronger sense of belonging at the close of the second semester (path f in Figure BS1.5). One possible explanation could be that students with enhanced well-being have greater (psychological) resources, enabling them to initiate and maintain social contacts or join student groups, thereby heightening their sense of university belonging.[10] Nonetheless, other mechanisms are also conceivable, such as the correlation between a more positive self-perception and evaluation of one's own abilities and enhanced well-being.

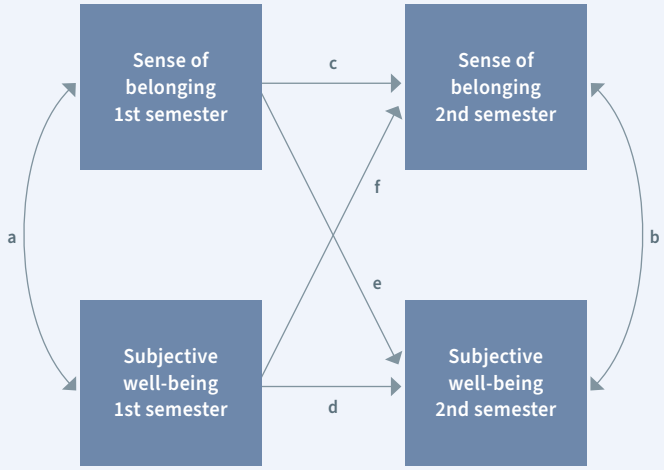
Sense of university belonging and academic success of international students in Germany

In parallel to the analysis of the sense of university belonging and subjective well-being, research was carried out into the correlation between a sense of belonging and various aspects of study satisfaction[11] (course content, studying conditions, workload) and the dropout intentions of international students.

For the most part, consistent results were obtained with regard to the three aspects of study satisfaction. In all three cases, positive cross-sectional correlations between the sense of university belonging and the different aspects of study satisfaction can be observed at both points in time; in other words, a stronger sense of belonging was associated with higher study satisfaction at the end of the first (path a in Figure BS1.5) and at the end of the second semester (path b in Figure BS1.5). In addition, over the course of two semesters – along similar lines as subjective well-being – positive correlations became apparent in both directions (paths e and f in Figure BS1.5), that is, the sense of university belonging and study satisfaction had a mutual impact. It was only between the sense of university belonging in the first semester and the satisfaction with the workload in the second semester that no correlation of statistical relevance was found.

As expected, negative correlations arise with regard to the dropout intentions of international students. This means that a stronger sense of university belonging was associated with lower intentions of dropping out of studies at both points in time (paths a and b in Figure BS1.5). The same observation is found over the course of studies. Consequently, students who felt a stronger allegiance to their university at the end of the first semester were less likely to intend to drop out at the end of the second semester, while minimal dropout intentions when commencing the programme were associated with a stronger sense of belonging over the course of the studies. On the one hand, these correlations could be explained by the fact that students with a stronger sense of belonging feel appreciated in the university environment and are thus more determined to complete their degree at that university. On the other hand, it may be assumed that students are more likely to cultivate social contacts and interact with other students and teachers if they intend to continue their degree (at this university).

BS1.5 Model of the analysis of the cross-sectional and longitudinal correlations between a sense of university belonging and subjective well-being



Source: SeSaBa project

Summary and outlook

In principle, the findings confirm the significance of the sense of university belonging for the subjective well-being and academic success of international students in Germany. Therefore, when developing support services for international students at universities, it would seem logical to focus first and foremost on initiatives that specifically aim to encourage the social inclusion of international students at the university, showing them that they are members of this community and are valued as such. The numerous options include buddy programmes as well as sporting and cultural activities, which are designed to encourage communication between international and domestic students. Events and initiatives that facilitate positive contact between students and teachers may also be instrumental in establishing students' sense of belonging.

Footnotes

1 See Locks et al. (2008).
2 See e.g. Glass/Westmont (2014).
3 A panel survey is a longitudinal study of the same group of respondents.
4 See also the project website and the list of publications: https://www.daad.de/en/the-daad/what-we-do/education-expertise-services/sesaba/.
5 This refers to the "sense of belonging" scale by Bollen/Hoyle (1990).
6 For the sake of brevity, the following section presents selected findings only. Please refer to the original publication by Yildirim et al. for a complete overview (2021).
7 See also World Health Organization (1998).
8 Respondents were asked to rate the following statements: Over the past two weeks, I have felt cheerful and in good spirits; Over the past two weeks, I have felt calm and relaxed; Over the past two weeks, I have felt active and vigorous; Over the past two weeks, I have woken up feeling fresh and rested; Over the past two weeks, my daily life has been filled with things that interest me.
9 See Baumeister/Leary (1995), Ryan/Deci (2000).
10 See also the Broaden-and-Build Theory of Positive Emotions described by Fredrickson (2001).
11 See Westermann et al. (1996).

3.1 Mobility trends and subject groups

In the 2020/21 winter semester, approximately 12,400 international students were enrolled for a temporary visit at a German university, representing roughly 4% of all international students. However, this figure underestimates the total number of students who came to Germany for a temporary study visit in the 2020 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 5,200 attended the 2020 summer semester, which means that the total number of temporary visiting and exchange students enrolled at German universities during the 2020 academic year was in the region of 17,600, roughly 52% less than the 2019 academic year.

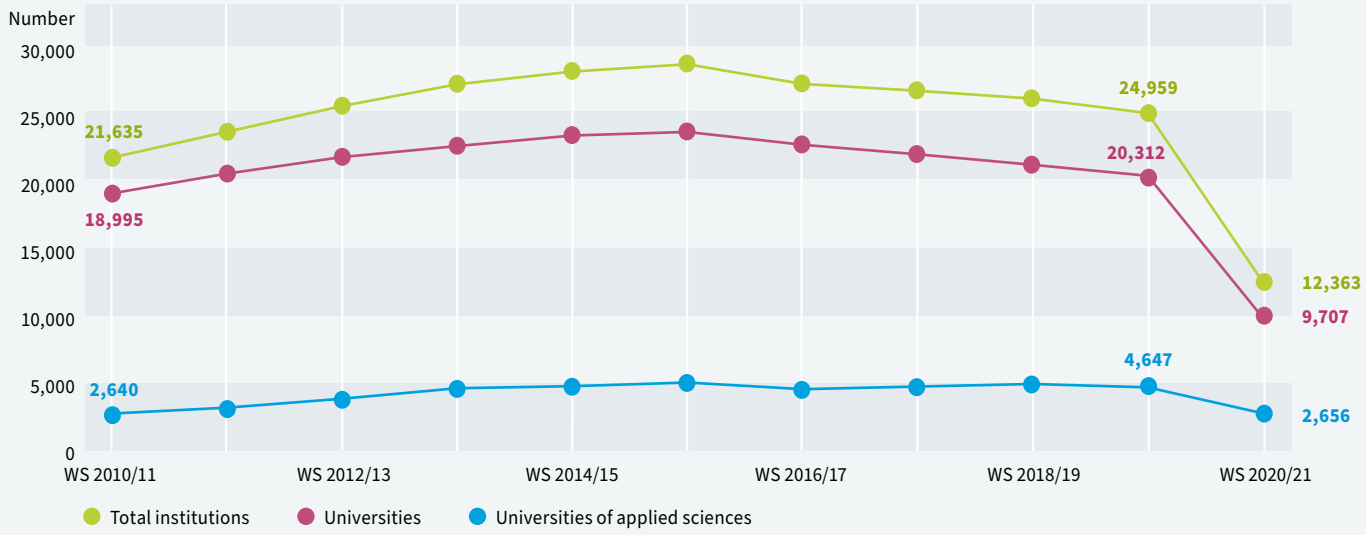
After slight declines in previous years, this constituted a sharp fall in the number of international students undertaking a temporary study visit in Germany. This sole reason for this was the extreme restriction in movements as a result of the pandemic. In an initial response to the pandemic, many international and German universities suspended some or all of their exchange programmes in the 2020 summer semester, continuing on into the 2020/21 winter semester. While international students who were already pursuing a degree at German universities were less affected by the temporary travel restrictions – they were able to simply continue their studies in Germany or attend classes online – the mobility constraints were extremely limiting for students who planned to enrol in Germany for just a few months.

> “In the 2020/21 winter semester, the number of exchange and visiting students enrolled at German universities dropped by half compared to the previous year.

The overwhelming majority of international students (79%) were enrolled at a university for their temporary visit. Just 21% spent their temporary period abroad at a university of applied sciences.

International students undertaking a brief study visit at a German university were particularly likely to enrol in law, economics and social sciences (32%) and the humanities (26%). By contrast, the share of those in engineering was 20%. 7% studied mathematics and natural sciences, while medicine and health sciences and art and art history accounted for 4% each, followed by agricultural, forestry and food sciences with 2%. Lastly, 7% were enrolled in other subjects. Compared to international students pursuing a degree a Germany, the high proportion of temporary visits in the humanities and the low proportion in engineering are particularly striking. The same ratios apply 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. However, 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.

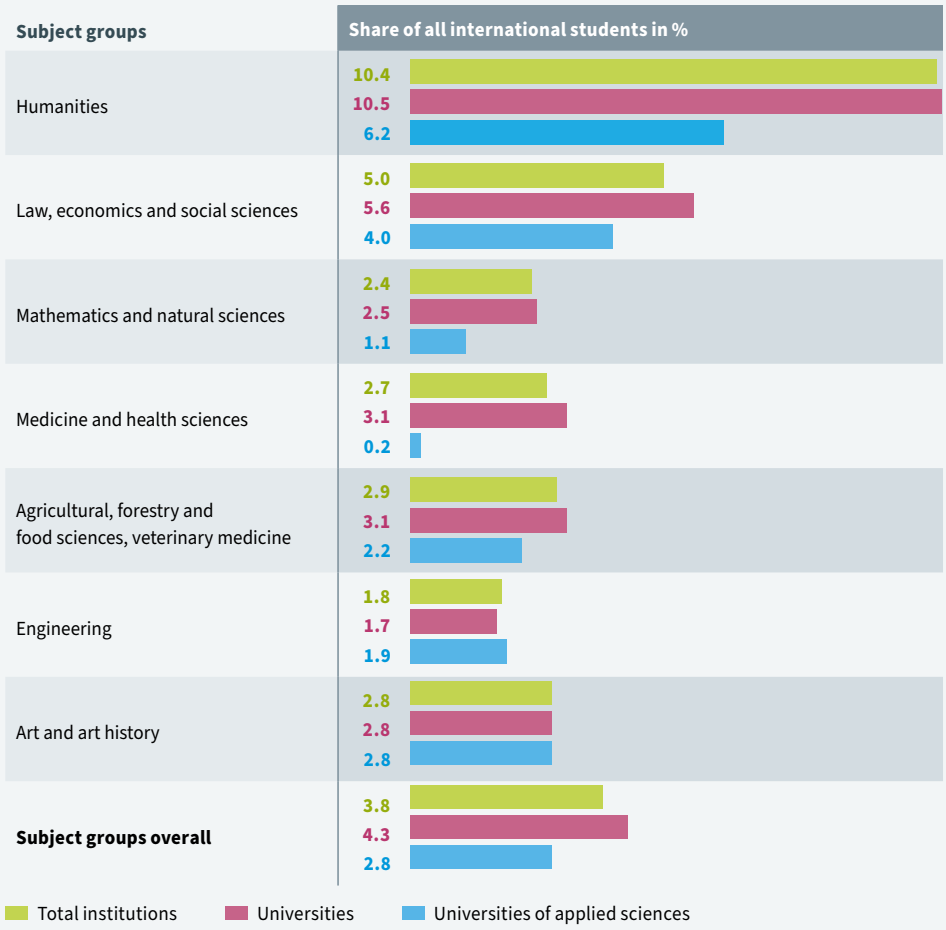
B3.1 International students on temporary study-related visits, by type of university, since winter semester 2010/11



Source: Federal Statistical Office student statistics

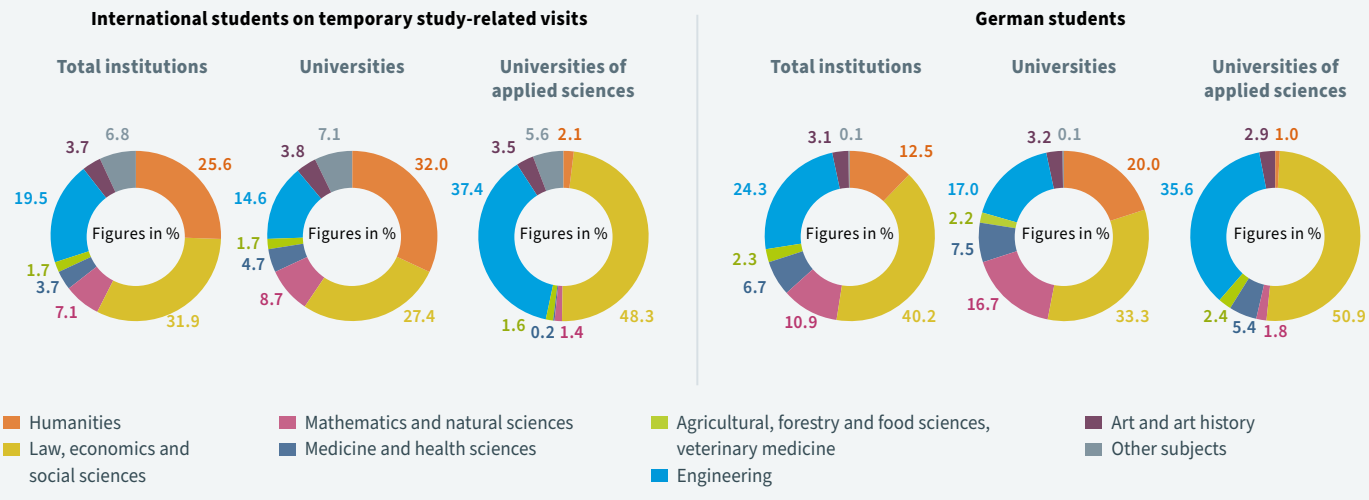
In line with the relatively high intake for German and cultural studies, students on temporary visits also represented the largest share – 10% – of all international students in the humanities. One in ten international students in this subject group is thus only at university for a limited period. A comparatively high share (5%) is also found in law, economics and social sciences. This figure was below average in all other subject groups and lowest in engineering, mathematics and natural sciences, at 2% each. Of the international students who cannot be assigned to any subject group, the vast majority had enrolled on a temporary study visit. These are clearly special initiatives and short programmes set up primarily for international exchange and visiting students.

B3.2 Share of international students on temporary study-related visits of all international students, by subject group and type of university, winter semester 2020/21



Sources: Federal Statistical Office student statistics; DZHW calculations

B3.3 International students on temporary study-related visits and German students, by type of university and subject group, winter semester 2020/21



Sources: Federal Statistical Office student statistics; DZHW calculations

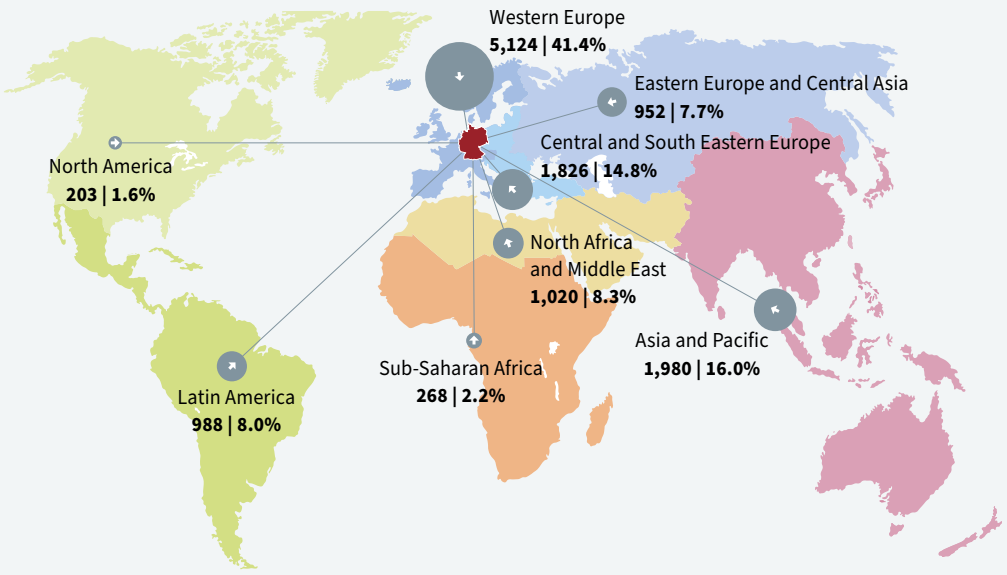
3.2 Regions and countries of origin

In the 2020/21 winter semester, most international students on temporary study visits at German universities came from Western Europe, accounting for a total of 41% of these students. 15% of temporary visits were undertaken by students from Central and South Eastern Europe. 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. Moreover, the Asia and Pacific countries also figure prominently, representing 16% of temporarily mobile students in total. By comparison, the other regions of origin played a much less significant role: 8% of international students on temporary study visits in Germany came from each of North Africa and Middle East, Eastern Europe and Central Asia, and Latin America, with 2% from Sub-Saharan Africa and North America.

> “Compared to the 2019/20 winter semester, the number of students from the US on temporary study visits plummeted by 89% in the 2020/21 winter semester.

Thus, a substantial proportion of roughly 36% of international exchange and visiting students were from non-European countries of origin. Despite the pandemic-related restrictions, German universities were evidently attractive for brief study visits, even for students from countries outside Europe. 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 North America, North Africa and Middle East as well as Sub-Saharan Africa. Even when allowing for the developments brought about by Covid-19, 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, to some extent 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 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 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.

B3.4 International students on temporary study-related visits, by region of origin, winter semester 2020/21



Number and share in % of all international students on temporary study-related visits at German universities

Sources: Federal Statistical Office student statistics; DZHW calculations

Footnote

1 Only countries with at least 50 international students with temporary visits, in winter semester 2020/21 (increase) and/or winter semester 2019/20 (decrease).

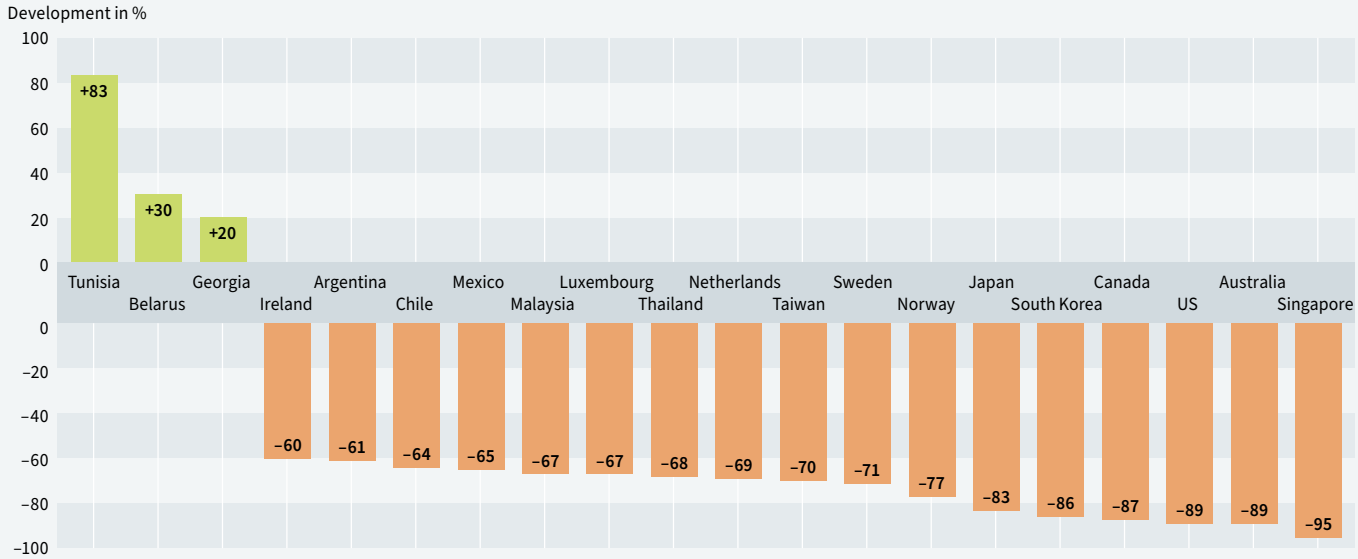
Topping the ranking of the countries of origin are the Erasmus countries France, with a share of 10%, then Italy, Spain and China, at 9% each, followed by Russia, Turkey, Poland and the United Kingdom with shares of between 4% and 3%. Other major countries of origin are Brazil, Jordan, Switzerland and Colombia. Five years ago, they were also among the key countries of origin for international students on temporary study visits in Germany. Nonetheless, in the wake of the Covid-19 crisis, these countries have all seen seismic shifts with regard to the specific number of temporary students and their position in the ranking of the key countries of origin. At the same time, not one single country of origin shows an increase in the number of students in the 2020/21 winter semester, compared to the 2019/20 winter semester. The sharpest drops in the first year of the pandemic can be seen in students from Singapore (–95%), Australia and the US (–89% each), Canada (–87%) and South Korea (–86%).[1]

B3.5 International students on temporary study-related visits, by key countries of origin, in winter semesters 2015/16 and 2020/21

	WS 2015/16			WS 2020/21	
Country of origin	Number	in %	Country of origin	Number	in %
Italy	2,300	8.0	France	1,223	9.9
Spain	2,251	7.9	Italy	1,152	9.3
China	2,214	7.7	Spain	1,097	8.9
France	1,968	6.9	China	1,070	8.7
US	1,909	6.7	Russia	494	4.0
Brazil	1,859	6.5	Turkey	445	3.6
Poland	1,154	4.0	Poland	391	3.2
South Korea	941	3.3	United Kingdom	380	3.1
Turkey	931	3.3	Brazil	357	2.9
United Kingdom	747	2.6	Jordan	302	2.4
Japan	741	2.6	Switzerland	286	2.3
Russia	688	2.4	Colombia	250	2.0
Mexico	564	2.0	India	224	1.8
Czech Republic	498	1.7	Czech Republic	205	1.7
India	444	1.6	Ukraine	198	1.6
Hungary	439	1.5	Iran	195	1.6
Switzerland	436	1.5	US	177	1.4
Taiwan	402	1.4	Taiwan	167	1.4
Belgium	401	1.4	South Korea	157	1.3
Netherlands	387	1.4	Mexico	157	1.3

Sources: 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 2020/21[1]



Sources: Federal Statistical Office student statistics; DZHW calculations

3.3 Erasmus visits

The mobility restrictions caused by the pandemic in the 2020 summer semester and the 2020/21 winter semester mainly affected the number of international students who were undertaking a temporary study-related visit at German universities. This figure was half that of the previous year (see pp. 52/53), also resulting in reduced numbers of students from other countries coming to Germany for an Erasmus study visit. In the 2020 Erasmus year[1], roughly 25,800 Erasmus students took part in a study-related visit in Germany. This equates to 22% or 7,300 fewer students than in 2019. Compared to the decline in all students undertaking a temporary visit at German universities, this downswing is considerably lower. This result is due not just to stable structures and well-coordinated partnerships in the Erasmus+ programme – even during Covid-19 – but to the fact that the Erasmus participants in the pre-pandemic 2019/20 winter semester are included in the 2020 Erasmus year. Only in the 2021 Erasmus year will it be possible to obtain a complete picture of the pandemic's impact on the Erasmus+ programme. The number of Erasmus students tailed off more noticeably among those coming to Germany for a placement, dropping by 32% compared to 2019. The decrease in study visits came to 17%. In total, 31% of all Erasmus students completed a placement in Germany in 2020.

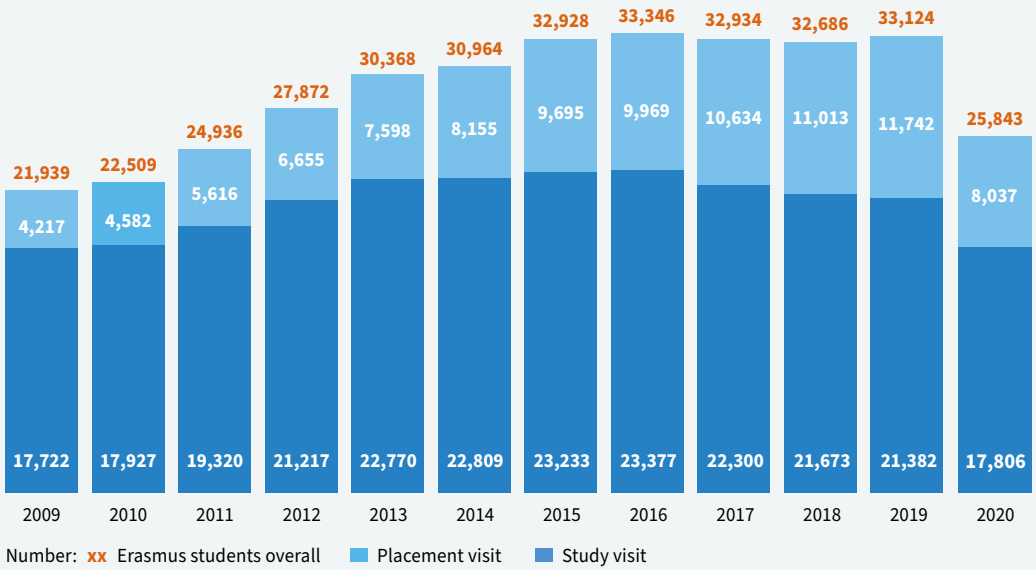
Once again, France, Italy and Spain were the key countries of origin in the 2020 Erasmus year, together accounting for 43% of all Erasmus students in Germany alone. Other major countries are Turkey, the United Kingdom, the Netherlands and Austria, which together represented a further 24% of Erasmus participants. At the same time, the reduction in Erasmus students varied from country to country. While there was an above-average decrease in the number of Erasmus students from Turkey (–42%), Poland (–32%), the United Kingdom (–29%) and the Czech Republic (–28%), Austria's decline (–6%) stayed in the single-digit range. These variations are primarily due to regional travel regulations during the pandemic.

Three subject groups figured prominently for Erasmus students in Germany in 2020: arts and humanities alone accounted for 25% of all participants, with business, administration and law at 22% and engineering, manufacturing and construction at 17%. A comparison with all international students at German universities reveals that

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.

B3.7 Erasmus students from other countries in Germany, by type of visit, since 2009[1]



Number: xx Erasmus students overall | Placement visit | Study visit

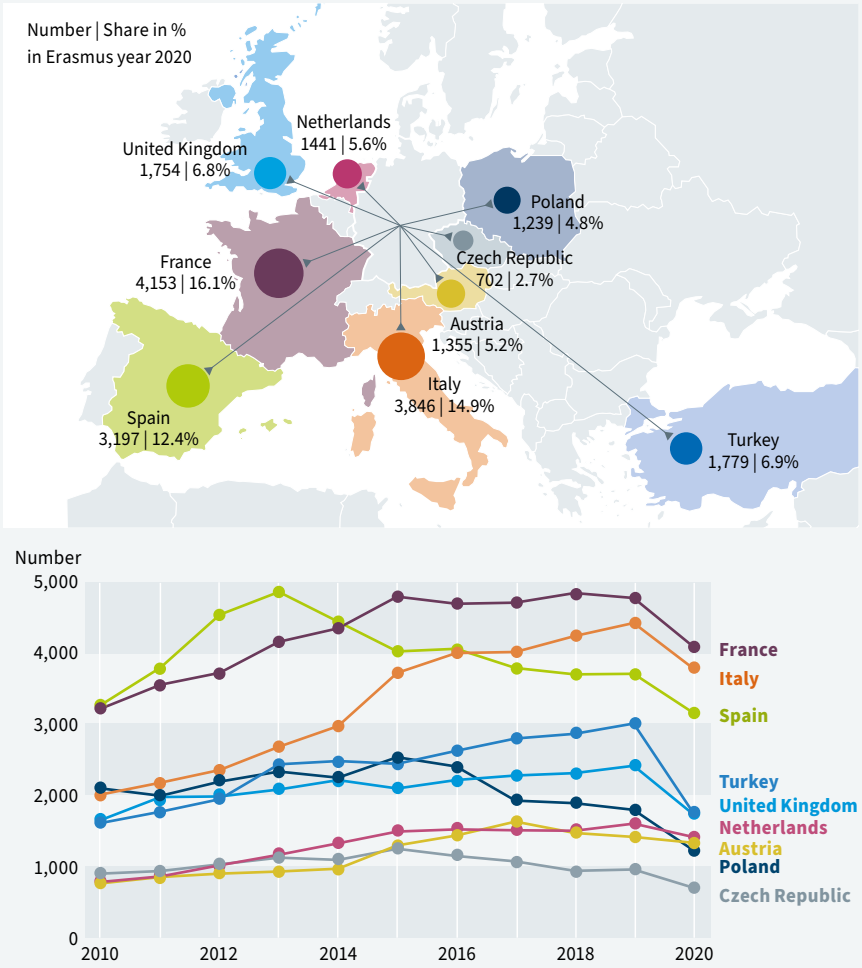
Source: DAAD Erasmus statistics

Footnote

1 Erasmus statistics until 2014: the Erasmus year starts in the winter semester and 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. 2020 = 1 June 2019 to 31 May 2021. Due to the pandemic, however, the 2020 Erasmus year was extended until 31 March 2022. To ensure a meaningful comparison with previous years, only activities undertaken during the usual period, in other words, from 1 June 2019 to 31 May 2021, were included when calculating the numbers for the 2020 Erasmus year.

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 the international students in Germany, tend to favour engineering subjects. By contrast, 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 2010



Sources: DAAD Erasmus statistics; DZHW calculations

B3.9 Erasmus students from other countries in Germany and all international students in Germany, by subject group, 2020

International students in Germany in %	Subject groups	All Erasmus students in Germany in %
1.1	Education	2.3
13.8	Humanities and arts	24.6
19.2	Social sciences, journalism and information	11.3
4.2	Business, administration and law	22.1
10.7	Natural sciences, mathematics and statistics	6.9
11.3	Computer science and communication technologies	3.1
29.7	Engineering, manufacturing and construction	16.9
1.7	Agriculture, forestry, fisheries and veterinary	1.6
5.8	Health and welfare	8.5
2.1	Services	2.7

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

SPOTLIGHT

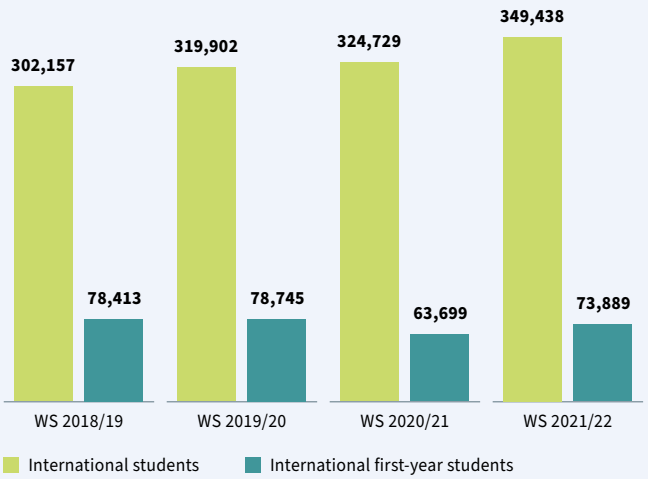
The evolution of the number of international students in Germany in 2021

Despite the global mobility restrictions in 2020 and 2021, the first two years of the pandemic, there was no drop in the number of international students at German universities. On the contrary, their numbers continued to grow. Between the 2019/20 winter semester and the 2020/21 winter semester, the number of international students rose from around 319,900 to 324,700, an increase of 2%. This positive development continues in the 2021/22 winter semester, the second winter semester of the pandemic. At this point in time, a total of around 349,400 international students are enrolled at German universities, a rise of approximately 24,700 or 8% compared to the 2020/21 winter semester.

> “Following a sharp fall in the 2020 summer semester, the number of international first-year students saw strong growth again in the 2021 summer semester.

To begin with, there was a significant decline in international first-year students in 2020 nonetheless. While there were approximately 74,700 in the 2019/20 winter semester, this number dropped to 63,700 one year later, a decrease of 19%. However, the number of international first-year students rose again in the 2021/22 winter semester, by around 10,200 to 73,900, an increase of 16%. This significantly reduces the margin between the highest number of international students enrolling for the first time, roughly 78,700, in the 2020/21 winter semester.

BS2.1 International students and first-year students in Germany since winter semester 2018/19



Source: Federal Statistical Office student statistics

Database

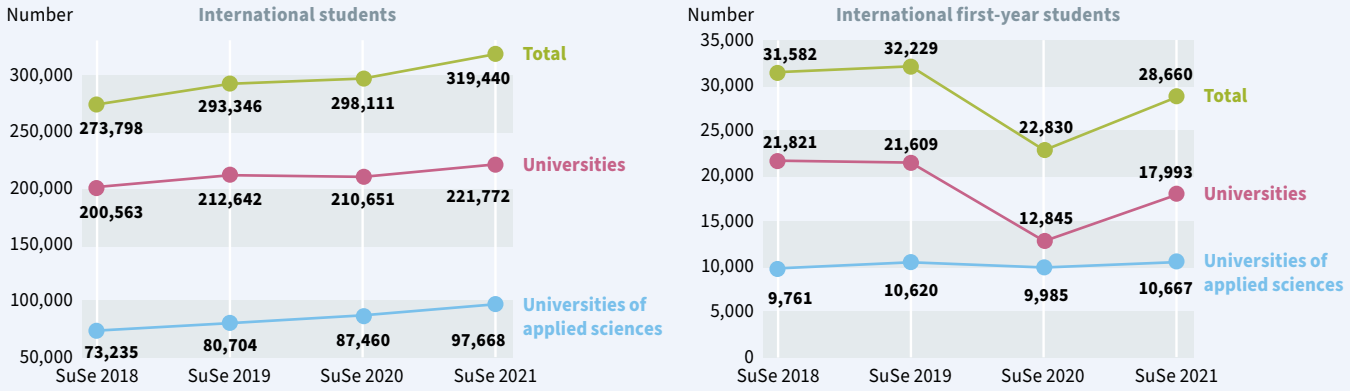
The evolution of the number of international students in Germany in 2021 is primarily visualised using data from official statistics for the 2020/21 winter semester and the 2021 summer semester. Robust, final data are available for these periods. Moreover, the analysis also includes robust data for the 2021/22 winter semester published by the Federal Statistical Office in August 2022. Nonetheless, these current figures were not yet available in all differentiations and forms.[1]

To enable a differentiated analysis, this spotlight once more uses student numbers for the summer semesters. Previous editions of *Wissenschaft weltoffen* were based first and foremost on the numbers for the winter semesters. The summer and winter semesters were only both taken into account in the figures showing the numbers of first-year students and graduates.[2] When interpreting the student numbers presented here, it should be noted that the data from the summer and winter semesters cannot be compared directly. Due to variations in the figures for first-year and formerly enrolled students, there are systematic differences in the student numbers between the summer and winter semesters. The figures for the winter semester are higher for all student groups than those of the summer semester. Therefore, the data for the summer and winter semesters are not compared directly. Instead, they are only compared with the respective data for the summer semesters or that for the winter semesters.

Similar developments in the number of international students can be observed for the summer semester. While a total of 293,300 international students were enrolled at German universities in the 2019 summer semester, this number rose by 5,000 or 2% to around 298,100 in the 2020 summer semester. The 2021 summer semester saw a further jump of 21,300 or 7% to 319,400. Whilst the number of international students at universities increased by 4% (from 212,600 to 221,800) from 2019 to 2021, they shot up by 21% (from 80,700 to 97,700) at universities of applied sciences during the same period.

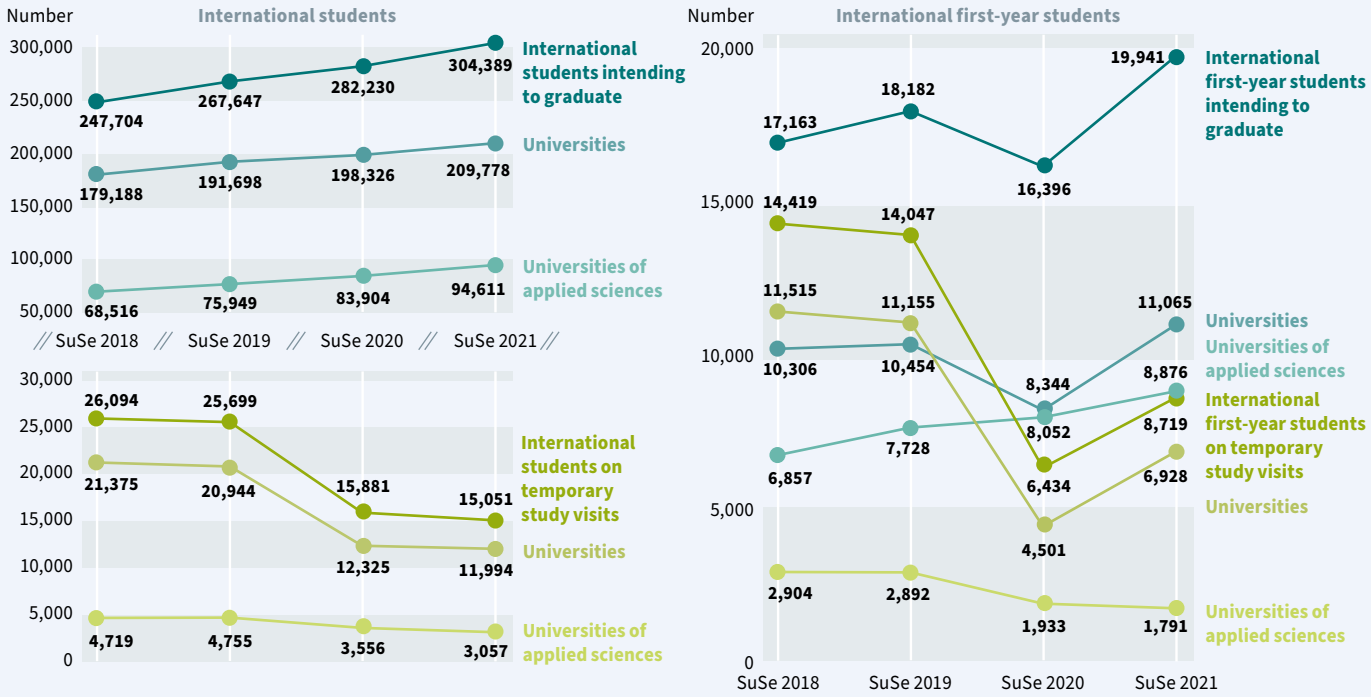
Meanwhile, at both universities and universities of applied sciences, the number of international first-year students fell significantly in the 2020 summer semester, before rising sharply again in the 2021 summer semester. At universities, they plummeted by 41% from 2019 to 2020 and then surged back up by 40% in 2021. At universities of applied sciences, they first dropped by 6% and subsequently went back up by 7%. Overall, roughly 22,800 international students enrolled in a German university for the first time in the 2020 summer semester, down from 32,200 in the 2019 summer semester. The number was back to 28,700 in the 2021 summer semester.

BS2.2 International students and first-year students by type of university, since summer semester 2018



Source: Federal Statistical Office student statistics

BS2.3 International students and first-year students by intention to graduate and type of university, since summer semester 2018



Source: Federal Statistical Office student statistics

The remarkable increase in international student numbers in both the summer and the winter semester, despite Covid-19 and the temporary decline in the number of international first-year students at the same time, may be explained by the reduction in the number of international graduates over the same period, meaning that more international students in later semesters remained at the universities than in previous years. In the 2021 summer semester and the 2021/22 winter semester, the upturn in the numbers of international first-year students also contributes to the increase in the number of international students overall. However, there also appears to be a longer study period extension in these semesters as the number of international students increased even more sharply than that of international first-year students in each case. The hypothesis that many international students in later semesters extended their period of study would appear to be confirmed not just by the fall in international graduates in 2020, down 2% year-on-year, and by declining dropout rates (see

SPOTLIGHT

The evolution of the number of international students in Germany in 2021

pp. 46/47). Compelling reasons for this could be that the changeover to new digital study formats led to delays in many degree programmes[3] or that students put off completing their degrees to avoid having to look for a job under pandemic conditions, which were also having a considerable effect on the economy. On the other hand, a larger percentage of international students than in previous years may have continued with a master's programme immediately after obtaining their bachelor's degree, for example to steer clear of any difficulties in undertaking planned placements or visits abroad or to avoid uncertainty when searching for a job to further their career. This would appear to be corroborated by the above-average increase in international students starting a master's programme in the 2021 summer semester, compared to 2020. Their number jumped by 24%, from 11,400 to 14,100.

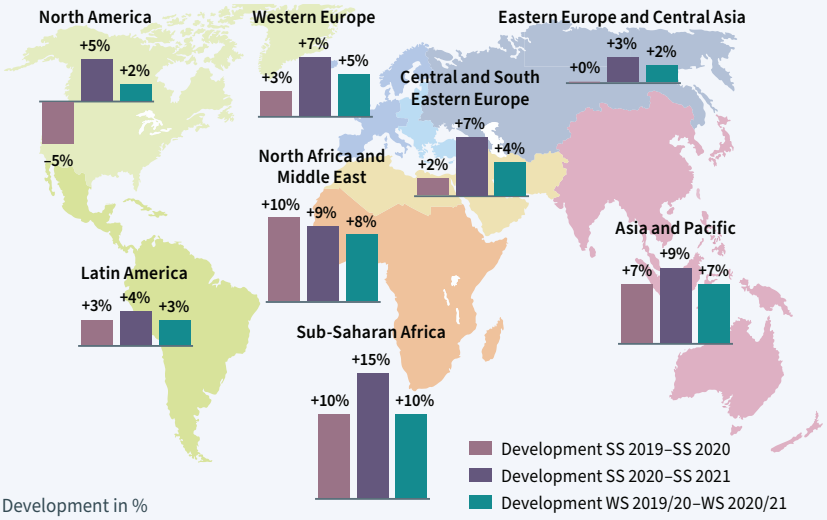
The considerable shortfall in international first-year students in 2020 was more than offset, firstly by the renewed rise in numbers as of the 2020/21 winter semester and, secondly, most of all, by extending the study period for international students at German universities. Many international students had obviously come to terms with the conditions of studying under Covid-19. Conversely, the situation for international first-year students was initially more complex in 2020, the first year of the pandemic. Covid-19 led to severe restrictions in terms of issuing visas and travelling. Moreover, starting a degree in a foreign country under pandemic conditions at that time was an even greater challenge than under normal conditions. Quite a few internationally mobile students who were interested in studying in Germany may well have postponed commencing their courses until such time as the situation improved. This seems to be borne out by the rising numbers of first-year students in the 2021 summer semester. During the second year of Covid-19, the universities clearly succeeded in establishing conditions that were more conducive to effectively taking up studies than under pandemic conditions.

> "6% of international students enrolled in a distance learning course in the 2021 summer semester – more than ever before.

In the 2020/21 winter semester, numerous host countries offered international students an alternative: namely of commencing their programmes online from their home countries. Just under three quarters of German universities offered international students this option in the 2020 summer semester and the 2020/21 winter semester.[4] Plenty of international students took advantage of this opportunity when enrolling or re-enrolling; the number of those indicating that they were domiciled abroad during the semester surged by 30% from the 2019/20 winter semester to the 2020/21 winter semester (from 29,900 to 39,000). This applied to 12% of all international students. In the 2021 summer semester, this figure went up to 42,100 or 13%. The increasing number of international students who enrolled in a (normal or permanent) distance learning programme may be another consequence of the pandemic. From the 2019/20 winter semester to the 2020/21 winter semester, their numbers leaped from approximately 12,500 to 15,800 (+27%). The 2021 summer semester saw a further increase to 18,900. This means that, overall, 6% of international students are enrolled in a distance learning course.

A differentiated analysis of the development in international student numbers in the summer semesters clearly shows that the decrease in international first-year students is mainly the result of the declining figures of international students on temporary study visits. While in the 2021 summer semester, compared to 2019, 14% more international students were enrolled at German universities with the intention of obtaining a degree in Germany, the share of visiting and exchange students in 2021 was still 41% below that of the 2019 summer semester. This development is similar at both universities and universities of applied sciences.

BS2.4 Development in numbers of international students intending to graduate, by region of origin, in summer semesters 2019–2021 and winter semesters 2019/20–2020/21

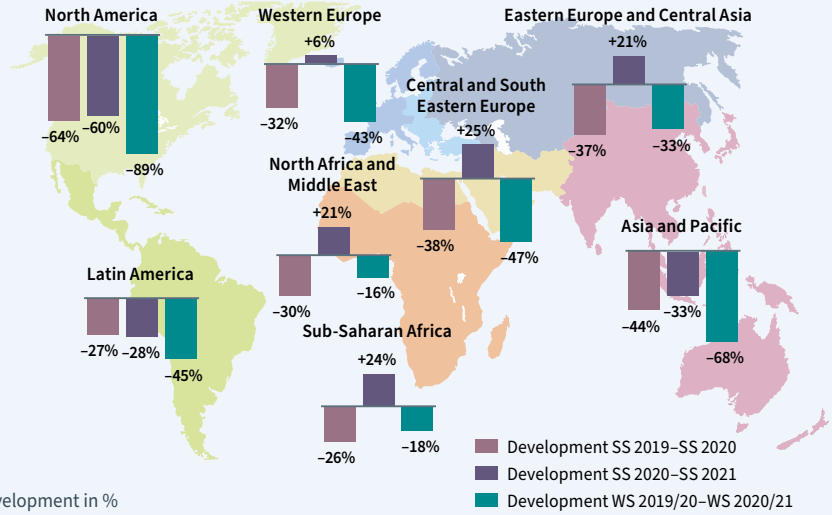


Development in %

Source: Federal Statistical Office student statistics; DZHW calculations

As the majority of international students on temporary study visits only remain at their host universities for one semester, it is extremely interesting to monitor the situation among first-year students. Following a sharp fall of 54% during the first year of the pandemic, an increase in the international first-year students on temporary visits can now be observed, although this has not yet reached the 2019 level. In the 2021 summer semester, 2,300 more international visiting students enrolled in Germany for the first time than the previous year (+36%). Nevertheless, this positive development applies to universities only. The decline at universities of applied sciences is ongoing (–7% compared to the 2020 summer semester). By contrast, among international first-year students intending to graduate, not only has the downturn of the 2020 summer semester been offset, their number in the 2021 summer semester noticeably exceeds that of the 2019 summer semester (+10%). The upswing is 6% at universities and a remarkable 15% at universities of applied sciences.

BS2.5 Development in numbers of international students on temporary study-related visits, by region of origin, in summer semesters 2019–2021 and winter semesters 2019/20–2020/21



Development in %

Source: Federal Statistical Office student statistics; DZHW calculations

The differences between international students with and without the intention of obtaining a degree in Germany can also be seen when looking at the evolution of student numbers from the various regions of origin. For all regions of origin, despite the pandemic, the number of international students intending to graduate grew steadily between the 2019 and 2021 summer semesters. This applies most notably to students from Sub-Saharan Africa, whose number rose by 10% from 2019 to 2020 and by a further 15% from 2020 to 2021. The only exception is students from North America, who showed a decline (–5%) at first from 2019 to 2020. However, this was almost offset between 2020 and 2021 (+5%). A comparison between the 2019/20 winter semester and the 2020/21 winter semester produces similar findings.

> “Between the 2019 and 2021 summer semesters, the number of visiting students from North America tumbled by 85%.

The situation is very different for international visiting and exchange students. Their number tumbled from the 2019 summer semester to the 2020 summer semester for all regions of origin, particularly in the case of visiting students from North America (–64%). Between the 2020 and 2021 summer semesters, most regions of origin regained a positive development, without cancelling the decline, however. Only for international visiting students from Sub-Saharan Africa did the results first show a decrease of 26%, followed by an increase of 24%, so that this region registered student numbers for 2021 that were equivalent to pre-pandemic levels. Nonetheless, the significant reduction in the number of visiting students also continued in the 2021 summer semester for the regions of origin North America (–60%), Asia and Pacific (–33%) and Latin America (–33%).

In summary, the findings reveal that, at universities in Germany, there was merely a decline in temporary international mobility (referred to as credit mobility) during the pandemic in 2020 and 2021. In some of the regions of origin, this downturn stabilised in the 2021 summer semester. By contrast, degree-related international mobility (known as degree mobility) increased, despite the mobility restrictions in the wake of Covid-19. It may be assumed that this positive development continued unabated in the 2021/22 winter semester.

Footnotes

1 Therefore, no information on international students with temporary study visits, types of university or types of degree can be provided at this juncture.

2 To date, apart from in this spotlight, the number of first-year students has invariably been presented in *Wissenschaft weltoffen* with reference to an academic year (academic year = summer semester + the following winter semester) and that of graduates with reference to a graduation year (graduation year = winter semester + the following summer semester).

3 See Lörz et al. (2020).

4 See DAAD (2021b), p. 17.

1.1 Mobility trends and major host countries

In 2019, around 138,000 German nationals were studying abroad. This number has dropped slightly 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. However, 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, their share of all German students has even fallen slightly since 2011 due to the strong growth in the number of students in Germany up to 2015. In 2019, this figure was 5.1%.

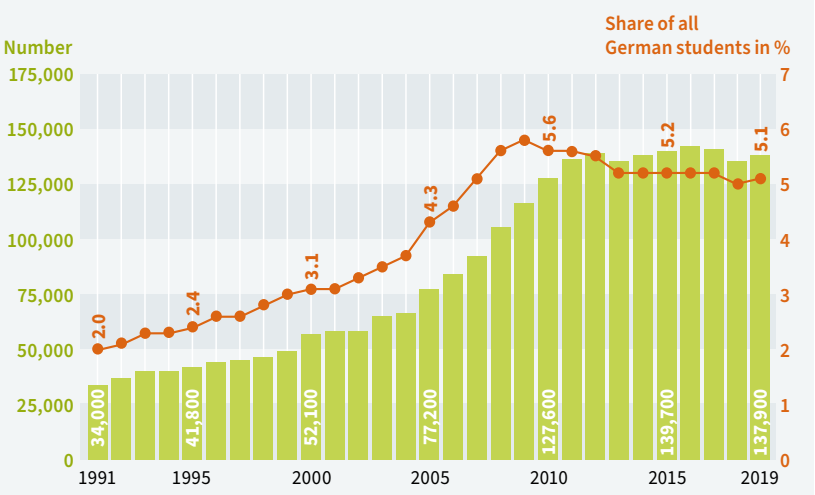
Database

The data on German students abroad presented on pages 62–65 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). However, 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. The data presented here are therefore primarily to be interpreted as data on degree-related student mobility.

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 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.

Just under three quarters of all German students abroad are in Western European countries (71%). The regions of Central and South Eastern Europe (12%), North America and Asia and Pacific (8% each) follow at a considerable distance. The other regions of the world are virtually immaterial in the degree-related international mobility of

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



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

Footnotes

1 From 2010, including results of the Doctoral Survey; from 2019, including doctoral statistics.

2 2019: 2,549,224 German students in Germany. German students abroad thus account for 5.1% 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 2018 or 2019.

4 2019: break in the time series due to changed statistical recording compared to 2016.

5 Figure from 2018, rather than 2019, as no data are currently available for 2019.

6 Figures have been taken from the official statistics of the Higher Education Statistics Agency (HESA) as the report of the Federal Statistical Office does not include any data on 2016.

7 2016: data from 2017 as no data are available for 2016.

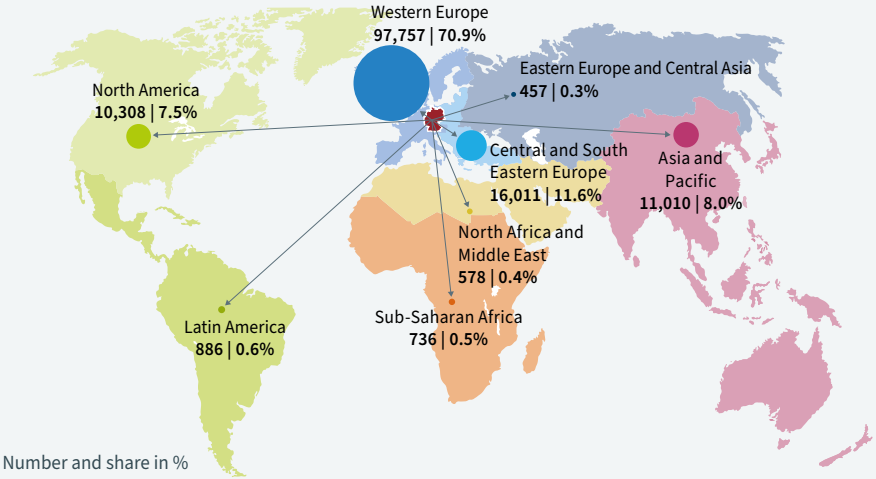
German students, with each accounting for less than 1%. By contrast, regions such as Latin America or Sub-Saharan Africa figure much more prominently in temporary study-related international mobility – presumably on account of the different motives for mobility behind these visits (see pp. 66/67).

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 (–10%) and particularly in Switzerland (–21%) have dropped significantly since 2016, an upward trend can be observed for Austria (+7%) and the Netherlands (+2%) over the same period. Among the major host countries with an exceptionally noticeable increase in German students between 2016 and 2019, with the exception of Sweden (+19%), Central and South Eastern European countries are particularly well represented, such as Bulgaria (+37%), Romania (+35%), Poland (+33%) and Turkey (+20%). With regard to Bulgaria, however, this rise may also be attributed to the country's change in recording student statistics.

The situation is similar in three other major host countries showing a conspicuous decline in the number of German students. In Switzerland (–21%), France (–22%) and Spain (–29%), the declines are mainly statistical. Nonetheless, a sharp decline can also be observed in Greece (–28%), even without a statistical break.

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 20% in the number of first-year students between 2016 and 2019, the number of first-year students in Austria rose by 18%. 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 sharp rise in tuition fees and the cost of living in the United Kingdom. The huge plunge of 79% in the number of first-year German students in France is also striking. However, like the decline in overall numbers for France, this decline is due to statistical factors.

C1.2 German students abroad by host region in 2019[3]



Number and share in %

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

C1.3 German students abroad by key host countries in 2016 and 2019, plus development 2016–2019

Host country	Number 2016	Number 2019	Development 2016–2019 in %
Austria	28,220	30,231	+7
Netherlands	21,956	22,439	+2
United Kingdom	15,770	14,145	–10
Switzerland[4]	14,609	11,536	–21
US	10,169	9,242	–9
China[5]	8,145	8,079	–1
France[4]	6,007	4,715	–22
Turkey[4]	3,363	4,022	+20
Hungary	3,232	3,447	+7
Denmark[5]	3,468	2,980	–14
Sweden[5]	1,689	2,011	+19
Spain[4]	2,756	1,965	–29
Portugal	1,622	1,771	+9
Poland	1,239	1,653	+33
Romania	1,187	1,605	+35
Italy[5]	1,458	1,533	+5
Bulgaria	1,070	1,467	+37
Australia	1,202	1,166	–3
Greece[5]	1,512	1,094	–28
Canada[5]	1,161	1,066	–8

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

C1.4 German first-year students abroad by key host countries in 2016 and 2019, plus development 2016–2019

Host country	Number 2016	Number 2019	Development 2016–2019 in %
Austria	7,692	9,084	+18
United Kingdom[6]	7,665	6,155	–20
Netherlands	6,643	6,564	–1
Switzerland[4]	4,295	3,391	–21
Portugal	1,374	1,475	+7
Spain[7]	974	846	–13
Turkey	677	844	+25
Australia	499	465	–7
France[4]	1,671	344	–79
Poland	330	321	–3

Source: Federal Statistical Office, "Deutsche Studierende im Ausland"; 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%),[1] followed by health and welfare (13%), arts and humanities (12%), natural sciences, mathematics and statistics, and engineering, manufacturing and construction (9% each). Compared to German students at German universities, the social sciences, journalism and information are thus clearly over-represented abroad, whereas engineering, manufacturing and construction are noticeably under-represented.

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 clearly dominates in Portugal, Spain, Denmark, Australia and Finland. The high proportion of health and welfare subjects in the three Eastern European host countries, Hungary, Poland and the Czech Republic, 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. Countries such as Hungary, Poland and the Czech Republic also highlight the good reputation of their medical education specifically to attract international students, with programmes in English in Poland and the Czech Republic, while Hungary even offers programmes in German. In addition, the structure of medical studies in these countries is very similar to that of German medical studies; in the Czech Republic and Hungary, these study programmes also end with a state examination.

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

Just under half of German students abroad (47%) aim for a bachelor’s degree there, over a third (36%) for a master’s degree.[2] A further 11% do a doctorate abroad, while other types of degree (including type of degree unknown) account for 7% of students. Compared to German students at German universities, master’s students are thus clearly over-represented abroad, whereas bachelor’s students are markedly 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 the Netherlands, Japan and Canada, are pursuing a bachelor’s degree. By contrast, in Central

> “Compared to German students at German universities, the social sciences, journalism and information are thus clearly over-represented abroad, whereas engineering, manufacturing and construction are noticeably under-represented.

and South Eastern European countries, such as Latvia, Bulgaria, Romania, Hungary and Poland in particular, 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, Norway, Sweden, Ireland, Canada, Finland, the US and the United Kingdom represent a significant proportion of German students. This also applies to Switzerland, the Czech Republic and Spain.

Footnotes

1 Basis: countries that supply the Federal Statistical Office with differentiated data on German students and doctoral students abroad, broken down by subject group. These countries account for around 86% of German students abroad. With the exception of China, these countries also include all 20 key host countries of internationally mobile German students.

2 Basis: countries for which data on German students by type of degree are available from the Federal Statistical Office or the OECD. However, these countries account for around 82% of German students abroad and, with the exception of China, 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 The data on German students at German universities refer to the 2018/19 winter semester.

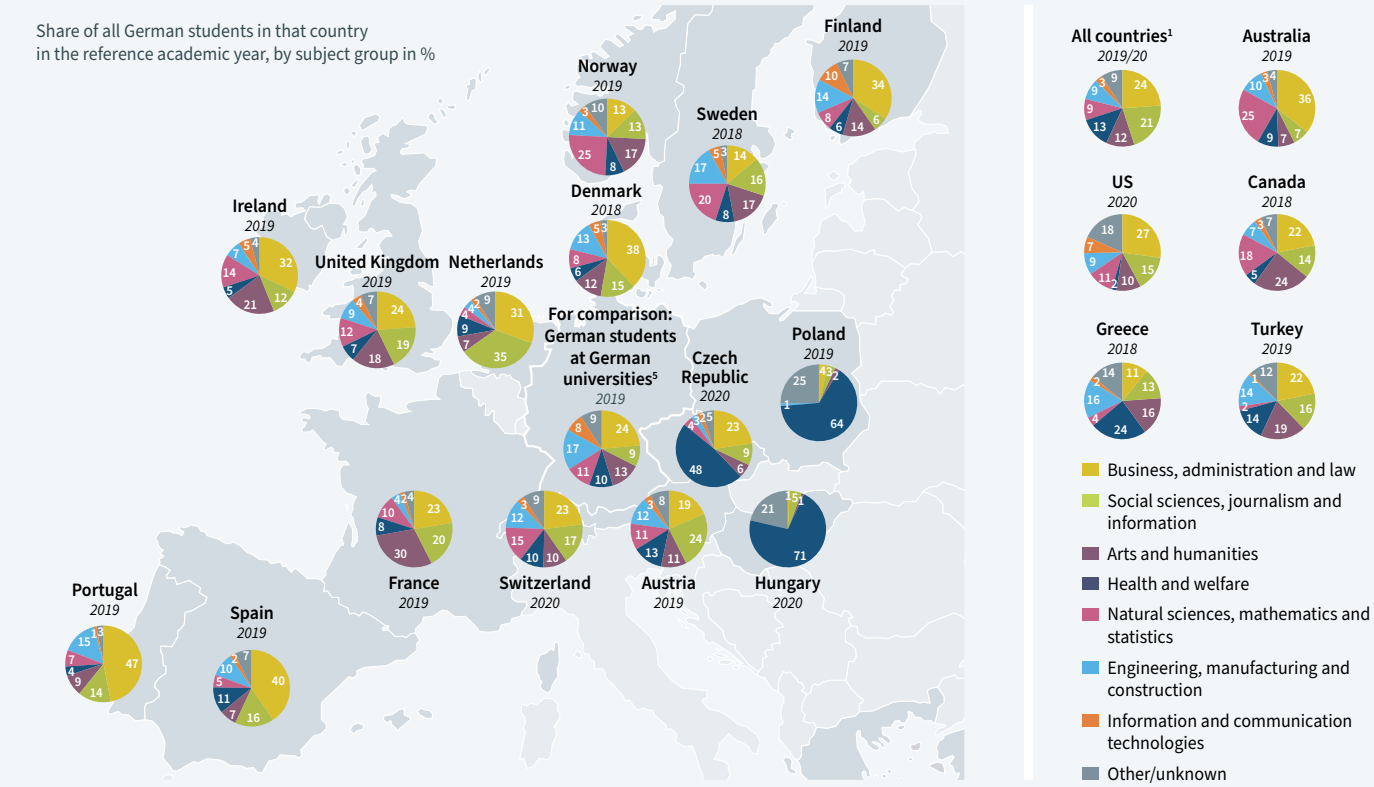
6 OECD data as they are more complete, more up-to-date or more accurate than data from the Federal Statistical Office.

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

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

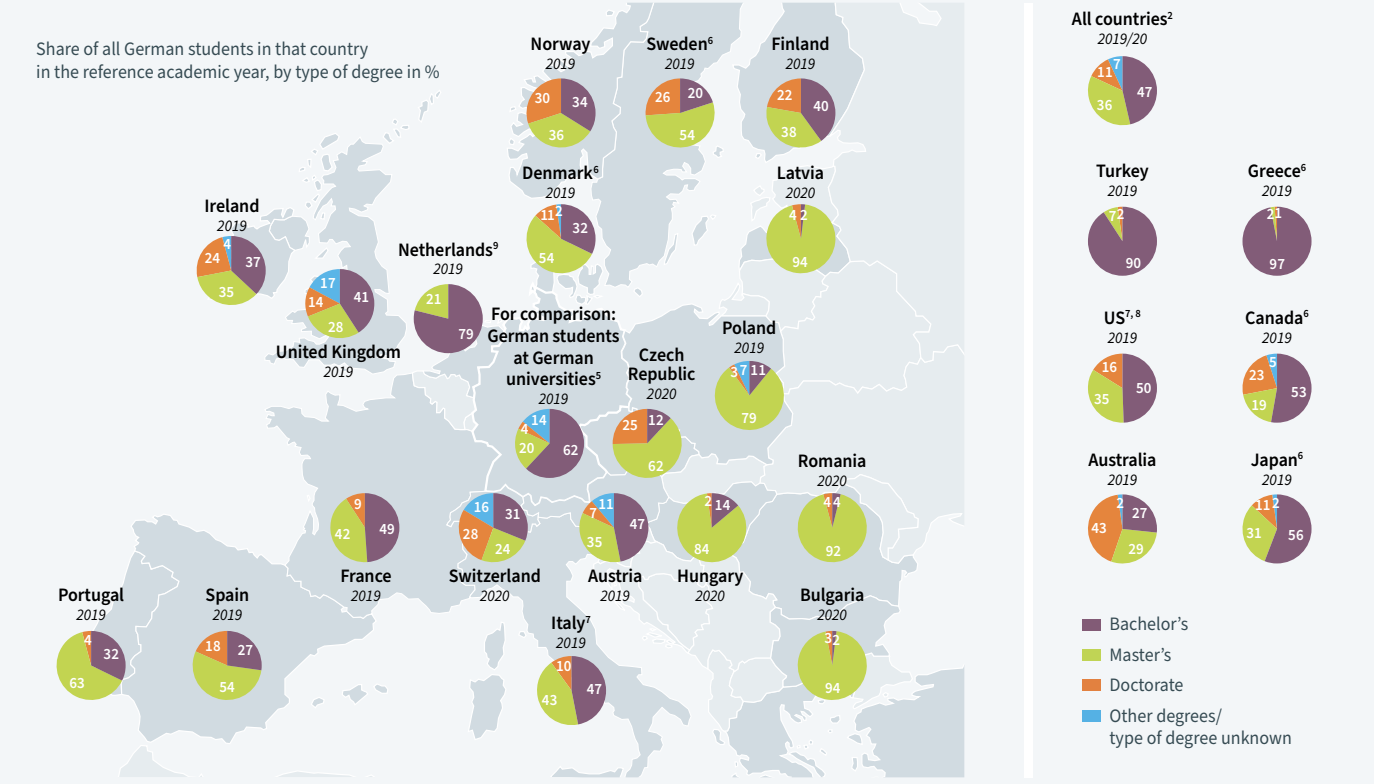
9 No data on doctoral students as they are not included in data from the Federal Statistical Office nor in OECD data.

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



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

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



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

2.1 Mobility trends, host regions and host countries

The findings of previous Social Surveys conducted by the German National Association for Student Affairs (DSW) show that, between 1991 and 2000, the share of students in later semesters undertaking visits abroad rose sharply (from 20% to 32%), stabilising at this level until 2006.[1] In 2009 and 2012, the figure was slightly lower, at 30% in each case, falling further to 28% in 2016. This development can be observed – at varying levels – at both universities and universities of applied sciences. In contrast to degree-related international mobility (see pp. 62), there was therefore no increase in the mobility rate for temporary study-related mobility while the two-cycle study system of bachelor's and master's programmes was in the process of being introduced. In fact, temporary student mobility even declined to a certain extent during this period.

Possible reasons for this are the more strongly structured study and examination system, introduced as part of the Bologna reform, and the reduction of standard study periods. From the students' point of view, both aspects may have led to the fact that the newly introduced study programmes offer less scope for study-related visits abroad during their studies than was previously the case.

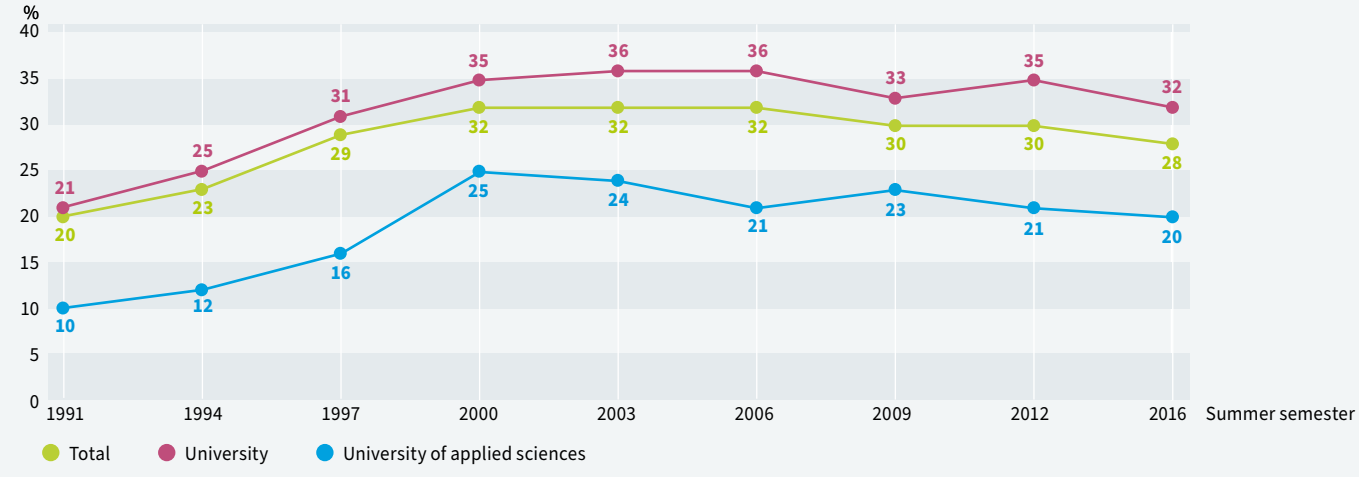
> "61% of all domestic students surveyed in the 2020/21 winter semester who had already undertaken a temporary study-related visit abroad chose a host country in Western Europe.

It will only be possible to determine how the temporary study-related international mobility of students in Germany has developed since 2016 when new, comparable mobility data are available. However,

Database

The data situation regarding the temporary study-related mobility of students at German universities must be described as unsatisfactory at present, especially by comparison with other countries. It was not until 2017 that the reformed Higher Education Statistics Act introduced the mandatory survey of study-related visits abroad undertaken by students in Germany. This requirement of the new Higher Education Statistics Act still poses major challenges for many universities. 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 mobility data. Furthermore, it should be noted that these data conform to the definition of the EU mobility benchmark (see also pp. 68/69). As a result, mobility rates on this basis will be considerably lower than the mobility rates previously recorded on the basis of survey data. Given the unsatisfactory situation of the official statistics, the data from the Social Surveys conducted by the German Centre for Research on Higher Education and Science Studies (DZHW) until 2016 represented the most reliable source of data for analysing the development over time of temporary study-related mobility of students at German universities. Since 2021, this time series has been continued in the nationwide, representative follow-up study, entitled "The Student Survey in Germany" (SiD). However, the mobility data for 2021 from the first round of the SiD survey will not be published until after the release of this issue of *Wissenschaft weltoffen*.[6]

C2.1 Share of domestic students in later semesters in Germany with study-related visits abroad, by type of university, since the summer semester 1991[1, 3]



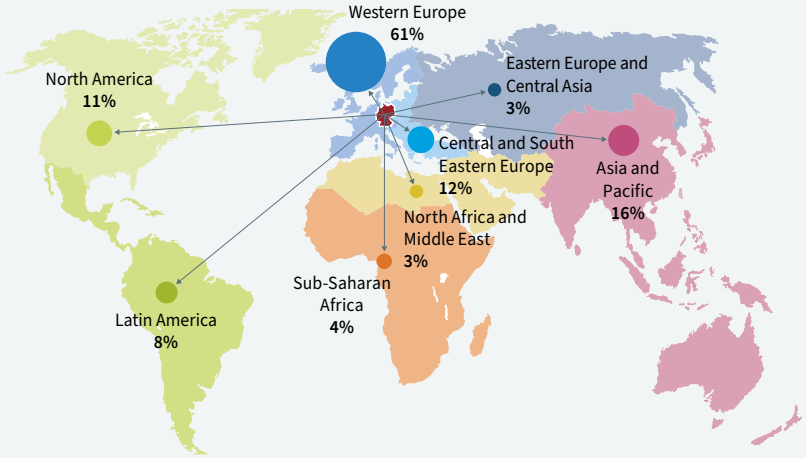
Share of all domestic students in later semesters in %

Sources: DZHW Social Surveys 1991–2016

these will not be published until the beginning of 2023 as the new, integrated student survey by DZHW, DSW and the University of Konstanz could only be conducted in the summer semester of 2021 (instead of the summer semester of 2020 as originally planned) due to the pandemic.[6]

For the data on the key host regions and countries, on the other hand, reference can be made to the DAAD survey "Benchmark internationale Hochschule" (BintHo)[2] in the 2020/21 winter semester. Almost two thirds (61%) of all (domestic) students surveyed who had already undertaken (at least) one temporary study-related visit abroad chose a host country in Western Europe. The host regions Asia and Pacific (16%), Central and South Eastern Europe (12%), North America (11%) and Latin America (8%) follow at a considerable distance. The other host regions each account for less than 5% of stays. Among the key host countries, three countries in Western Europe also predominate with Spain (12%), France and the United Kingdom (10% each). The US (9%) is the only non-European country of roughly comparable importance. Italy (5%), Finland, the Netherlands, Sweden (4% each), Australia, Austria, Canada, China, Ireland, Norway and Switzerland (3% each) follow at a considerable distance. All other host countries account for less than 3% of all stays.

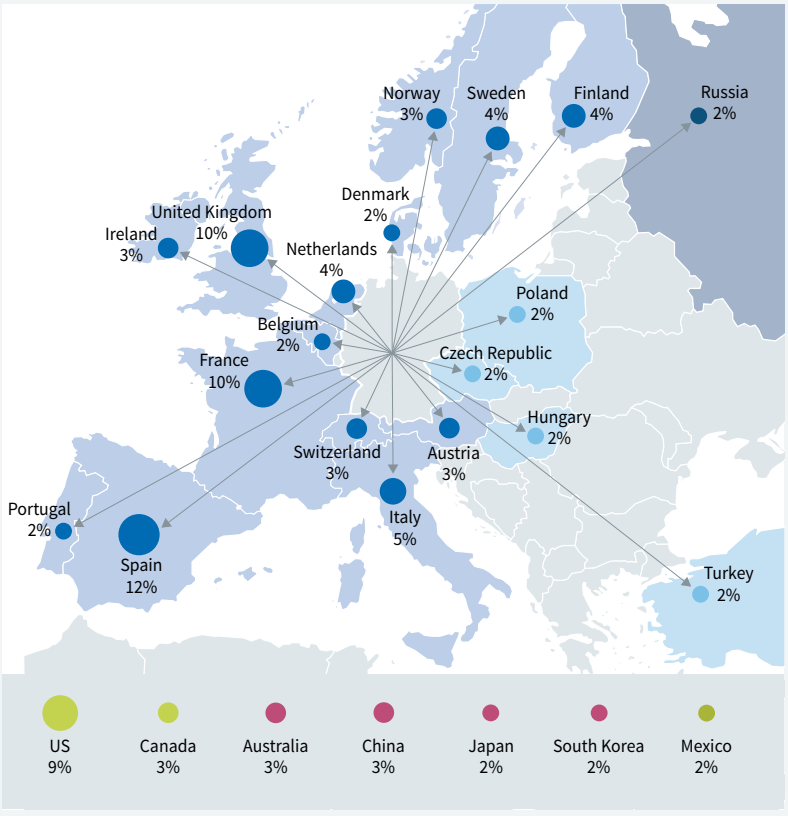
C2.2 Domestic students in Germany with study-related visits abroad, by host region, winter semester 2020/21[3, 4]



Multiple answers possible

Source: DAAD survey "Benchmark internationale Hochschule" (BintHo) 2020/21; DAAD calculation

C2.3 Domestic students in Germany with study-related visits abroad, by major host countries, winter semester 2020/21[3, 5]



Multiple answers possible

Source: DAAD survey "Benchmark internationale Hochschule" (BintHo) 2020/21; DAAD calculation

Footnotes

1 The mobility rate of students in later semesters or at the end of their studies provides a rough estimate of study-related international mobility over the course of an entire study cycle. It is thus more conclusive than mobility rates in relation to all students. Students in later semesters from 1991 to 1994 are: students from the 8th university semester (university) or 6th university semester (university of applied sciences) (1991: West Germany only); from 1997: students from the 9th to 14th university semester (university) or 7th to 11th university semester (university of applied sciences).

2 See the info box on the BintHo (International University Benchmark) survey on pp. 70/71.

3 Reference group: German nationals and Bildungsinlaender.

4 As respondents were able to indicate more than one visit, the shares of the regions of the world add up to over 100%.

5 Only countries in which at least approximately 2% of the visits recorded took place.

6 See also the project website at https://www.die-studierendenbefragung.de/en/the-student-survey

2.2 Status of goal achievement

Targets for international student mobility exist at both European level and the level of individual higher education systems. A specific mobility goal was set for all EU countries in 2011 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 2019, Germany had not yet reached the EU benchmark target (20%) at 16.3%, but was slightly above the EU average of 14.4%.

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 also 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 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

C2.4 European and German mobility targets until 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 (EHEA) 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

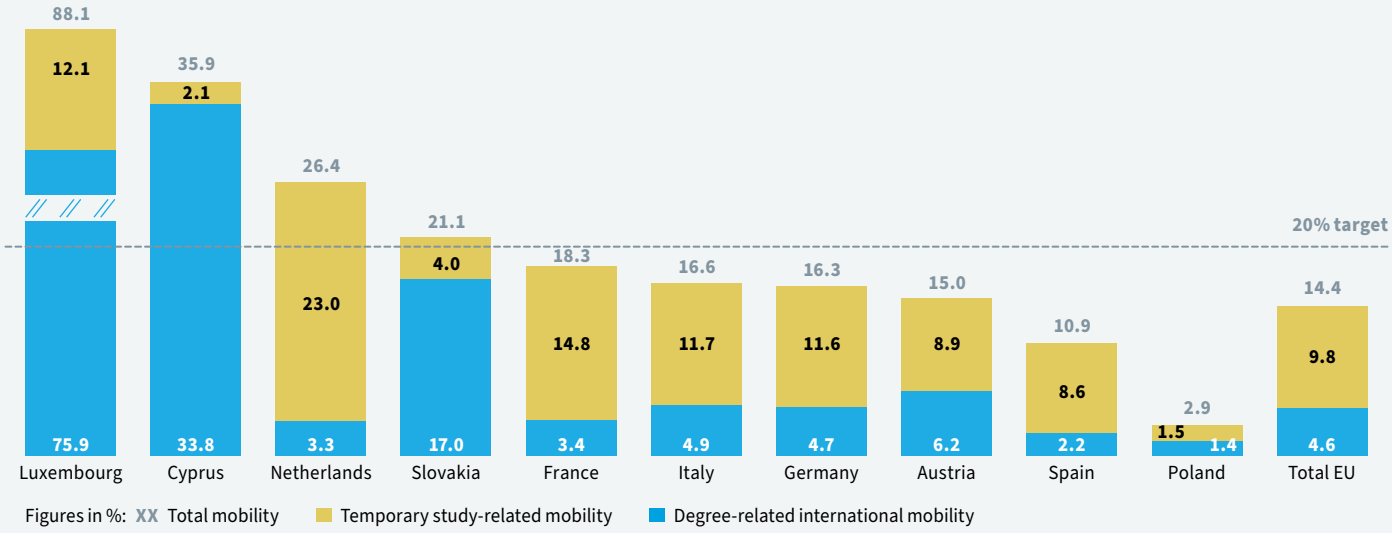
1 Deviations between individual rates and the total figure are due to rounding.

2 Although the Federal Statistical Office now collates 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 2016. The results of the "Student Survey in Germany" (Studierendenbefragung in Germany, SiD) on the international mobility of students in Germany in 2021 had not been released at the time of preparing this publication. Please see the project website at https://www.die-studierendenbefragung.de/en/the-student-survey for further information on SiD and all available reports.

4 Data on degree-related international mobility refer to 2019. See also Federal Statistical Office (2021d).

C2.5 Mobility rates of university graduates in Germany and selected other countries in graduation year 2019, according to EU benchmark[1]



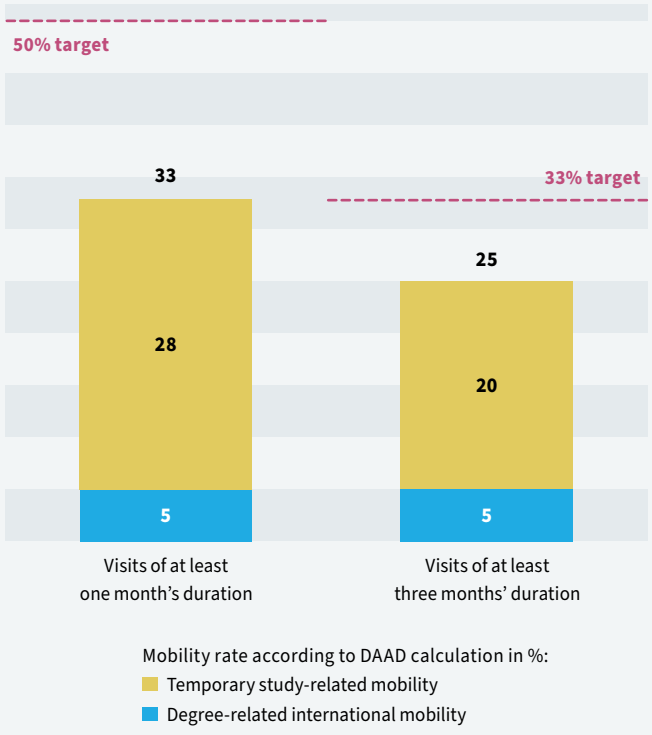
Source: European Commission, Education and Training Monitor 2021

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 did not reach the 20% target of the EU benchmark in 2019 but, at 16.3%, is well above the EU average of 14.4%. So far, just four small countries have achieved the 20% target: Luxembourg (88%), Cyprus (36%), the Netherlands (26%) and Slovakia (21%). However, both France (18%) and Italy (17%) report higher mobility rates than Germany (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, 4.7%, almost exactly matches the EU average of 4.6%, while its rate for temporary study-related visits abroad is 11.6% and thus well above the EU average (9.8%).

Furthermore, the German mobility targets for 2020 have not yet been achieved on the basis of the current data. The corresponding figures are 33% (50% target) and 25% (33% target), in other words, the 50% target in particular shows a considerable gap until the target is achieved. However, a final assessment of target achievement for the European and German mobility targets will only be possible in the next issue of *Wissenschaft weltoffen*.

C2.6 Extrapolation of the mobility rate of German university graduates[3, 4]



Sources: DSW/DZHW, 21. Social Survey 2016; Federal Statistical Office, "Deutsche Studierende in Deutschland", 2019; DAAD calculations

2.3 Preparation, financing and benefits

What aspects of the stay do students research most of all when planning their study-related visit abroad? This was one of the questions in the DAAD student survey "Benchmark internationale Hochschule" (BintHo, International University Benchmark), which was carried out among approximately 100,000 domestic (and 15,000 international) students in the 2020/21 winter semester. From a list of relevant aspects, the internationally mobile domestic respondents were asked to select the three that they had researched most intensively in the run-up to their visit.[1] The most frequently cited aspect by far (by roughly 56% of the internationally mobile respondents) were organisational arrangements, that is information such as applying for a visa, health insurance abroad or prescribed vaccinations. In addition, over 40% of the internationally mobile respondents had spent a great deal of time looking into each of four other aspects when planning their visit: the costs of the stay (47%), having academic credits obtained abroad recognised (47%), finding accommodation in the host country (42%) and the content of the study programme or placement (41%). Just under one third of the internationally mobile respondents (32%) also obtained information on financing options for their visit abroad.

Benchmark internationale Hochschule (BintHo)

In the 2020/21 winter semester, the DAAD invited all member universities of the German Rectors' Conference to take part in the project on "Benchmark internationale Hochschule" (BintHo, International University Benchmark) for the first time. The 74 participating universities from 14 federal states included 34 universities of applied sciences, 33 universities, four colleges of education and three colleges of art and music. Most of these universities invited students to take part in the online survey via email (individual universities only sent invitations to selected groups of students). The field phase of the survey ran from 30 November 2020 to 28 February 2021. All in all, just under 100,000 domestic students (German nationals and Bildungsinlaender) and approximately 15,000 international students took part in the survey, with a response rate of a good 10%. Due to the sampling procedure, a limited representativeness is to be expected. To improve their informative value, the data were thus weighted according to relevant characteristics used in official student statistics (gender, type of degree, subject group, university region).

C2.7 Aspects on which internationally mobile students obtain the most information before undertaking a study-related visit abroad[1]

Aspects that were researched most intensively	Share in %
Organisational arrangements (e.g. visa, health insurance)	56
Financial cost of the visit	47
Recognition of academic credits obtained abroad	47
Finding accommodation in the host country	42
Course or placement content	41
Financing options	32
Living conditions in the host country	27
Social and cultural aspects of the host country	23
Study and education system in the host country	11
Most eco-friendly travel options	7
Working conditions in the host country	5
Other information	1

Maximum of three answers per person; shares of respondents citing a specific aspect as one of the three most important aspects, in %

Source: DAAD survey "Benchmark internationale Hochschule" (BintHo) 2020/21; DAAD calculation

Another important aspect when making arrangements for study-related visits abroad are the support services provided by the home university. The question arises as to which of these support services were considered particularly important by students interested in participating in a mobility programme. Therefore, internationally mobile respondents of the BintHo study were given a list of typical initiatives introduced by universities to promote mobility and asked to assess their relevance on a five-point scale from "not important at all" (1) to "extremely important" (5). Their responses showed that general information sessions on visits abroad (86%) and personal consultation by the International Office (80%) were frequently considered important or even extremely important. Moreover, just over half the respondents (53%) indicated that specific preparatory events such as cultural awareness training or introductions to regional studies were (extremely) important for their preparation. Guidance or support from their home university during visits, whether by telephone, email or chat, was (extremely) important for some 43% of internationally mobile respondents, while this evaluation applied to follow-up events (e.g. exchange meet-ups with other internationally mobile students, reviews) for just under a third of respondents (32%).

A key requirement in completing a study-related visit abroad is having sufficient funds available to finance the stay. Many students finance their visits from more than one source, combining several

Footnote

1 Reference group: German nationals and Bildungsinlaender who had completed study-related visits abroad. Bildungsinlaender are students with foreign citizenship who obtained their university entrance certificate at a German school.

resources, such as scholarships and savings. The sources of financing most frequently cited in the BintHo survey in the 2020/21 winter semester are financial support from students' partners, parents or friends, plus their own savings (each scoring 54%, whereby multiple responses were allowed). Another key element in financing study-related visits abroad is the EU's Erasmus+ scholarship programme, which was indicated as a source of funding by 47% of the internationally mobile BintHo respondents. The fourth major source of funds is part-time employment prior to or during their degree (37%). All other financing resources are cited by significantly fewer respondents.

After completing their visit abroad, the question arises as to what specific advantages or benefits students gained from the visit. Evaluating these gains was also part of the 2020/21 BintHo survey. Respondents were given a list of benefits and asked to select the three most important with regard to their (most recent) visit. The role played by the visit abroad in their personal development was by far the most frequently given (77%). Nonetheless, over half of the internationally mobile respondents viewed three other positive effects of the visits as crucial: the cultural immersion (62%), improving language skills (54%) and gaining exciting, interesting experience outside university walls (53%). In summary, then, it can be stated that, on the whole, the benefits described by the students are not connected to their field of study. By comparison, specific subject- and career-related gains such as establishing contacts and extending their network (43%), acquiring specialised expertise (35%), discovering another higher education system and other teaching methods (35%), improved prospects on the labour market (34%) and gaining practical experience (24%) play a subordinate role.

C2.8 Importance of support measures from their home university according to internationally mobile students in Germany[1]

Support measures	Share in %
General information sessions on visits abroad	86
Personal consultation by the International Office	80
Specific preparatory events (e.g. organisational advice, cultural awareness training and introduction to regional studies)	53
Guidance or support during visits (e.g. support by telephone or email, chat, blog)	43
Follow-up events (e.g. exchange meet-ups with other students, reviews)	32

Shares of scale responses 4 + 5 on a scale from 1 = "not important at all" to 5 = "extremely important" in %

Source: DAAD survey "Benchmark internationale Hochschule" (BintHo) 2020/21; DAAD calculation

C2.9 Financing sources for study-related visits abroad[1]

Sources of funding	Share in %
Support by partner, parents or friends	54
Own savings	54
Erasmus+	47
Part-time job(s) prior to/while studying	37
BAföG grants for studies abroad	16
Other scholarship	10
PROMOS scholarship	9
Support from employer/training centre	7
Part-time job(s) during visit abroad	6
Other DAAD scholarship	6
Other source	5
Educational loan	2

Multiple answers possible; share of respondents indicating this source of funding, in %

Source: DAAD survey "Benchmark internationale Hochschule" (BintHo) 2020/21; DAAD calculation

C2.10 Most important benefits of study-related visits abroad according to internationally mobile students in Germany[1]

Most important benefits according to students	Share in %
Personal development	77
Cultural immersion	62
Improving language skills	54
Gaining exciting, interesting experience outside university walls	53
Establishing contacts and extending their network	43
Acquiring specialised expertise	35
Discovering another higher education system and other teaching methods	35
Improved prospects on the labour market	34
Gaining practical experience	24
Other advantages	2
Meeting employer's requirements	2
None of the above	<1

Maximum of three answers per person; shares of respondents citing a specific aspect as one of the three most important aspects, in %

Source: DAAD survey "Benchmark internationale Hochschule" (BintHo) 2020/21; DAAD calculation

2.4 Erasmus visits

Since the beginning of the Bologna Process in 1999, the number of annual Erasmus visits undertaken by students at German universities has virtually tripled, from around 14,700 to around 40,900 in the 2020 Erasmus year.[1] Consequently, since 1999, the number of all Erasmus participants from Germany has soared much higher (+178%) than the number of students in Germany over the same period (+61%). Nonetheless, due to the pandemic, the 2020 Erasmus year saw a decrease of 1,447 Erasmus participants (–3%) compared to the previous year. Over the past ten years, the number of Erasmus participants has risen faster at universities of applied sciences (+48%) than at universities (+30%).[2, 3] Moreover, the year-on-year drop in participant numbers in 2020 due to Covid-19 was less noticeable at universities of applied sciences (–1%) than at universities (–4%). Thus, universities of applied sciences now account for 30% of all Erasmus participants.

> “Undeterred by the pandemic, the number of Erasmus visits in 2020 increased in five of the ten key host countries of Erasmus participants from Germany.

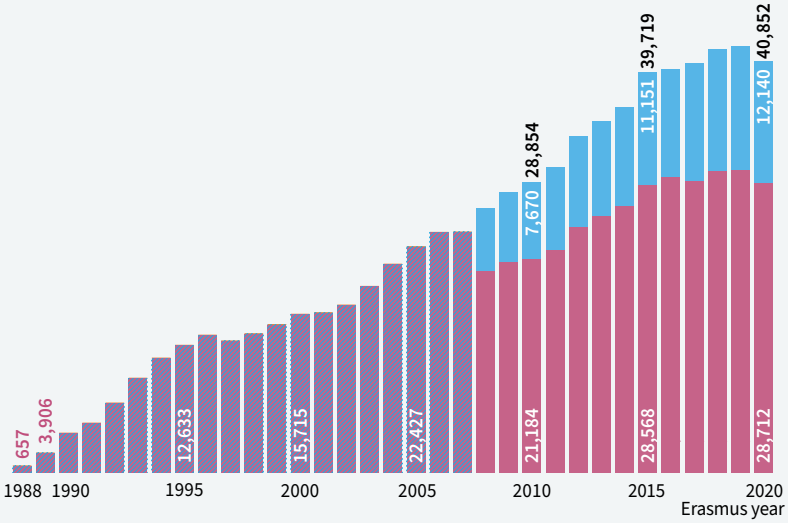
As in recent years, Spain was once again the most popular destination for Erasmus participants from Germany in the 2020 Erasmus year, followed by France and the United Kingdom. The number of Erasmus visits declined in all three countries, however – by 4% in Spain, by 3% in France and by a remarkable 24% in the United Kingdom. Among the ten key host countries, reductions were also observed in Ireland (–8%) and Italy (–6%).

Compared to the previous year, the number of Erasmus visits increased in the other five key host countries of Erasmus participants from Germany, despite the pandemic. They are the Netherlands and Sweden (1% each), Finland (3%), Norway (4%) and Austria (7%).

Database

The data on temporary international mobility presented on pages 72/73 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 and DZHW mobility study, around 40% of all temporary study-related visits abroad by German students are undertaken through Erasmus+. Both German and international students wishing to complete a study or placement visit in one of the 35 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.

C2.11 Erasmus participants from Germany by type of university, since 1988[1, 2, 3, 4, 5]



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: an Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2020 = 1 June 2019 to 31 May 2021.

2 A breakdown of visits by type of university is only possible from the 2008 Erasmus year onwards.

3 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.

4 Since June 2020, Erasmus mobility figures 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.

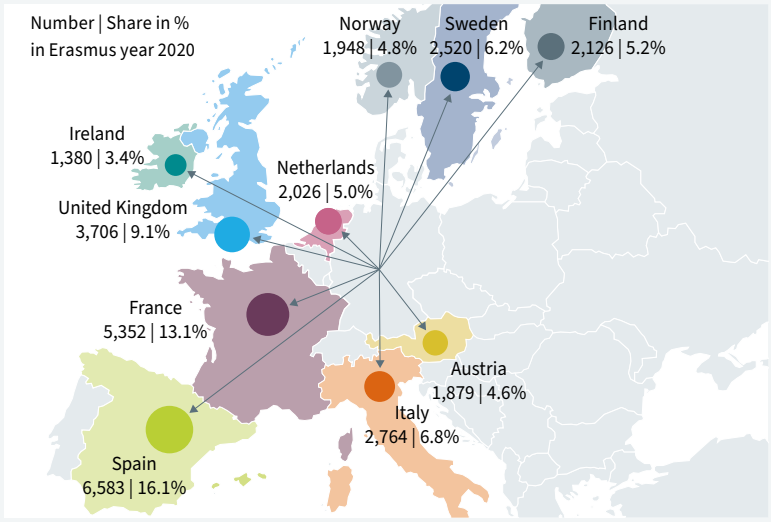
5 Due to the pandemic, the 2020 Erasmus year was extended to 31 March 2022. To ensure a meaningful comparison with previous years, however, only activities undertaken during the usual period, in other words, from 1 June 2019 to 31 May 2021, were included when calculating the numbers for the 2020 Erasmus year.

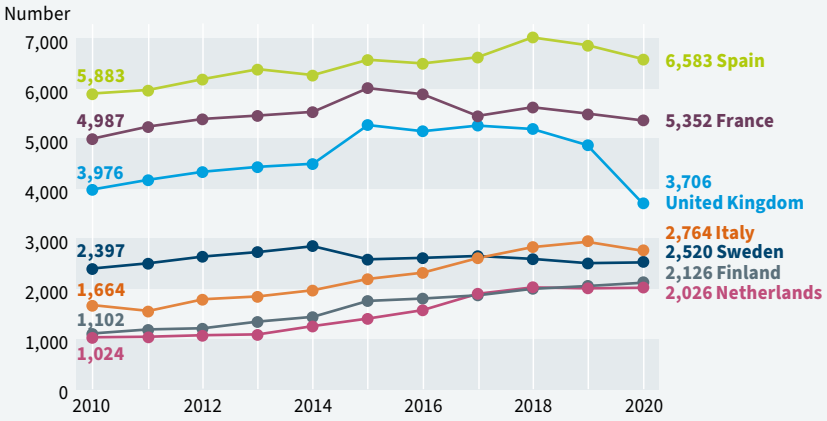
6 Subject group distribution for all students in Germany in the 2019/20 winter semester according to Eurostat. The subject groups are categorised according to ISCED standards in the Erasmus statistics and therefore deviate from the Federal Statistical Office’s standard classification system.

7 For the sake of clarity, Norway, Austria and Ireland are not included in the lower section of the figure.

8 The shares of all students in Germany refer to the 2019/20 winter semester.

C2.12 Erasmus participants from Germany by major host countries in 2020 and since 2010[1, 4, 5, 7]





Source: DAAD, Erasmus statistics

An analysis of the distribution of Erasmus participants from Germany by subject group shows that, in particular, students of the social sciences, journalism and information account for an above-average percentage.[6] 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 less than half that of students as a whole (7%).

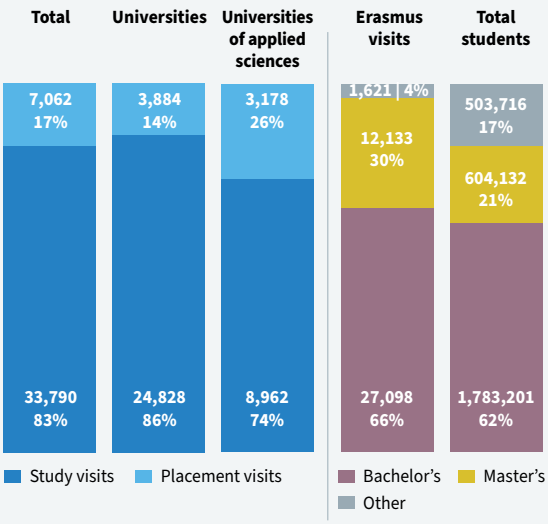
83% of all Erasmus visits undertaken by students from Germany in the 2020 Erasmus year were study visits, while 17% were placements. However, the share of placement visits at universities of applied sciences (26%) was a great deal higher than that at universities (14%). Bachelor's students accounted for 66% and master's students for 30% 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.

C2.13 Erasmus participants from Germany and all students in Germany, by subject group, 2020[1, 4, 5, 6]

Share of all students in Germany	Subject group	Share of all outgoing Erasmus participants
7.8	Education	4.6
12.1	Arts and humanities	17.4
7.8	Social sciences, journalism and information	14.6
23.2	Business, administration and law	29.7
9.6	Natural sciences, mathematics and statistics	7.7
7.4	Information and communication technologies	3.4
19.7	Engineering, manufacturing and construction	12.9
1.4	Agriculture, forestry, fisheries and veterinary	1.2
8.6	Health and welfare	6.5
2.4	Services	2.1

Sources: DAAD, Erasmus statistics; Eurostat, student statistics; DAAD calculations

C2.14 Erasmus participants from Germany by type of university, visit and degree, in 2020[1, 3, 4, 5, 8]



Number and share in %

Source: DAAD, Erasmus statistics; DAAD calculations

SPOTLIGHT

The degree-related international mobility of German students in the first year of the pandemic

Internationally comparable student data (e.g. based on UNESCO statistics) are still not available for the 2020 reporting year that would enable a comprehensive global analysis of the international mobility of German students and the adverse effects of the pandemic.[1] However, several of the key host countries for German students seeking a degree abroad have published national student data for the year 2020 or, to be more precise, for the 2020/21 academic year. An initial assessment of the development in the international mobility of German students in the first year of the pandemic can be carried out on the basis of these data.

Austria, the Netherlands and Switzerland: rising numbers of German students despite Covid-19

In the 2020/21 winter semester, approximately 42,500 German students were enrolled in the key[2] host country Austria, roughly 9% or 3,700 students more than the 2019/20 winter semester (38,900). There was an even more pronounced increase of 17% in German students enrolling for the first time in Austria in the 2020/21 winter semester (plus 1,600 first-year students). Accordingly, the number of German first-year students in Austria rose from around 9,600 in the 2019/20 winter semester to roughly 11,200 in the 2020/21 winter semester.

Data are already available on the total number of German students in the Netherlands for the academic years 2020/21 and 2021/22. After initial growth from some 23,000 in the 2019/20 academic year to approximately 24,600 in the 2020/21 academic year (+7%), they declined marginally to around 24,500 in the 2021/22 academic year (–1%). The number of German first-year students in the Netherlands showed a plus of 9% in the 2020/21 academic year, before dropping by 10% in the 2021/22 academic year.[3] Particularly when compared with the trend in Switzerland, this development in the numbers in the Netherlands may suggest that Covid-19 affected the number of incoming international students to an enormous extent, depending specifically on how the pandemic evolved in the respective host country.

> In the first year of the pandemic, some key host countries reported surprisingly robust increases in the number of German students.

In Switzerland, the total number of German students rose from roughly 12,500 in the 2019/20 academic year to approximately 13,100 in the 2020/21 academic year (+5%). Like in Austria, the increase in German students enrolling for the first time in Switzerland in the 2020/21 academic year was even more marked than that in the total number of students. During this period, the number of German first-year students went from around 3,700 to around 3,900, an upswing of approximately 8%. Switzerland has also released the data for the 2021/22 academic year. They indicate further growth in the number of German students, although at a slightly more moderate rate. The total number of German students increased to around 13,600 (+4%) and the number of first-year students to around 4,100 (+3%).[4]

The United Kingdom, the US, France and Hungary: from slight to significant declines for German students

In the United Kingdom, the total number of German students fell from roughly 12,900 in the 2019/20 academic year to approximately 12,300 in the 2020/21 academic year (–5%). The number of German first-year students also dropped slightly from around 6,400 in the 2019/20 academic year to approximately 6,000 in the 2020/21 academic year (–7%). However, this may also be attributed to the United Kingdom finally withdrawing from the EU in January 2021 and not merely to the impact of Covid-19.

Among the key host countries, the US recorded the greatest reduction in German students by far. Total student numbers plunged from approximately 9,200 in the 2019/20 academic year to around 5,400 in the 2020/21 academic year, a slump of 42%. No data are yet available on German first-year students in the US.

In France, approximately 3,600 German students were enrolled at universities in the 2020/21 academic year. This represents a decrease of approximately 21% or 1,000 students, compared to the previous year. Here again, no data are yet available on German first-year students in the 2020/21 academic year.

Footnotes

1 The UNESCO, OECD and Eurostat data on the 2020 reporting year are only being published shortly after this edition of *Wissenschaft weltoffen* went to press.

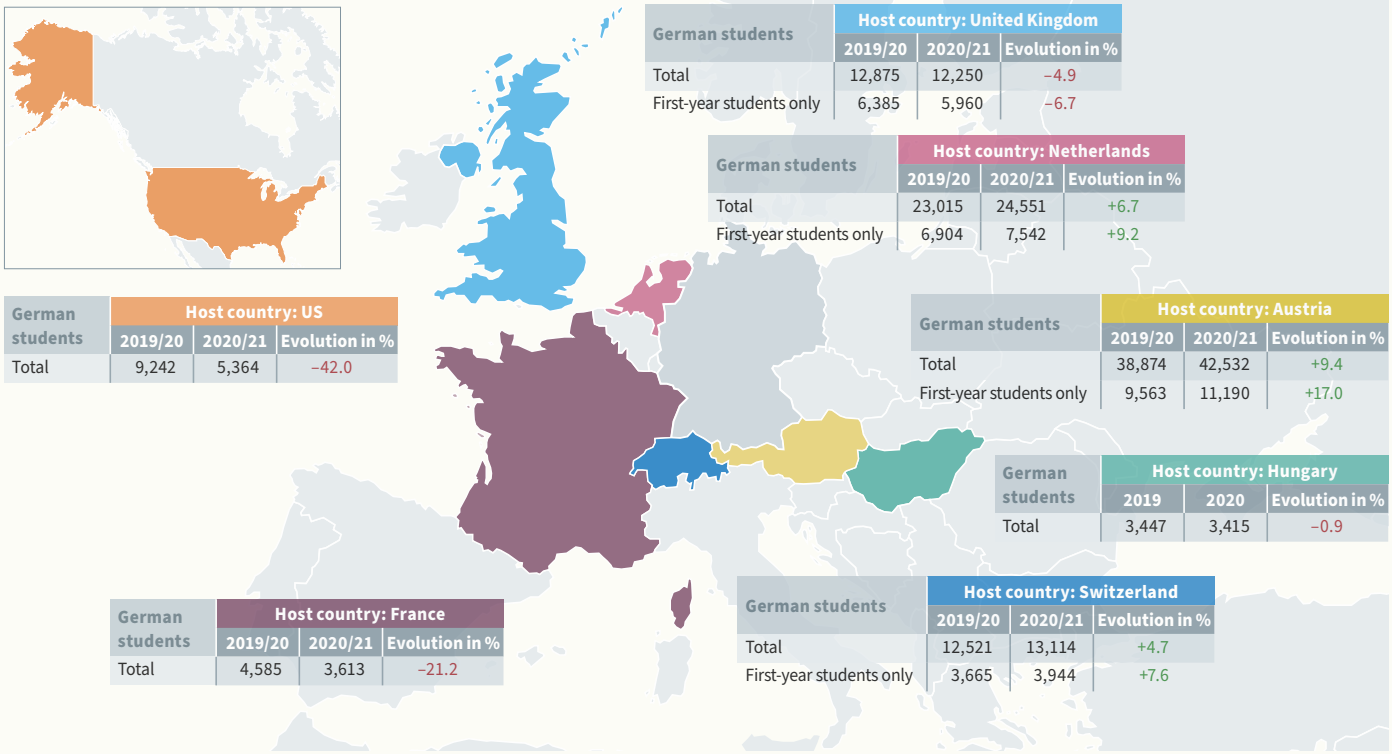
2 See also pp. 62/63 for the importance of the host countries for the degree-related international mobility of German students.

3 The exact number of German students in the Netherlands in the 2021/22 academic year was 24,534, that of German first-year students 6,787.

4 The exact number of German students in Switzerland in the 2021/22 academic year was 13,601, that of German first-year students 4,051.

5 See *Wissenschaft weltoffen* 2021, pp. 80–83 for an in-depth analysis of Erasmus mobility in the first year of the pandemic. At the time of going to press, no more recent Erasmus data than those presented there were available.

CS1 German students in major host countries, 2019–2020



German students	Host country: United Kingdom		
	2019/20	2020/21	Evolution in %
Total	12,875	12,250	–4.9
First-year students only	6,385	5,960	–6.7

German students	Host country: Netherlands		
	2019/20	2020/21	Evolution in %
Total	23,015	24,551	+6.7
First-year students only	6,904	7,542	+9.2

German students	Host country: US		
	2019/20	2020/21	Evolution in %
Total	9,242	5,364	–42.0

German students	Host country: Austria		
	2019/20	2020/21	Evolution in %
Total	38,874	42,532	+9.4
First-year students only	9,563	11,190	+17.0

German students	Host country: Hungary		
	2019	2020	Evolution in %
Total	3,447	3,415	–0.9

German students	Host country: France		
	2019/20	2020/21	Evolution in %
Total	4,585	3,613	–21.2

German students	Host country: Switzerland		
	2019/20	2020/21	Evolution in %
Total	12,521	13,114	+4.7
First-year students only	3,665	3,944	+7.6

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); Federal Statistical Office, "Deutsche Studierende im Ausland" (Hungary); DAAD calculations

These data are not available for Hungary either. However, the total number of German students fell by 1% to roughly 3,400.

Summary and outlook

In summary, therefore, with regard to the degree-related international mobility of German students, it is clear that developments in the first year of the pandemic differed in the extreme, depending on the host country, and not all host countries reported a drop in numbers. Particularly worthy of note in this regard are the trends in Austria, the Netherlands and Switzerland, with some unexpectedly significant increases in German students.

Comparing this to the development in the **Erasmus mobility**[5] of German students, an initial tumble can be observed in 2020 of around 41,200 visits, which were carried out physically to some extent at least (with hybrid visits involving a combination of physical and virtual mobility), to approximately 21,000 (–49%). In 2021, however, the number of these at least partially physical visits shot back up to approximately 31,700 (+51%). Consequently, although the pandemic-related downturn in Erasmus mobility clearly fell much more sharply than that of degree-related international mobility, it recovered relatively quickly.

At this point in time, it may be assumed that the degree-related international mobility of German students will continue to develop very differently, depending on the host country. Particularly in host countries in Europe, international mobility is expected to make a swift recovery, returning before long to pre-pandemic levels. With regard to non-European host countries, however, this recovery is likely to be a protracted process, especially in countries in which entry restrictions are still being enforced due to the pandemic, such as China and Japan.

1 International academics and researchers at German universities

1.1 Mobility trends, regions of origin and countries of origin

International academic staff[1] at German universities in 2020[2] amounted to around 55,200 academic and artistic staff of foreign nationalities, or 13.3% of all academic staff. Since 2017, the number of international staff has increased by 16%. By comparison, the number of German academics and researchers has only risen by 4% over the same period.

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 2020, around 3,600 professors of foreign citizenship were appointed at German universities, equating to a rise of 10% since 2017. The lower growth rate compared to other international staff is also explained by the fact that 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 7.2% of all professors at German universities. This is a much lower proportion than that of international staff 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 due to a lack of recognition and prestige. Moreover, international applicants are less likely to be considered due to a lack of German language skills or they may even refrain from applying altogether.

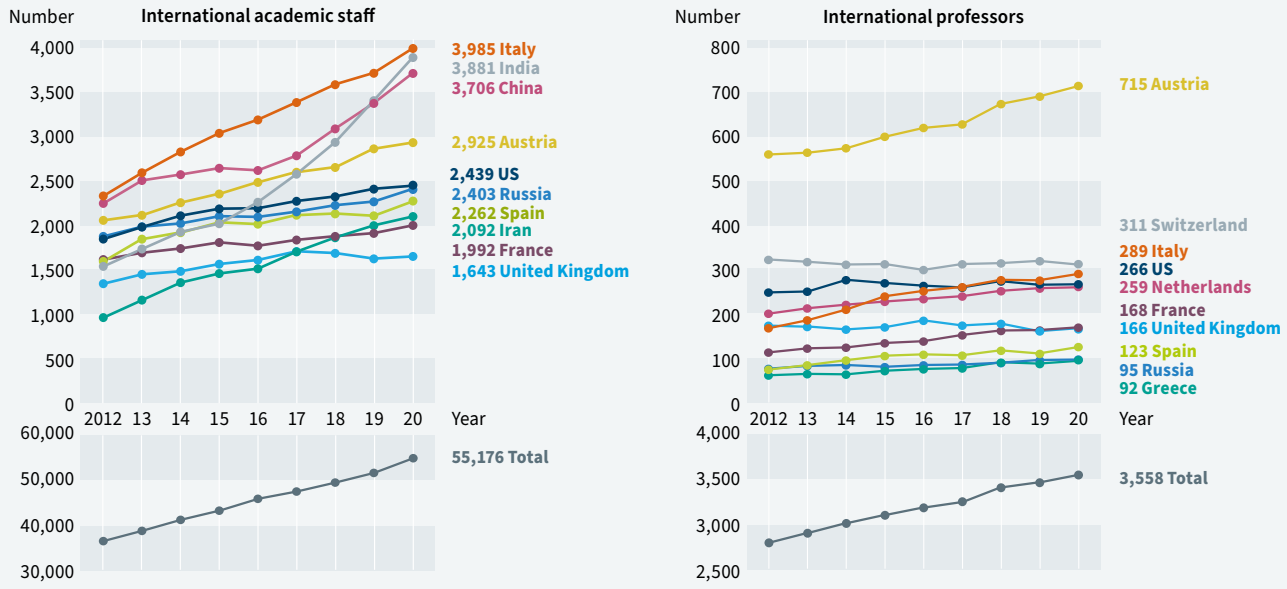
A comparison of types of universities confirms these assumptions. While international staff at universities account for 15.9% of all academic staff and international professors for 10.7% of all professors, the corresponding figures at universities of applied sciences are 5.9% and 2.6% respectively. At colleges of art and music, the share of international academic staff is 19.7% and that of international professors a remarkable 21.5%.

The key countries of origin for international academic staff at German universities are Italy, India, China, Austria, the US, Russia, Spain and Iran. While Italy, Austria and Russia have recorded an average increase in the number of academic staff of between 18% and 12% since 2017, this rate is below average for the US (+8%) and Spain (+7%) and well above average for India at +51%, China at +33% and Iran at +23%.[3]

Among international professors, Austria is by far the most important country of origin, followed by Switzerland, Italy and the US. The two German-speaking countries of origin, Austria and Switzerland, account for almost one third of all international professors, at 20% and 9% respectively. However, while the number of Austrian professors has grown by 14% since 2017, the Swiss figures have been stagnating for some time. The largest increase can be observed for Turkey (+60%). By contrast, the number of professors from the United Kingdom has dwindled over the last few years (–4%).[4]

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, 35% come

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



Source: Federal Statistical Office, university staff statistics

from Western European countries; for professors, the figure is as high as 67%. Other major regions of origin for academic staff are Asia and Pacific (20%), Central and South Eastern Europe (13%), and North Africa and Middle East (10%). In the case of international professors, they are Central and South Eastern Europe (10%) and North America (9%). 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. 94/95). 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 the historic, economic and political relationships such as those in the context of the EU.

Footnotes

1 International academic staff comprise all academic and artistic staff 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).

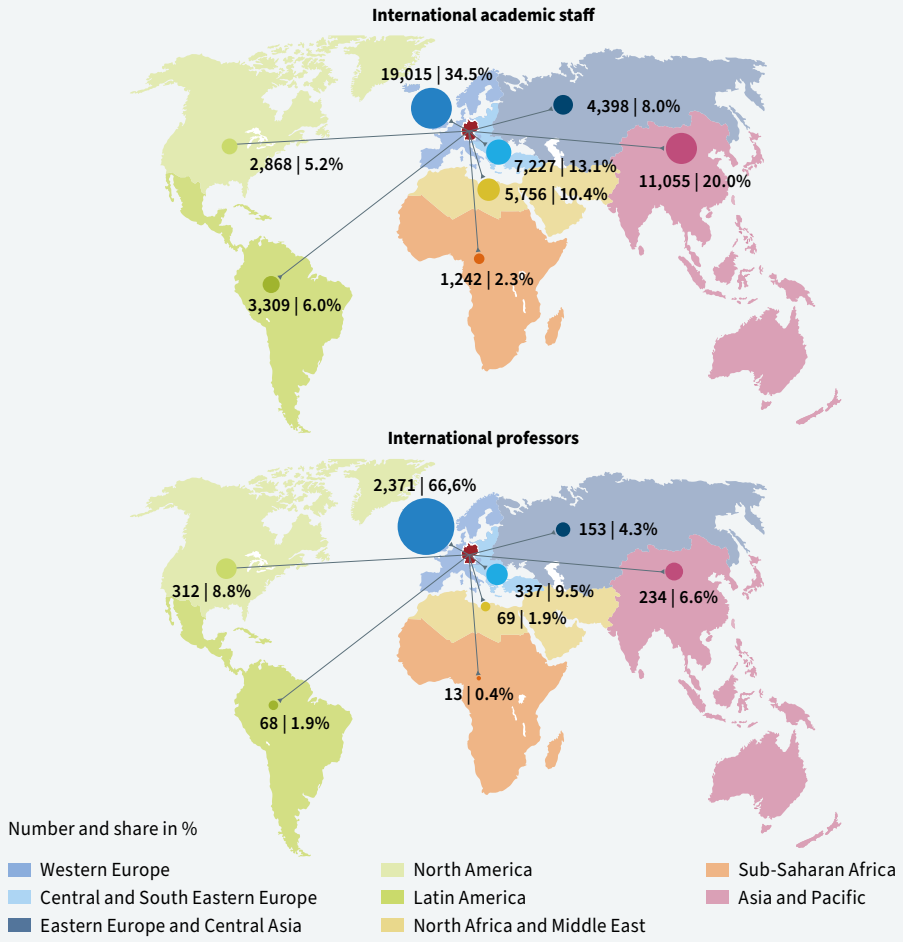
2 Data from the Federal Statistical Office on academic staff at universities refer to reporting years (January-December) and not to academic years.

3 Only countries with at least 50 academic staff at German universities.

4 Only countries with at least 20 professors at German universities

5 No concrete details have been released regarding the citizenship of 306 scientific and artistic staff members, including two professors. They account for approximately 1% of international academic staff.

D1.2 Total international academic staff and international professors, by region of origin, in 2020[5]



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 2010, 2015 and 2020

Type of university	Staff	Year	Share in %
Universities	International academic staff	2010	11.6
		2015	13.1
		2020	15.9
	International professors	2010	8.7
		2015	9.8
		2020	10.7
Universities of applied sciences	International academic staff	2010	4.8
		2015	5.4
		2020	5.9
	International professors	2010	1.9
		2015	2.4
		2020	2.6
Colleges of art and music	International academic staff	2010	15.4
		2015	17.1
		2020	19.7
	International professors	2010	20.0
		2015	21.4
		2020	21.5
Total	**International academic staff**	2010	**10.0**
		2015	**11.2**
		2020	**13.3**
	International professors	2010	**6.0**
		2015	**6.7**
		2020	**7.2**

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

1.2 Federal states and subject groups

Most academic and artistic staff 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 Saarland (18.3%), Berlin (16.9%) and Brandenburg (16.8%) therefore have particularly high shares of international staff. This figure is relatively low for Mecklenburg-Western Pomerania (9.5%) and Schleswig-Holstein (10.5%). 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 11.3%, while in Mecklenburg-Western Pomerania just 3.8% of professors come from abroad.

> "Saarland reports the highest share of international academic staff, namely 18%.

Over the last ten years, the different federal states have seen varying quantitative increases in international academic staff. A significant upswing can be observed first and foremost in the new federal states, with Thuringia the highest (+120%) and Bremen much lower (+36%).

The development in the number of international professors shows a similar range. The strongest growth rates between 2010 and 2020 were recorded for Rhineland-Palatinate (+74%) and Saxony-Anhalt (+72%), with Brandenburg (+18%) and Saxony (+24%) at the other end of the scale. 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 various subject groups. With a share of 21%, most foreign academic staff can be found in the mathematics and natural sciences subject group. Engineering, medicine and health sciences are similarly important (20% each). Some 11% of international academic staff work in the humanities, and in law, economics and social sciences, another 9% 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%) and engineering (17%), the subject groups of law, economics and social sciences, and art and art history (18% each) are particularly relevant for international

D1.4 Total international academic staff and international professors, by federal state in 2020 and development, since 2010[2]

	International academic staff		International professors		Development 2010–2020 in %	
Federal states	**Number**	**Share in %**	**Number**	**Share in %**	**Academic staff**	**Professors**
Baden-Wuerttemberg	10,047	13.2	585	7.8	+64	+38
Bavaria	9,136	14.9	616	8.5	+79	+66
Berlin	4,618	16.9	431	11.3	+91	+51
Brandenburg	1,305	16.8	66	6.7	+108	+18
Bremen	589	13.3	55	7.7	+36	+34
Hamburg	1,813	11.3	128	7.1	+103	+45
Hesse	3,392	12.4	233	6.2	+57	+40
Mecklenburg-Western Pomerania	658	10.3	33	3.8	+67	+38
Lower Saxony	3,590	12.5	217	5.7	+62	+46
North Rhine-Westphalia	10,325	11.7	665	6.4	+69	+35
Rhineland-Palatinate	1,996	12.7	139	6.5	+66	+74
Saarland	832	18.3	37	7.2	+48	+42
Saxony	2,934	13.3	146	6.4	+102	+24
Saxony-Anhalt	1,110	12.3	62	6.1	+114	+72
Schleswig-Holstein	966	10.7	70	6.3	+82	+67
Thuringia	1,659	15.2	75	5.8	+120	+29
Total	**54,970**	**13.3**	**3,558**	**7.2**	**+74**	**+45**

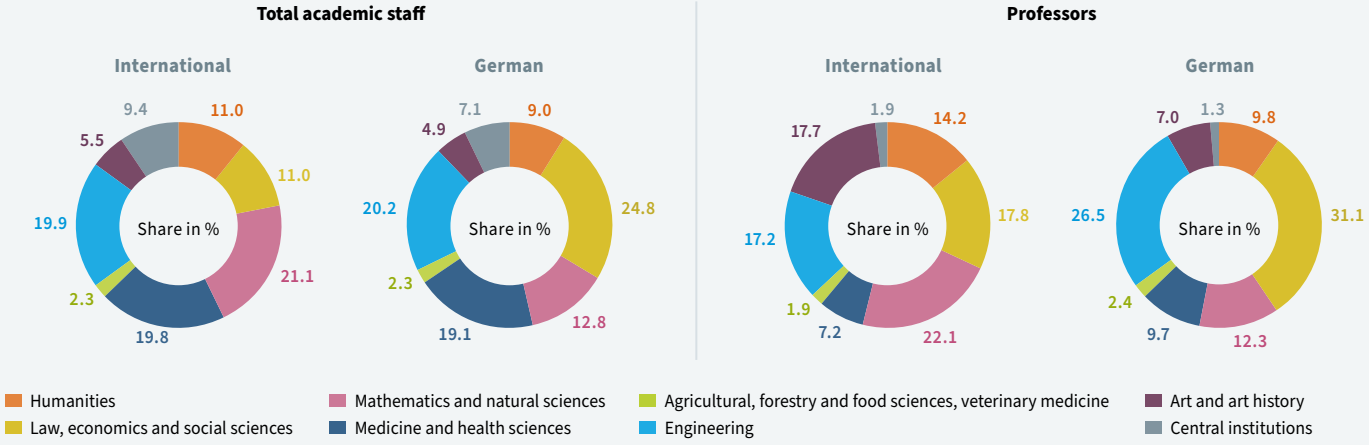
Sources: Federal Statistical Office, university staff statistics; DZHW calculations

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 2020

Subject groups	Share of total academic staff in		Share of all professors in %	
	Universities	Universities of applied sciences	Universities	Universities of applied sciences
Humanities	15.5	20.7	10.6	5.5
Law, economics and social sciences	8.6	4.0	7.0	2.3
Mathematics and natural sciences	20.7	7.0	13.4	2.8
Medicine and health sciences	14.5	2.1	6.3	1.9
Agricultural, forestry and food sciences, veterinary medicine	17.2	3.9	9.4	1.3
Engineering	18.9	5.5	10.0	2.6
Art and art history	16.6	6.6	19.7	5.9
Central institutions	17.1	16.2	14.9	3.0
Total	**15.8**	**5.8**	**10.7**	**2.6**

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

D1.6 Total international and German academic staff and international and German professors, by subject group, in 2020



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

professors. Compared to German professors, international professors are 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: 27%).

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 mathematics and natural sciences (21%) and engineering (19%), in art and art history, and universities' central services (17% each). At universities of applied sciences, the humanities account for a particularly high proportion (21%): this may be explained by their strong focus 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 (6%).

Footnotes

1 While the number of professorships went up by 29% in Hamburg between 2010 and 2020, it rose by just 4% in Saxony.

2 Total number including 256 persons not assigned to a federal state.

1.3 The situation regarding fixed-term contracts for 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 situation regarding fixed-term contracts. Do international academic staff have permanent or limited employment contracts? And are there any differences to the situation of their German colleagues? These questions can only be answered usefully with respect to academics and researchers holding full-time posts at the universities and research institutes. This applies to professors, lecturers, assistants, academic and artistic staff, and specialised teaching staff.

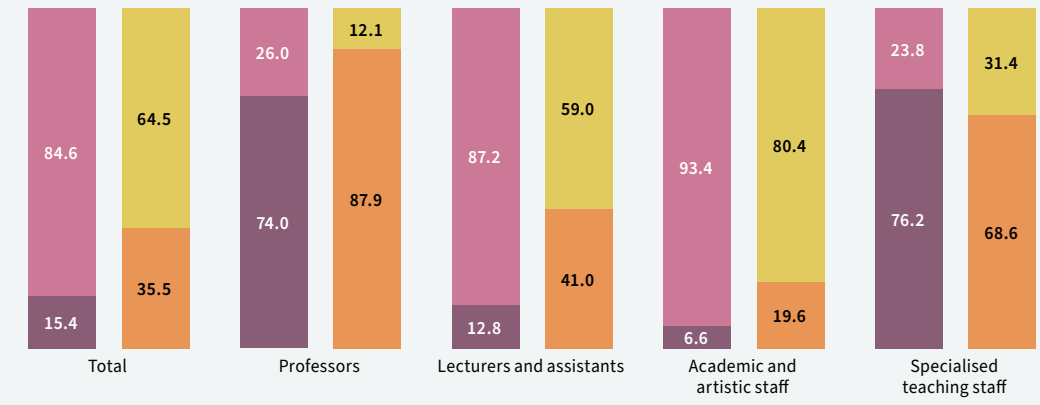
> “ 45% of Swiss, yet just 2% of Indian academic staff hold permanent positions at universities.

International academic staff are much less likely to be offered permanent contracts at universities and universities of applied sciences than their German counterparts. On average, just 15% of international staff, yet 36% of German staff held long-term positions in 2020. Those differences occur for all relevant personnel groups, apart from specialised teaching staff, where the share of permanently employed international teaching staff is 76%, compared to 69% of their German colleagues. Specialised teaching staff are entrusted with teaching duties on an ongoing basis. International teachers in this group are frequently engaged to teach foreign languages, where they play a key role as native speakers. The situation changes when it comes to professors, however. 88% of German and just 74% of international professors hold tenured professorships. Differences are even more marked among lecturers and assistants (permanent: German 41%, international 13%) and in the largest personnel group, that of academic and artistic staff (permanent: German 20%, international 7%).

Inconsistencies can also be observed in the individual subject groups. The proportions of international and German academics and researchers in permanent employment vary considerably – between 18 and 25 percentage points – particularly in the subject groups medicine and health sciences (permanent: German 32%, international 11%), engineering (permanent: German 34%, international 9%), agricultural, forestry and food sciences, and veterinary medicine (permanent: German 32%, international 8%), law, economics and social sciences (permanent: German 41%, international 19%), and mathematics and natural sciences (permanent: German 28%, international 10%). Meanwhile, these groups tend to be more balanced in universities’ central services (permanent: German 43%, international 30%), the humanities (permanent: German 38%, international 31%) and, most notably, in art and art history (permanent: German 64%, international 62%).

Ultimately, the permanent employment rate also appears to be determined by the regions of origin of international academic staff. Comparatively high shares can be observed for academics and researchers from North America (30%), the EU-27 states[1] (22%), Australia/Oceania (21%) and the other European states (19%). By contrast, only few academics and researchers from Africa and Asia (5% each) or from Latin America (6%) hold long-term positions at German universities. As regards the individual countries of origin, Switzerland has the highest rate of permanently employed staff, namely 45%. Among other factors, this may be attributed to the considerable number

D1.7 Full-time international and German academic staff at universities, by professional and employment status, in 2020



Figures in %

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

Footnotes

1 Apart from Germany.

2 Excluding Germany, yet including the United Kingdom.

3 Value estimated.

of Swiss professors at German universities. Large shares are also found in Austria (36%), the United Kingdom (34%), the US (31%) and the Netherlands (30%). Despite the sizeable number of academics and researchers at German universities, a low rate of permanent employment is given for India (2%), Iran (3%), China (5%) and Turkey (7%), for example. This is due to the small number of professors from these countries.

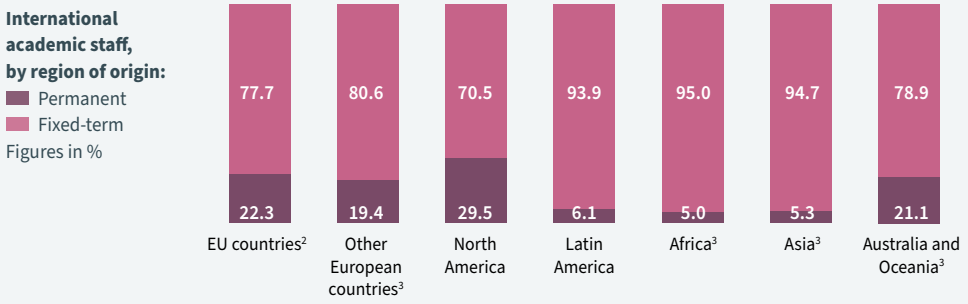
In terms of fixed-term contracts, the situation is similar at non-university research institutes. In 2020, 18% of international and 42% of German academic staff are on permanent contracts at these institutes. However, while there are minor differences between academic staff requiring a doctorate (permanent: international 4%, German 6%), the figures for other academic staff, in particular, diverge substantially (permanent: international 20%, German 47%), even among heads of research groups and heads of department (permanent: international 58%, German 75%). Given the low number of contractually employed academic and research posts requiring a doctorate, their share of all academics and researchers also affects the regional rates of those in permanent positions. Like at universities, the high proportions of staff from the EU-28 countries[2] (24%), other European countries (23%), North America (19%) and Australia/Oceania (17%) permanently employed by non-university research institutes are juxtaposed with low shares of academics and researchers from Latin America (8%), Asia (9%) and Africa (11%).

D1.8 Full-time international and German academic staff at universities, by subject group and employment status

International academic staff		Subject groups	German academic staff	
Permanent in %	Fixed-term in %		Permanent in %	Fixed-term in %
31.2	68.8	Humanities	38.1	61.9
18.7	81.3	Law, economics and social sciences	40.7	59.3
9.9	90.1	Mathematics and natural sciences	27.6	72.4
11.3	88.7	Medicine and health sciences	32.1	67.9
7.9	92.1	Agricultural, forestry and food sciences, veterinary medicine	31.9	68.1
9.3	90.7	Engineering	34.1	65.9
61.7	38.3	Art and art history	64.4	35.6
30.3	69.7	Central university institutions	42.9	57.1

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

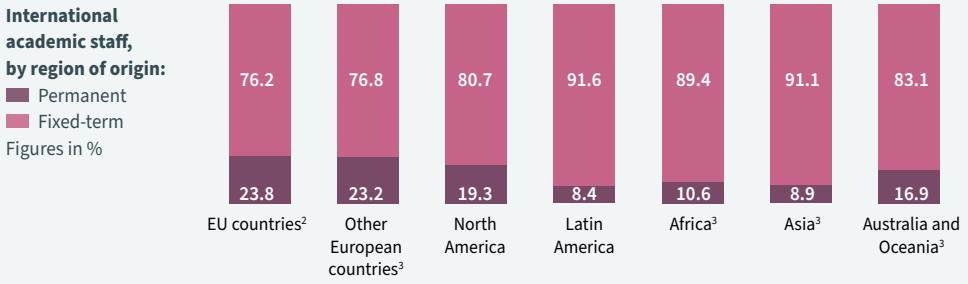
D1.9 Full-time international and German academic staff at universities, by region of origin and employment status, in 2020



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

D1.10 Full-time international and German academic staff at the four largest non-university research institutes, by employment status, region of origin and employment status, in 2020

International academic staff		Employment status	German academic staff	
Permanent in %	Fixed-term in %		Permanent in %	Fixed-term in %
58.3	41.7	Heads of research groups and heads of departments	75.2	24.8
4.0	96.0	Academic and research posts requiring a doctorate	6.1	93.9
20.3	79.7	Other academic staff	46.7	53.3



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

SPOTLIGHT

International doctoral students in Germany – their quantitative development and employment situation

German universities place special emphasis on international doctoral students. Their research endeavours help consolidate Germany's reputation as a hotspot for research. Moreover, they encourage the development of international networks and contribute to the internationalisation of studies and research. In the 2020/21 winter semester, around 27,600 international doctoral students[3] were enrolled at universities in Germany (see Fig. DS1). Despite the complicated research and working conditions during the first year of the pandemic, this corresponds to a drop of just roughly 250 doctoral students compared to the previous winter semester. Their number has increased by 31% since the 2010/11 winter semester. Although the number of international doctoral candidates has seen slower growth than that of international students in bachelor's and master's programmes (see pp. 42/43), it still outpaces German doctoral students. While one fifth of doctoral students (20%) came from abroad in 2010/11, this had risen to one quarter (25%) by the 2020/21 winter semester.

> "International doctoral students represent one quarter of all doctoral candidates enrolled at universities.

Database

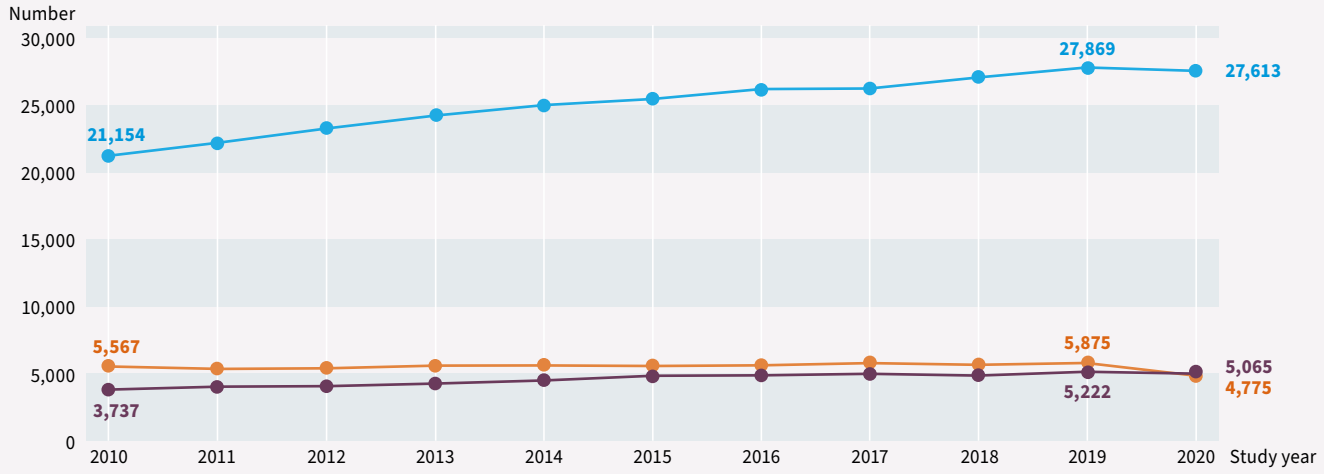
The development in the number of international doctoral students enrolled in Germany is shown with data from official student statistics.

Moreover, reliable doctoral statistics are available for the first time for the 2021 academic year[1], introduced by the Federal Statistical Office following the amendment of the German Higher Education Statistics Act in 2016 to include all doctoral students, not just those enrolled at universities. Nonetheless, to date, these statistics only provide data on doctoral students with foreign citizenship, in other words, they are not broken down into Bildungsinlaender and international doctoral students.

Information on the employment situation of international doctoral students starting their doctoral studies in 2017/18 was obtained in early 2019 in the context of the DZHW's National Academics Panel Study (Nacaps). Approximately 3,700 international doctoral students from 57 German universities that are entitled to confer doctorates took part in this national survey. Data refer to all international doctoral students at the time of the survey.[2]

It should, however, be noted here that official student statistics underestimate the number of both international and German doctoral students as they only include doctoral students who are also enrolled at a university. Nonetheless, this does not apply to all doctoral students by any means.[4] According to the latest doctoral statistics published by the Federal Statistical Office, there were approximately 43,200 doctoral students with foreign citizenship in Germany in 2020. All the same, these new statistics do not differentiate between Bildungsinlaender and

DS1 International doctoral students, new doctoral entrants (first-year students) enrolled at German universities and candidates awarded a doctorate, since 2010[3, 6, 7]

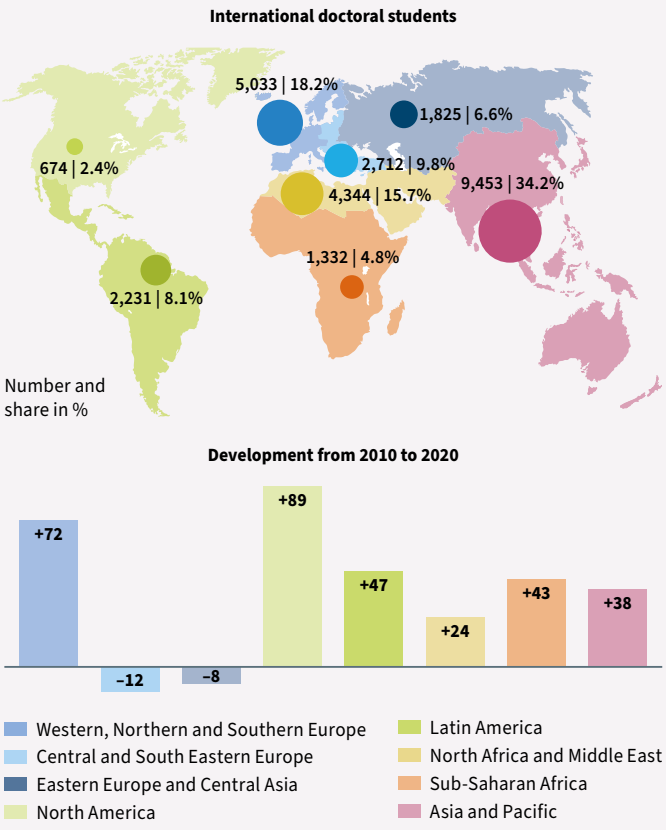


Source: Federal Statistical Office, student and examination statistics

international doctoral students in this group. Assuming that the share of international doctoral students of all doctoral candidates with foreign citizenship equals that of international students of all students with foreign citizenship (78%), the total number of international doctoral students would be roughly 33,700. This would mean that, in 2020, around 6,100 or 18% of international doctoral students in Germany were not enrolled at a university. According to these estimates, based on the latest doctoral statistics, the share of international doctoral students of all doctoral students would be roughly 18%.[5]

To summarise the above statements, it can be concluded that, despite the statistical anomalies, there has been a marked increase in the number of international doctoral students in Germany in recent years. Nevertheless, student statistics show that this development is not due to equally increasing numbers of new entrants to their doctoral studies. Between 2010 and 2019, the number of international doctoral students enrolling for the first time fluctuated between 5,400 and 5,900, before dropping to approximately 4,800 in 2020, due to the pandemic (see Fig. DS1).[6] In each case, roughly one quarter of these international doctoral students had been awarded a master's degree in Germany. By contrast, the number of international students completing their doctorate saw a sharp rise during this decade. In 2020, there were 5,100 international doctorate holders, 36% more than in 2010 and just 100 fewer than the previous year, despite the pandemic.[7] Meanwhile, the share of international candidates awarded a doctorate of all doctorate holders grew from 15% to 19% during this period. Given the rising numbers of doctoral students and doctorate holders, the relatively constant figures for first-year students suggest not just that the time to doctorate is increasing, they also point to an upsurge in successful doctorates.

DS2 International doctoral students enrolled at universities, by regions of origin 2020 and development, since 2010[8]



Sources: Federal Statistical Office student statistics; DZHW calculations

International doctoral students come predominately from the regions Asia and Pacific (34%), Western Europe (18%) and North Africa and Middle East (16%, see Fig. DS2). Their regional profile of origin corresponds to the distribution of international students in bachelor's and master's programmes (see pp. 40/41). By contrast, the greatest increases in doctoral students in the last ten years can be observed in North America (+89%) and Western Europe (+72%), while numbers of doctoral students from Central and South Eastern Europe (–12%), and Eastern Europe and Central Asia (–8%) are declining. China (around 5,000 doctoral students), India (around 2,000 doctoral students), Iran (around 1,700 doctoral students) and Italy (around 1,500 doctoral students) are the key countries of origin.

Footnotes

1 See Federal Statistical Office (2021).

2 See Willige/Dölle (2021) and the "Datenportal der National Academics Panel Study" (https://www.nacaps-datenportal.de, only available in German).

3 The numbers of international doctoral students always refer to the corresponding winter semester.

4 The doctoral regulations in most faculties or departments only require doctoral students to be enrolled for part of their doctoral studies.

5 It may be assumed that the share of international doctoral students of all doctoral candidates with foreign citizenship is higher than the share of international students of all students with foreign citizenship. While Bildungsinlaender as a sub-group of foreign doctoral students are chiefly entitled to undertake doctoral studies at a German university by virtue of a German university degree, foreign degrees play a key role in granting international doctoral students admission to doctoral studies in Germany in addition to a German university degree. 76% of international doctoral students hold a foreign university degree. The strong influx of prospective doctoral candidates from abroad could alter the ratio between Bildungsinlaender and international doctoral students in favour of the latter. This would mean that the estimated quota of 18% international of all doctoral students is actually underestimated.

6 Doctoral students in their first semester are classified as new doctoral entrants. The corresponding number of doctoral students enrolled for the first time refers to the entire academic year (summer semester + winter semester).

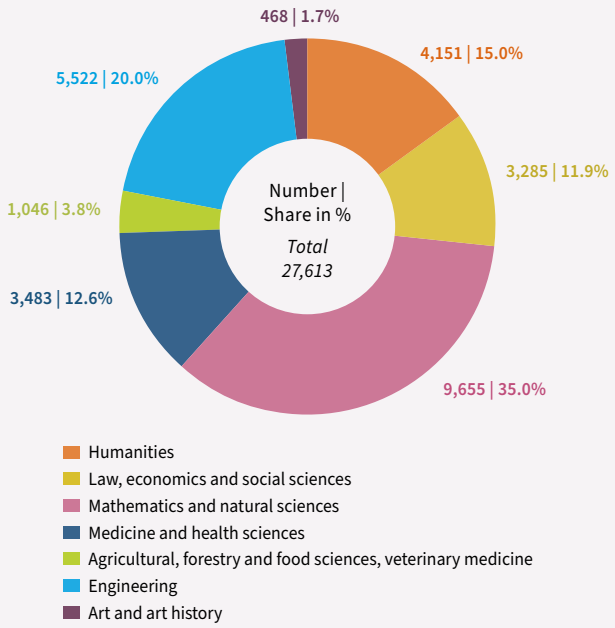
7 The number of candidates awarded a doctorate refers to the entire graduation year (winter semester + summer semester).

8 No concrete details available on the citizenship of nine international doctoral students.

SPOTLIGHT

International doctoral students in Germany – their quantitative development and employment situation

DS3 International doctoral students enrolled at universities, by subject group, in 2020



Source: Federal Statistical Office; student statistics; DZHW calculations

Over two thirds of international doctoral students aim for a doctorate in mathematics and natural sciences (35%), engineering (20%) or the humanities (15%, see Fig. DS3). At the same time, international doctoral students in these three subject groups also represent an above-average share of all doctoral students (mathematics and natural sciences: 30%; engineering: 29%, humanities: 28%). Nonetheless, the subject group medicine and health sciences (+181%) has seen the strongest upsurge in international doctoral students since 2010.

International doctoral students give a variety of reasons for completing a doctorate at a specific university in Germany. Almost two thirds cite their respective supervisor as a prime motivation (64%, see Fig. DS4). Other important factors for this decision are good research conditions in a certain subject (43%,) the university's excellent reputation (35%) and the university's location (25%). Attractive services aimed at doctoral students are of little account (10%). At the same time, choosing where to study is rarely left to chance, with just 13% stating that the university "simply came about". Compared to German doctoral students, a greater proportion of international doctoral students opt for a structured doctorate programme (37% vs. 43%). Moreover, 6% of international doctoral students are associate members in a structured programme. A fifth of respondents are cooperating with a foreign university to earn their doctorate (20%), of whom 21% indicate that they are aiming for a double degree involving a university at home and abroad.

Given the enormous importance of supervisors in deciding where to earn a doctorate, it can be safely assumed that this supervision also figures prominently in terms of students' satisfaction with their employment situation and the successful outcome of their doctoral studies. The majority of international doctoral students are satisfied with the supervision overall (60%, see Fig. DS5). However, 24% are only partly and 16% scarcely or not at all satisfied with the supervision they received during their doctoral studies. When asked directly about their (primary) supervisor, the level of satisfaction rises to 67%, although 15% are still dissatisfied. In contrast, the services provided by the university for doctoral students are regarded more critically, with just over half declaring themselves satisfied (52%).

> "The supervisor was a prime motivation in choosing their university for 64% of international doctoral students.

This shows that, despite a general satisfaction, a more differentiated evaluation of the supervisory situation is called for. Approximately one third of international doctoral students were obliged to look for an alternative supervisor (30%) or experienced phases of inadequate supervision (35%). With regard to the future, only around two thirds anticipated that their supervisor would be available throughout their doctoral studies (65%, see Fig. DS6). These shortcomings also affect the intensity of the supervision. Just one in two international doctoral students report that they meet their supervisor on a regular basis (52%) or that their supervisor wishes to be kept informed on the progress of their doctoral studies (48%). Although German doctoral students are less likely to lose their supervisor, their supervision is significantly less intense than that offered to international doctoral students.

These findings on the supervisory situation of international doctoral students are consistent with the support options reported. Thus, only about six in ten international doctoral students can rely at all times on someone in their academic environment to assist them with their expertise (59%), provide guidance in terms of doctoral content (57%) and help out with methodological and technical issues (56%, see Fig. DS7). Even less support is provided with regard to social aspects and motivation. For example, this means that just two fifths or thereabouts of international doctoral students invariably find a sympathetic ear for their concerns (43%), someone who provides encouragement in difficult times (40%) and unfailingly helps them establish their academic contacts and networks (38%). However, support is particularly lacking when it comes to the career prospects of international doctoral students. Between one quarter and one fifth can name somebody who introduces them to individuals who could have

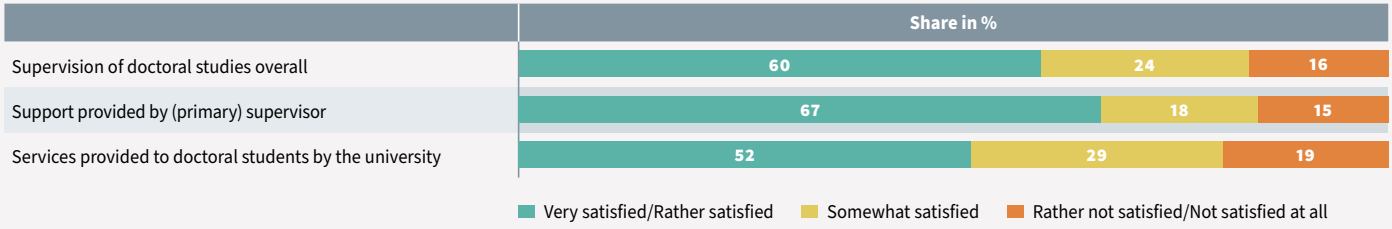
DS4 Factors prompting international doctoral students to choose a university

Factor	Share in %
Supervisor	64
Good research conditions in my subject	43
University's excellent reputation	35
University's location	25
It simply came about.	13
Attractive services for doctoral students	10
Other motivation	14

Figures in %, multiple answers

Source: Willige/Dölle (2021)

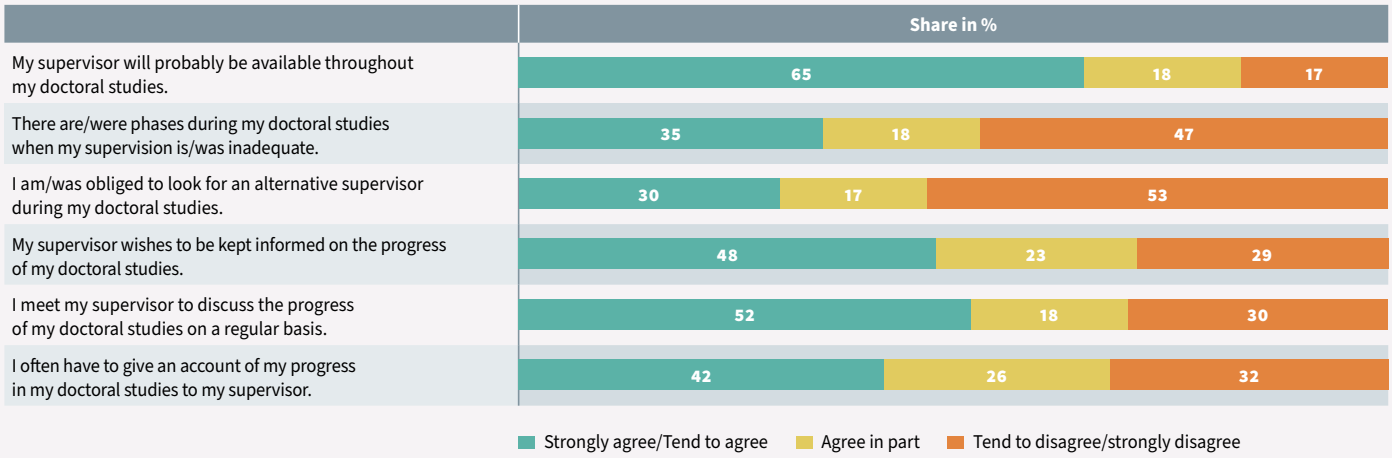
DS5 Level of satisfaction with supervision of international doctoral students



Figures in %, answers on a 5-point scale from 1 = Very satisfied to 5 = Not satisfied at all, values 1 + 2 and 4 + 5 combined

Source: Willige/Dölle (2021)

DS6 Assessment of the supervisory situation by international doctoral students



Figures in %, answers on a 5-point scale from 1 = Strongly agree to 5 = Strongly disagree, values 1 + 2 and 4 + 5 combined

Source: Willige/Dölle (2021)

International doctoral students in Germany – their quantitative development and employment situation

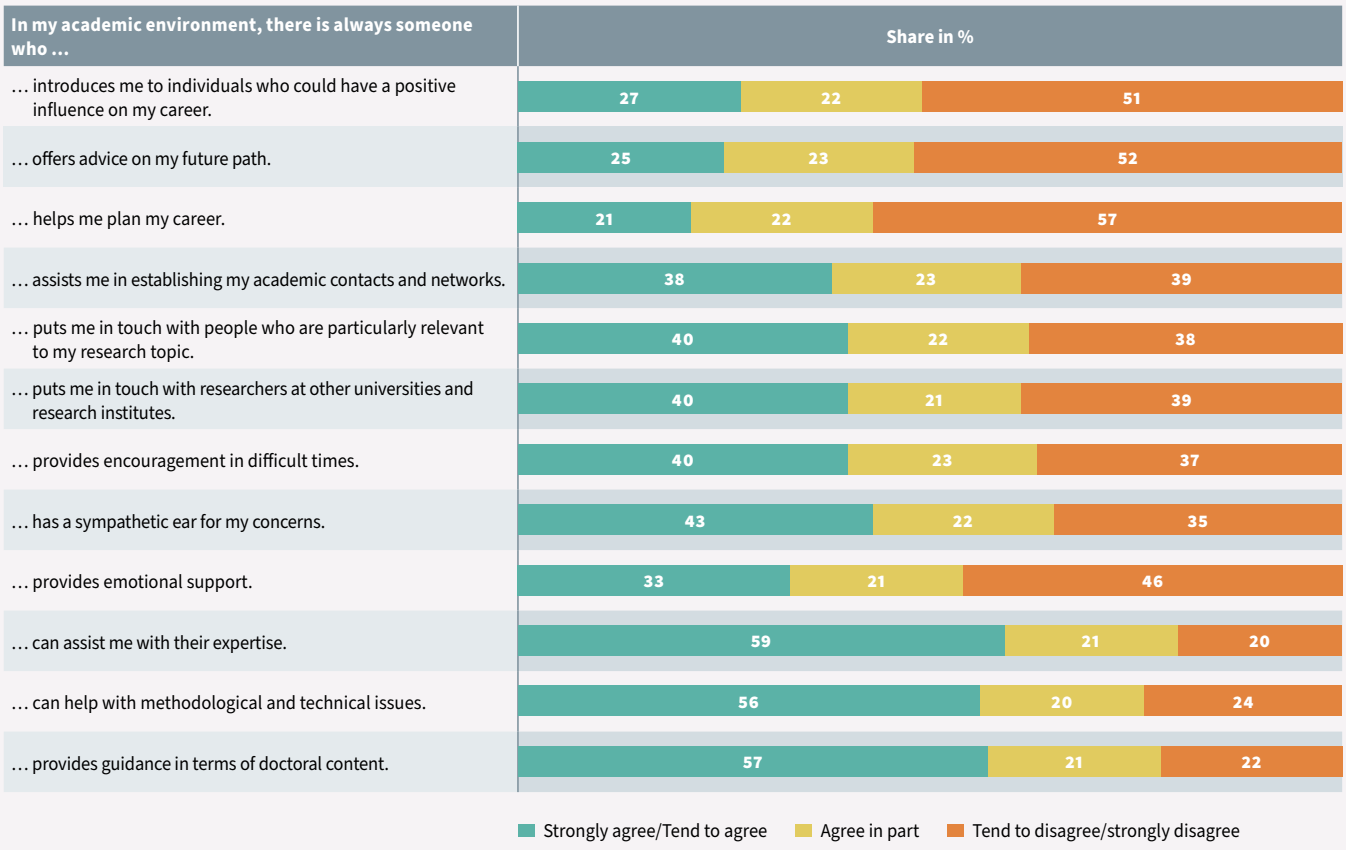
a positive influence on their career (27%), offers advice on their future path (25%) or helps them plan their career (21%). Compared to German nationals, international doctoral students are less likely to receive support for questions of content, methodological and technical issues, or motivational problems. However, despite the relatively limited assistance provided, even in career matters, international doctoral students are more likely to encounter a supportive environment for all aspects of contact and contact mediation than is the case for German doctoral students.

> “ 5% of international doctoral students experienced phases of inadequate supervision.

Against this backdrop, international doctoral students certainly also have an information problem. Just 52% feel sufficiently informed about the German higher education system. However, the corresponding share of German doctoral students is also only 61%. In this respect, interaction and information flows tend to be particularly favourable among those international students who earn their doctorate in a research project in which other people are involved. Even so, this applies to just 42% of international doctoral students. They collaborate with others in academia on their joint research project, at any rate. Nevertheless, some 59% of international doctoral students report that they have worked with other academics and researchers on at least one research or publication project over the last year.

Apart from the supervisory and support situation, the financing conditions are also crucial in ensuring the successful outcome of their

DS7 Assessment of support options of international doctoral students during their doctoral studies



Figures in %, answers on a 5-point scale from 1 = Strongly agree to 5 = Strongly disagree, values 1 + 2 and 4 + 5 combined

Source: Willige/Dölle (2021)

DS8 Sources of financing of international doctoral students

Sources of funding	Share in %
Employment at a university or research institute	45
Scholarship	37
Financial support from partner, parents or relatives	12
Employment outside a university or research institute	9
Investments, savings, insurance payouts or loans	7
Self-employment or freelance assignments unrelated to research or development	5
Self-employment or freelance assignments related to research or development	2
Other sources	7

Figures in %, multiple answers

Source: Willige/Dölle (2021)

doctoral studies. 61% of international doctoral students state that they have sufficient resources to cover their living expenses during their doctorate (see Fig. DS8). While 20% indicate considerable uncertainty in this regard, 19% can rely on funding that is at least partly secured. They thus find themselves in a more complicated position than German doctoral students, of which the substantially larger proportion of 76% have sufficient resources to cover their living expenses during their doctorate. Almost half of international doctoral students support themselves by working at a university or research institute (45%), while a fairly small share of 9% are employed in a non-university environment. A further 37% reveal that a scholarship is their source of funding. 12% of international doctoral students are forced to rely on financial support from their partner or parents. By contrast, German doctoral students are much more likely than international doctoral students to be able to support themselves during their doctoral studies by working at a university or research institute (64%). The share of those in employment outside a university or research institute is twice as high (18%), yet they are a great deal less likely to finance their doctorate by means of scholarships (14%).

> “ 39% of international doctoral students have sufficient resources to cover their living expenses.

2 International academics and researchers at non-university research institutes

2.1 Mobility trends, regions of origin and countries of origin

In 2020[1], around 15,000 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 2010 (+120%), 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 16% since 2017, the increase at NURI over the same period is 26%, up 6% on 2019 alone.

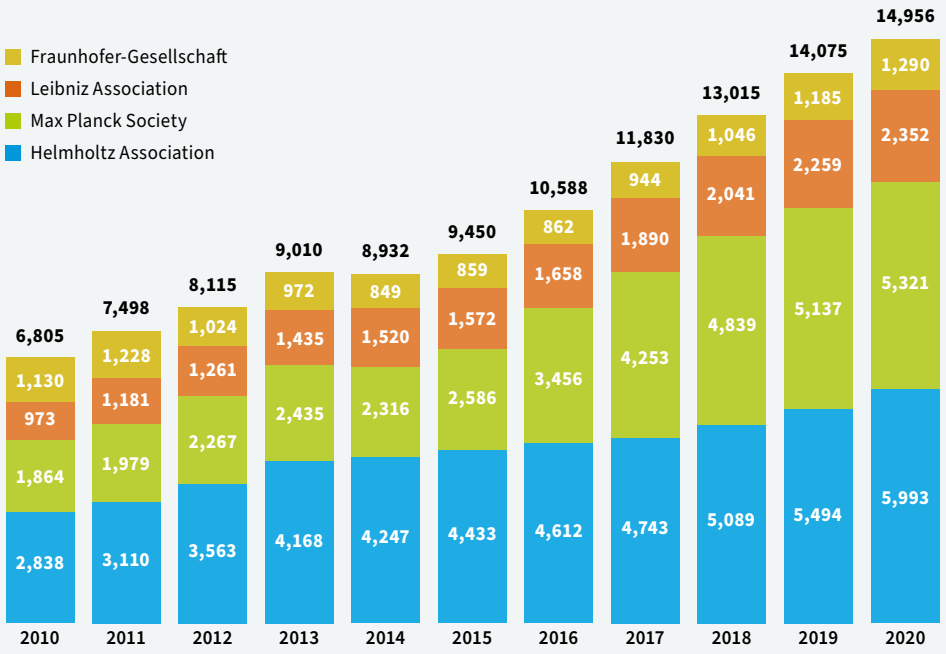
> “The number of international academics and researchers at the Max Planck Society has more than doubled since 2010.

The Max Planck Society registers the strongest growth, where the number of international academics and researchers has shot up by 185% in the last decade. This is partly due to the decision taken in 2015 to no longer finance doctoral students by means of scholarships but to give them fixed-term contracts. At the Helmholtz and Leibniz Associations, there has also been a significant increase in international academic staff since 2010, growing by 111% and 142% respectively. The Fraunhofer-Gesellschaft is the only noteworthy exception. Despite reporting its highest number of international academics and researchers to date in 2020, this represents a rise of just 14% compared to 2010. However, after a significant decline, this number has been picking up again since 2015, up by 9% from 2019 to 2020 alone.

The steady growth in the international academic staff at NURI meant that, in 2020, about 28% of all academics and researchers came from abroad. In 2010, this proportion was 15%. The current share of international academics and researchers at NURI is thus more than twice as high than at universities (see pp. 78/79). 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 subject areas, the share of international academic staff among all those working in science and research, including universities, is above average at 21% (see pp. 80/81). 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 is found at the institutes of the Max Planck Society, at around 52%. Approximately half of academics and researchers are thus foreign nationals. As stated above, this high figure is also the result of the fixed-term contracts offered to all doctoral students. By contrast, just one in ten academics

D2.1 International academic staff at the four largest non-university research institutes, since 2010[1]



Source: Federal Statistical Office, statistics on non-university research institutes

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 Data and comments refer exclusively to the four largest non-university German research institutes: Helmholtz Association, Max Planck Society, Leibniz Association and Fraunhofer-Gesellschaft.

3 In the official statistics on non-university research institutes, the origin of international staff is not given by more differentiated regions, but by continents.

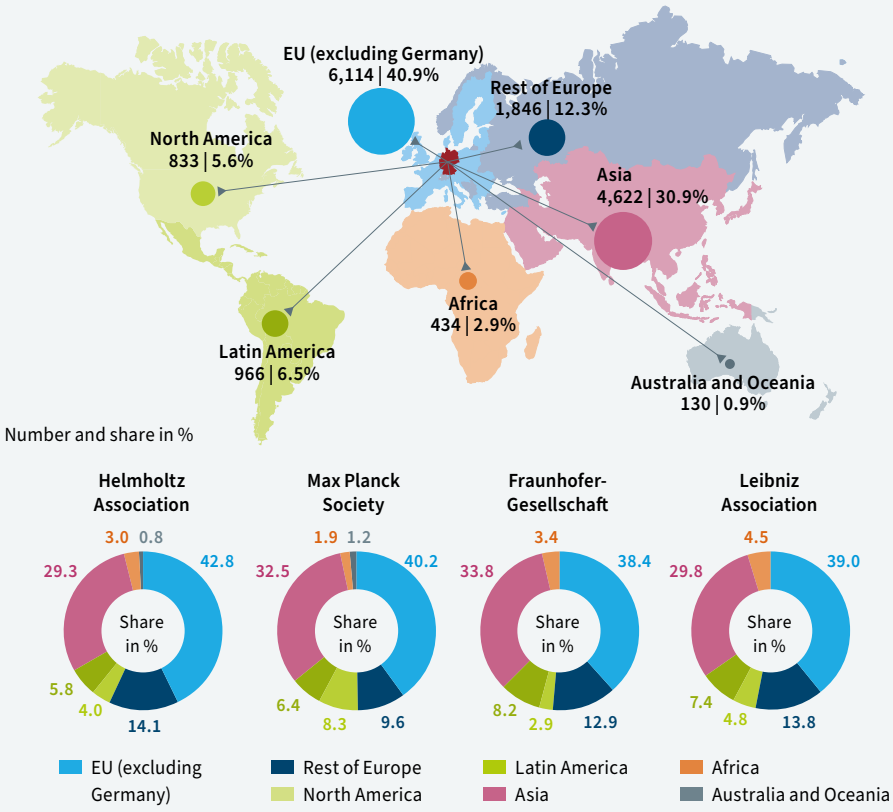
and researchers at the mostly engineering-oriented institutes of the Fraunhofer-Gesellschaft comes from abroad (11%). For the Helmholtz and Leibniz Associations, this figure is roughly one quarter (28% and 24% respectively).

> “ 41% of the international academic staff in non-university research institutes come from EU countries and 33% from Asian countries, particularly China and India.

International academic staff at NURI mainly come from European countries. EU countries account for 41% of international academics and researchers, the remaining European countries for 12%. Another large share, namely 31%, comes 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 come from Europe. There are only minor differences between the various NURI. The highest proportion of academics and researchers from European countries can be found at the institutes of the Helmholtz Association (57%), while most academics and researchers from North America (8%) and Asia (33%) work at the Max Planck Society.

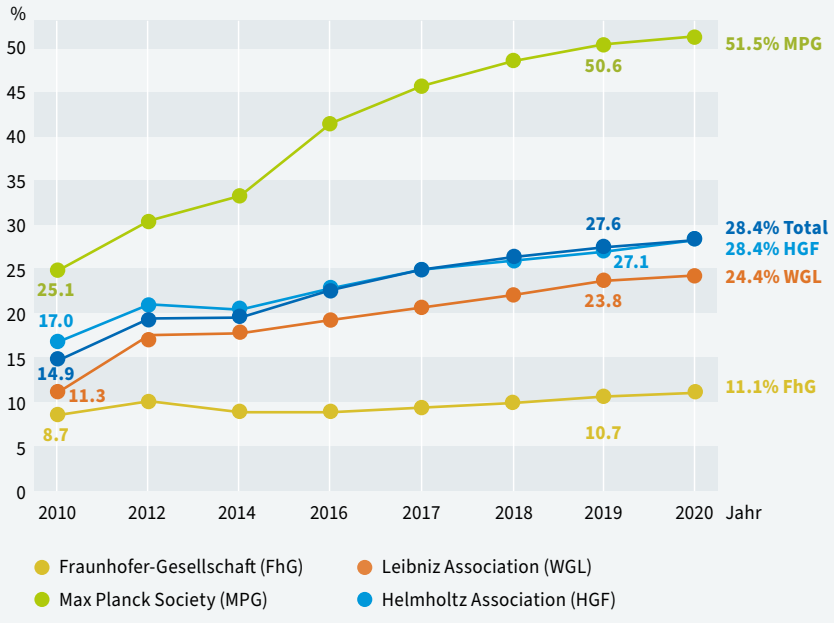
The key countries of origin are China and India, each with around 1,400 academics and researchers, and Italy, with roughly 1,300 staff working at NURI in 2020. Other major countries are Russia (approximately 800), Spain, France and the US (roughly 700 each).

D2.2 International academic staff at the four largest non-university research institutes, by region of origin, in 2020[3]



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 2010



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

2.2 Subject groups and qualifications

With a share of approximately 68%, 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. 16% 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 the international scientific staff 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 (68% vs. 50%), whereas it is much lower in engineering (16% vs. 31%). 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. 88/89). 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 working in this field, but also by the fact that these disciplines account for the highest share of the total staff (35%) compared to other subjects. Only medicine and health sciences present a similar figure of 29%. The relatively low proportion of foreign academics and researchers in engineering (17%) 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, 29% hold posts requiring a doctorate and 67% are other academics and researchers. A comparison with German academic staff reveals that the share of both heads of research groups and heads of departments (7%) and other academics and researchers (77%) are higher, while the share of posts requiring a doctorate (16%) is lower. There is a similar pattern 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

D2.4 International academic staff at the four largest non-university research institutes, by subject group, in 2020

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

in line with the corresponding percentages of German academics and researchers (14% and 3% respectively).

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%). Moreover, 44% of the staff in posts 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, 56% of posts requiring doctorates and 50% of the remaining academics and researchers come from abroad. In the institutes of the Fraunhofer-Gesellschaft, by contrast, just 5% of the research group leaders and heads of department, 15% of employees in posts requiring a doctorate and 11% of the other academics and researchers are foreign nationals.

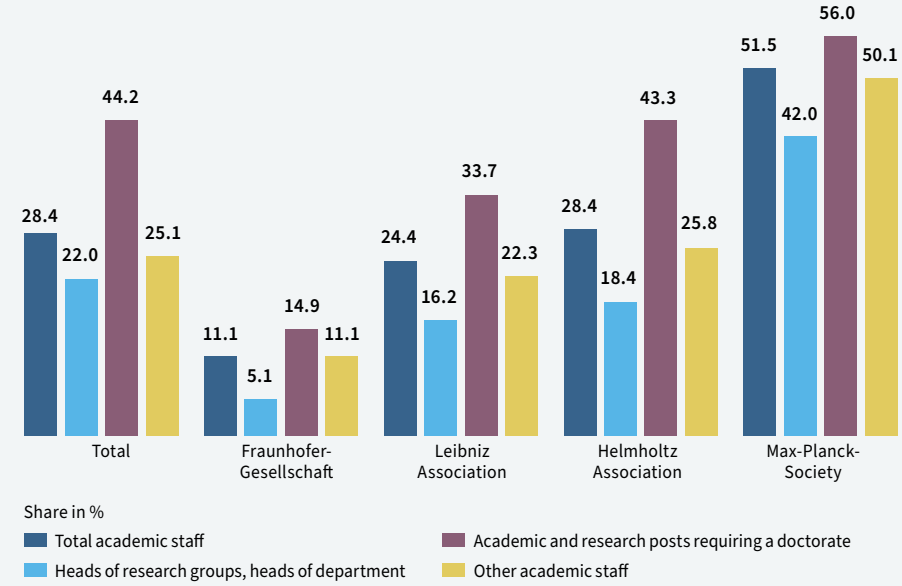
> “More than one fifth of senior scientific staff at non-university research institutes are foreign nationals.

The majority of international research group heads and heads of department, namely 58%, come from EU countries, 15% from North America and 11% from Asia, while 10% come from the rest of Europe. Among international academic staff requiring a doctorate, doctoral students from Asian countries represent the largest group (38%), followed by academics and researchers from EU countries (34%). Most of the remaining international academic staff also come from EU countries (42%) and Asia (30%).

Footnote

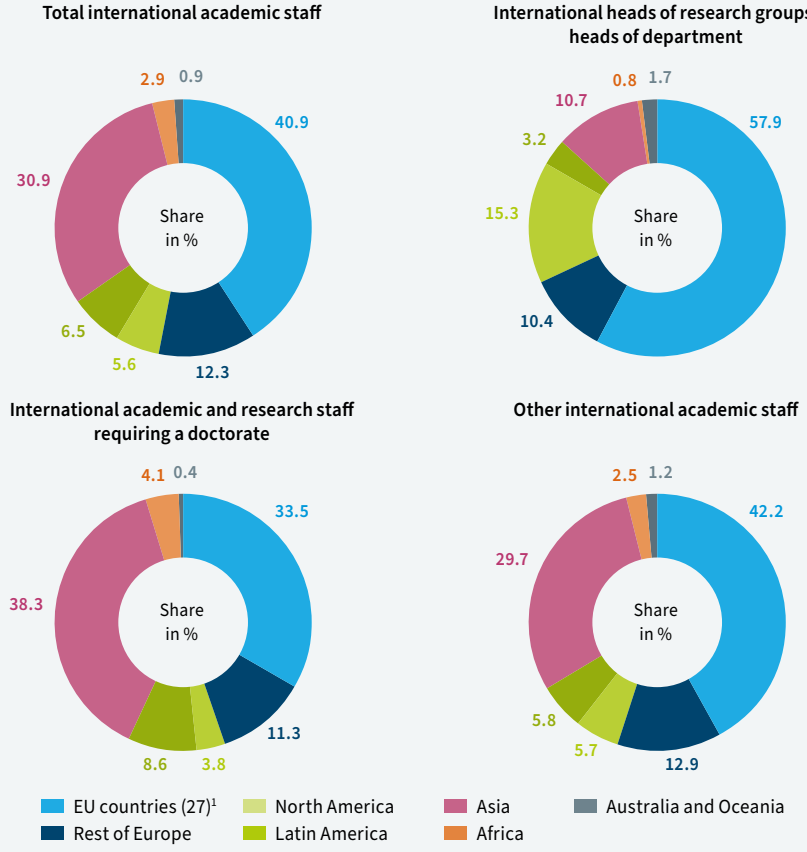
1 Excluding Germany, yet including the United Kingdom.

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 2020



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 2020



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

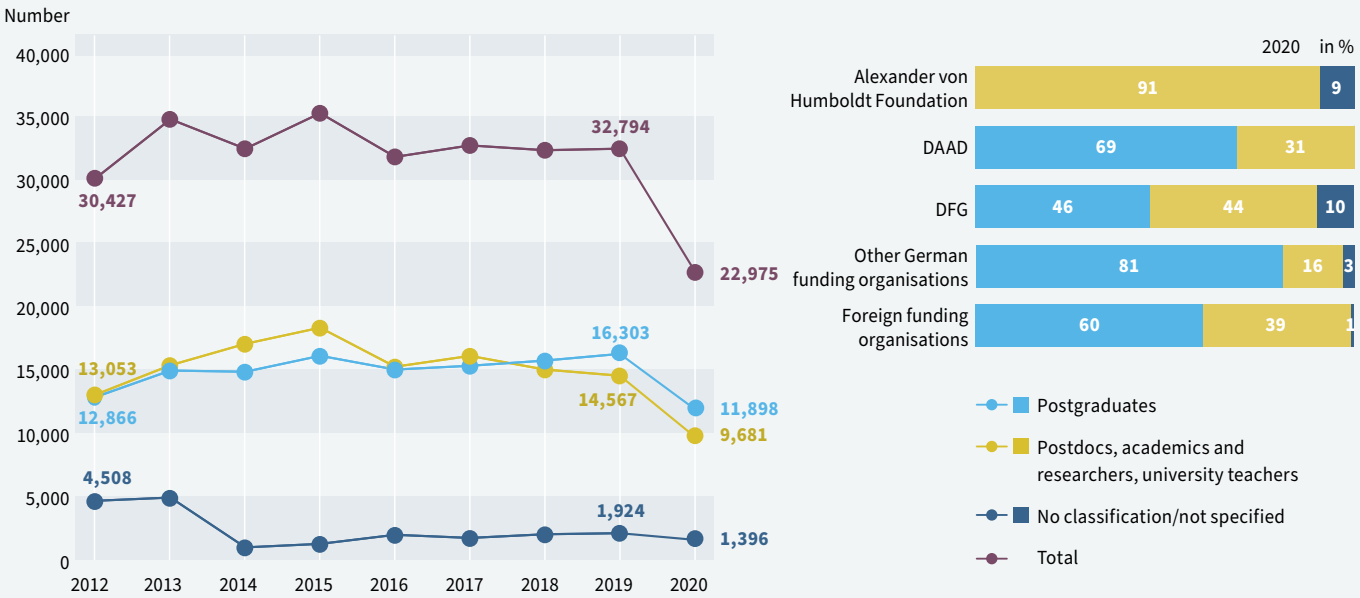
In 2020, domestic and foreign organisations funded around 23,000 visits by international guest researchers to Germany.[1,2] Guest researchers are foreign nationals visiting Germany for a limited period without being contractually employed, yet receive financial support, and are active in teaching and 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 funded 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.

> “Around 30% or 10,000 fewer visits by international guest researchers were funded in 2020 than in the previous year.

Compared to the previous year, the number of funded visits by international guest researchers dropped substantially by 30%. This dramatic fall is due to global mobility restrictions during the pandemic. Different developments are discernible in relation to the various funding organisations. Despite these drastic changes, three large funding organisations remain the primary source of support for the vast majority of guest researchers' visits to Germany: the German Research Foundation (DFG), the DAAD and the Alexander von Humboldt Foundation (AvH). In 2020, the DFG alone funded 53% of all guest research visits, the DAAD 30% and the AvH 8%. Together, they contributed to the funding of 91% of all visits. Nonetheless, the funding activities of the DFG dropped by around 21% and those of the AvH by 26%, while the DAAD funded a notable 44% fewer visits. The dramatic fall in the funding activities of the DAAD can explained by the fact that the DAAD primarily funds shorter visits abroad, while the visits funded by DFG and AvH tend to be significantly longer. For all visits abroad funded in 2020, short visits were more severely affected by the restrictions resulting from Covid-19 than long visits.

In 2020, approximately 6% of the visits undertaken by international guest researchers were funded by 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 funding 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. Undeterred by Covid-19, the Rosa Luxemburg Foundation, the German National Committee of the Lutheran World Federation/Bread for the World and the Konrad-Adenauer-Stiftung actually expanded their funding activities. Conversely, other organisations such as the Baden-Württemberg Foundation or Boehringer Ingelheim Fonds, were obliged to substantially reduce the number of funded visits abroad. All the same, at least half of these funding organisations managed to realise

D3.1 International guest researchers in Germany, by scholarship group, since 2012[1,2]



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

a similar number of visits to that of 2019. Overall, therefore, the number of visits by international guest researchers funded by these organisations has decreased by just 10% compared to the previous year.[4]

Foreign institutions' funding activities included in the survey cover roughly 3% of the visits of international guest researchers presented here. Year-on-year, their funding has dropped by around 250 visits or 29%. This is chiefly due to a reduction in the funding numbers at the Japan Society for the Promotion of Science. Nonetheless, the parallel increase in visits supported by Marie Skłodowska-Curie actions halted the downturn somewhat.

42% of all funded international visits are undertaken by academics and researchers with doctorates, including professors and experienced researchers, such as heads of research groups. A further 52% 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 (91%) 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 (69%), along with the DFG (46%).

Footnotes

1 The figures on foreign guest researchers in Germany on pp. 92–95 do not contain any information on the major non-university research institutes: Helmholtz Association, Max Planck Society, Leibniz Association and Fraunhofer-Gesellschaft. See pp. 96/97.

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 IASS Institute for Advanced Sustainability Studies, whose data were recorded for the first time for 2020.

5 Figure estimated.

D3.2 International guest researchers in Germany, by funding organisation, in 2020[2]

Funding organisations	Number
Key German funding organisations	
German Research Foundation	12,235
German Academic Exchange Service	7,009
Alexander von Humboldt Foundation	1,755
Other German funding organisations	
Konrad Adenauer Foundation	271
Katholischer Akademischer Ausländerdienst	184
Gerda Henkel Foundation[5]	152
Rosa Luxemburg Foundation	98
Hanns Seidel Foundation	82
Hans Böckler Foundation	71
Friedrich Ebert Foundation	66
German National Committee of the Lutheran World Federation/Bread for the World	53
German Federal Environmental Foundation	42
Einstein Foundation Berlin	38
Evangelisches Studienwerk	35
Friedrich Naumann Foundation for Freedom	32
Boehringer Ingelheim Fonds	24
Fritz Thyssen Foundation	23
IASS Institute for Advanced Sustainability Studies	23
Herzog August Bibliothek Wolfenbüttel	21
Study Foundation of the Berlin House of Representatives	20
Akademie Schloss Solitude	20
Baden-Württemberg Stiftung	19
University of Münster	19
Heinrich-Böll-Stiftung	15
Klassik Stiftung Weimar	9
Stiftung Charité	9
Heinrich Hertz-Stiftung – MKW NRW	4
Alfred Toepfer Stiftung F.V.S.	2
ZEIT-Stiftung Ebelin und Gerd Bucerius	2
Foreign funding organisations and -programmes	
Japan Society for the Promotion of Science	42
Marie Skłodowska-Curie actions	426
Swiss National Science Foundation	131
German-American Fulbright Commission	32
The Austrian Science Fund (FWF)	11
Total	**22,975**

Sources: data provided by funding organisations; DZHW survey; DZHW calculations

3.2 Regions and countries of origin and subject groups

In 2020, 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. 25% and 22% respectively of the funded academics and researchers come from 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 (8%), Sub-Saharan Africa (6%) 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. 76/77 and 90/91). 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 the previous year.

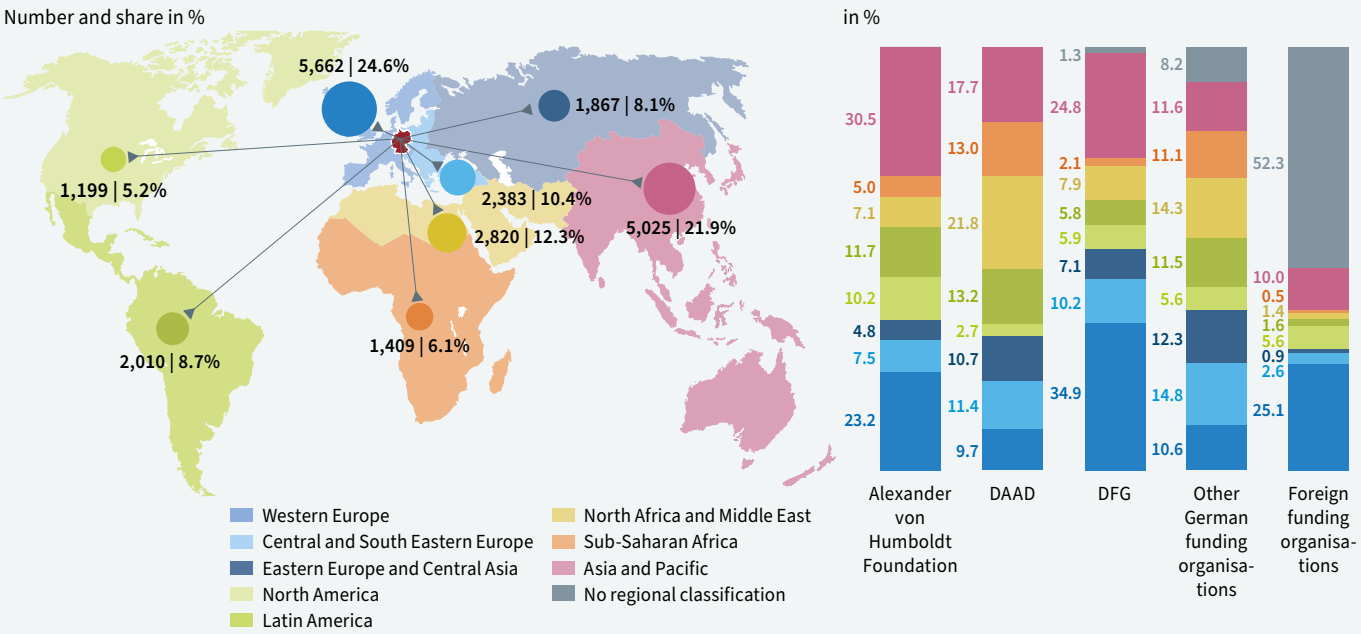
> “Funded visits by guest researchers from Russia and the US dropped between 2019 and 2020 by 46% and 40% respectively.

The individual funding organisations are distinguished by their different regional emphases.[1] The DFG's shares of funded guest researchers from Western Europe (35%) and Asia and Pacific (25%) are particularly marked. Moreover, the Alexander von Humboldt Foundation sponsors not just an above-average proportion of academics and researchers from Asia and Pacific (31%), but also from North America (10%). In contrast, funding from the DAAD and the smaller German funding organisations is more evenly spread across the various regions of origin.

The three key countries of origin for international guest researchers in Germany are China, India and Italy. In 2020, between 1,400 and 1,800 funded academics and researchers came from these countries. Compared with 2019, the number of guest researchers from China fell by 18%, from India by 27% and from Italy by 23%. Other major countries of origin are Russia, the US, Iran, Spain and France. However, there has been a dramatic plunge in the number of guest academics and researchers from Russia (–46%) and the US (–40%) in particular.

The largest single group of international guest researchers, with a share of 48%, can be found in the fields of mathematics and natural sciences. The humanities (14%), engineering (13%) and law, economics

D3.3 International guest researchers in Germany, by region of origin and funding organisation, in 2020[1, 2]



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

and social sciences (10%) trail some way behind, while medicine and health sciences (8%), agricultural, forestry and food sciences, and art and art history (2% each) play a subordinate role. The dominance of the natural sciences among international guest researchers corresponds to the importance of this subject area among contractually employed foreign academics and researchers, both at German universities and at non-university research institutes. The only striking feature is the comparatively high proportion of guest researchers representing the humanities, which is above average.

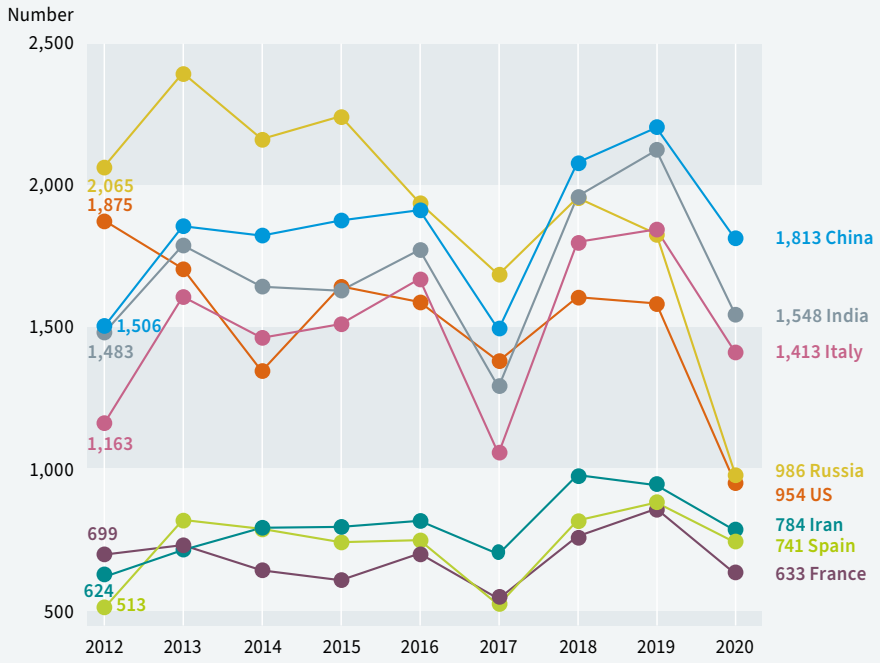
Clear distinctions can be drawn between the various funding organisations in terms of the specialist areas of the funded academics and researchers. At the DFG, the share of academics and researchers in the natural sciences, 64%, is remarkably high. By contrast, the smaller German funding organisations typically support the humanities (37%) and law, economics and social sciences (27%) to a greater degree. At 17%, the DAAD funds 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.

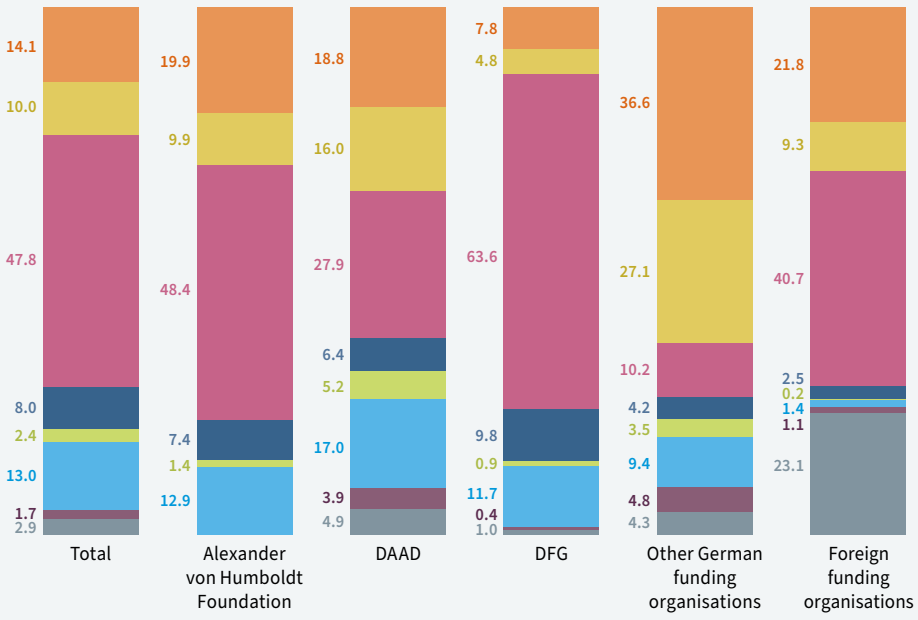
2 Total funded international guest researchers in Germany: 22,975 (including 600 guest researchers who cannot be assigned to any region of origin).

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 2020



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 funded 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 NURI have improved considerably in recent years. Above all, the Max Planck Society and the Leibniz Association – and the Helmholtz 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 2020, the Max Planck Society, the Helmholtz Association and the Leibniz Association funded a total of 44% fewer visits to Germany by international guest researchers.

In 2020, the Max Planck Society and the Helmholtz and Leibniz Associations together funded the visits to Germany of around 6,400 international guest researchers. Although the conditions for collecting data at the NURI have changed somewhat, this is still significantly down on the previous year.[1] This reduction, which can also be attributed to the mobility restrictions during the pandemic, was some 44% or 5,000 guest researchers.[2] The Helmholtz Association accounts for approximately 3,300 (–27%), the Leibniz Association for 1,900 (–74%) and the Max Planck Society for around 1,100 (–23%) guest researchers. In terms of contractually employed academic staff, this means that, in 2020, the Max Planck Society funded one guest researcher for every nine salaried researchers, while the Helmholtz Association funded one guest researcher for every six salaried researchers.[3] The ratio at the Leibniz Association was five to one.

In 2020, two research institutes recorded the region of origin of their international guest researchers. The Leibniz Association tends to sponsor academics and researchers from European countries. In total, 41% of its guest researchers were from EU countries and 11% from other European countries. Academics and researchers from Asia also figured prominently, representing 19% of all guest researchers receiving Leibniz Association funding. Thus, academics and researchers from Europe and Asia together made up 71% of all its guests. China (11%) and the US (10%) head the list of countries at the Leibniz Association, followed by the United Kingdom (8%), France (7%) and Brazil (6%).

The Max Planck Society also frequently sponsored temporary visits by guest researchers from European countries, with 31% from EU countries and 10% from other European countries. However, the funding extended to academics and researchers from Asia, accounting for 33%, is equally important. North America and Latin America each represented 10% of

D3.6 International guest researchers whose visits were funded by the Max Planck Society or the Leibniz Association, by region and country of origin, in 2020

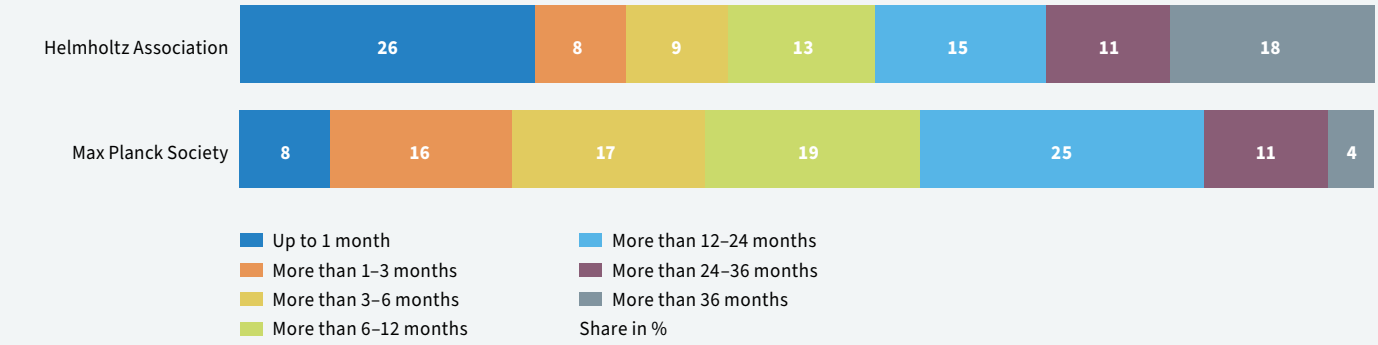
	Leibniz Association	Max Planck Society
Region of origin	Share in %	
EU (excluding Germany)	41.3	30.6
Rest of Europe	10.5	9.7
North America	11.9	9.7
Latin America	9.4	9.6
Asia	19.3	32.8
Africa	6.1	6.3
Australia and Oceania	1.1	1.3
Not specified	0.4	0.0
Total	**100.0**	**100.0**

Leibniz Association		
Country of origin	Number	Share in %
China	206	10.8
US	190	10.0
United Kingdom	159	8.4
France	125	6.6
Brazil	116	6.1
Other countries	1,107	58.1
Total	**1,903**	**100.0**

Max Planck Society		
Country of origin	Number	Share in %
China	203	18.1
India	101	9.0
US	89	8.0
Italy	67	6.0
France	42	3.8
Other countries	617	55.1
Total	**1,119**	**100.0**

Sources: statistics on non-university research institutes, DZHW survey; DZHW calculations

D3.7 International guest researchers whose visits were funded by the Max Planck Society or the Helmholtz Association, by visit duration, in 2020



Figures in %

Sources: statistics on non-university research institutes, DZHW survey; DZHW calculations

the guests. China is the leading country of origin with 18% of all guest academics and researchers, followed by India (9%) and the US (8%). Other major countries of origin are Italy (6%) and France (4%).

The Max Planck Society has also published data on the subject groups of international guest researchers in 2020, reporting 57% in mathematics and natural sciences, 23% in medicine and health sciences, and 15% in law, economics and social sciences. Thus, compared to the contractually employed international academics and researchers, the subject groups medicine and health sciences, and law, economics and social sciences play a much more significant role for guest researchers, while mathematics and natural sciences figure less prominently (see pp. 80/81).

Information on visit duration is also available for the Max Planck Society and the Helmholtz Association, showing that longer visits of more than one year played a key role in 2020. They accounted for 41% at the Max Planck Society and 44% at the Helmholtz Association, for which short visits of one month or less also represented a sizeable proportion – 25% – of all funding.

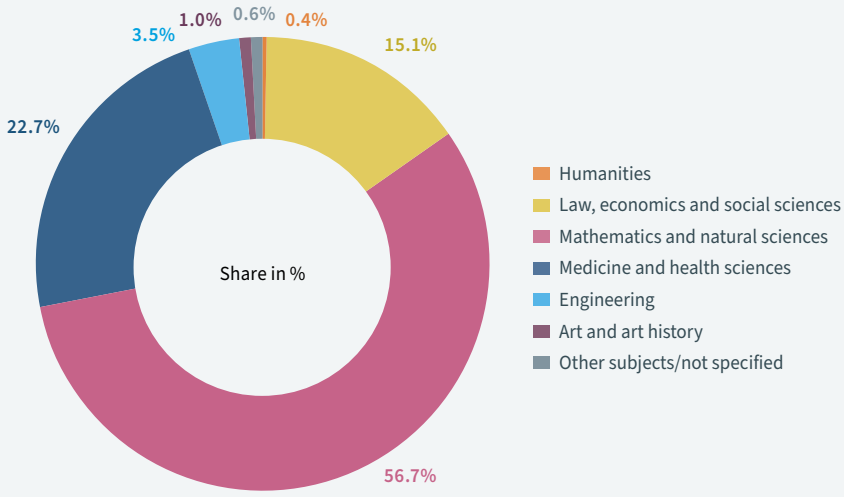
Footnotes

1 The 2020 funding data for the non-university research institutes, particularly the Max Planck Society, can only be compared to a limited extent with the figures for previous years due to changes in the way in which they are collected.

2 For 2020, the Max Planck Society indicates an additional 1,800 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.

D3.8 International guest researchers of the Max Planck Society, by subject group, in 2020



Sources: data provided by funding organisations, DZHW survey; DZHW calculations

3.4 Erasmus guest lecturers

Temporary visits by guest lecturers from abroad receive funding under the European Union's Erasmus+ programme. These guest lectureships in Europe can be between 2 and 60 days in length. The 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 in the programme. It is therefore possible for some Erasmus guest lecturers in Germany to be German citizens, although this percentage is likely to be very small.

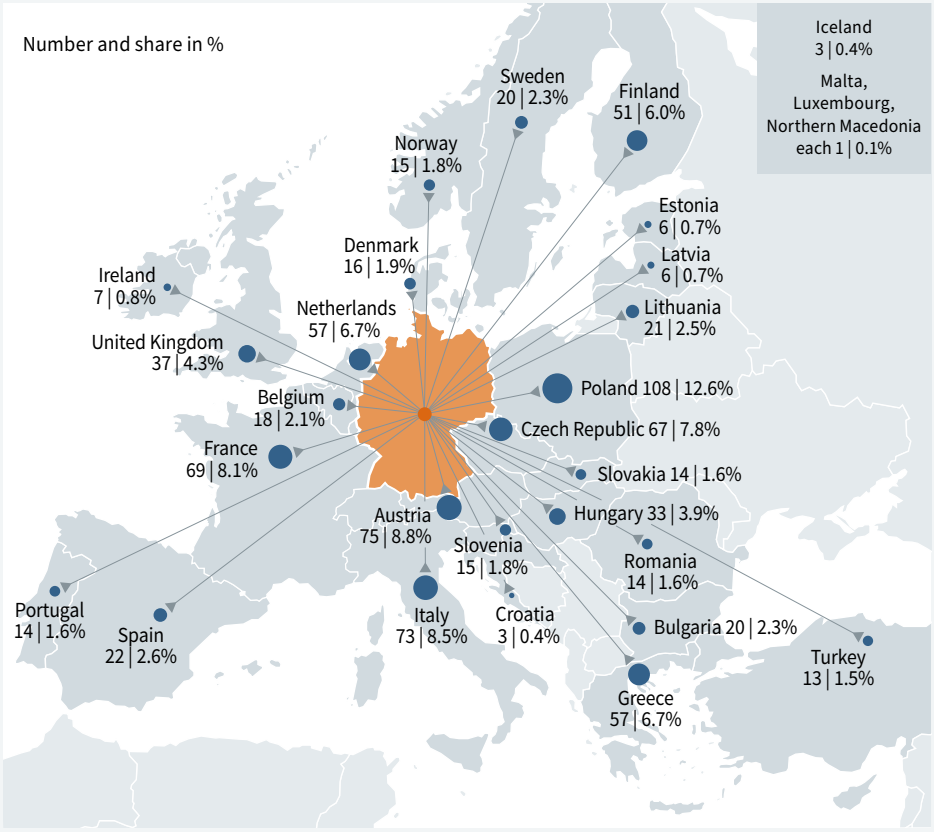
> "The number of Erasmus guest lecturers from the United Kingdom plummeted by 81% between 2019 and 2020.

In the 2020 Erasmus year[1], a total of just 857 Erasmus guest lecturers came to Germany on teaching visits, a drop of 1,650 or two thirds less than the previous year. The Europe-wide mobility restrictions and the closure of the universities in 2020, the first year of the pandemic, meant that many Erasmus visits by guest lecturers to Germany had to be cancelled.

32% of Erasmus guest lecturers – the largest group – came from countries in Central Eastern Europe, 22% were from Western Europe and 13% from Southern Europe. The share of guest lecturers from South Eastern Europe and Northern Europe was 12% in each case, with 9% 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 13%. Austria and Italy lag behind in second and third place, each with 9%. The Czech Republic and France (8% each) and Greece and the Netherlands (7% each) also play an important role. The sharpest decline among the key Erasmus countries can be observed in the number of participants from the United Kingdom (–81%).

With a share of 34%, most foreign Erasmus guest lecturers in Germany are found in the arts and humanities.[2] 18% belong to the engineering, manufacturing and construction subject group, while a further 16%

D3.9 Erasmus guest lecturers in Germany, by region and country of origin, in 2020[1]



Region of origin	Number	Share in %
Central Eastern Europe	273	31.8
Southern Europe	110	12.8
Western Europe	188	21.9
South Eastern Europe	105	12.3
Northern Europe	105	12.3
Central Western Europe	76	8.9
Total	**857**	**100.0**

Source: DAAD, Erasmus statistics

Footnotes

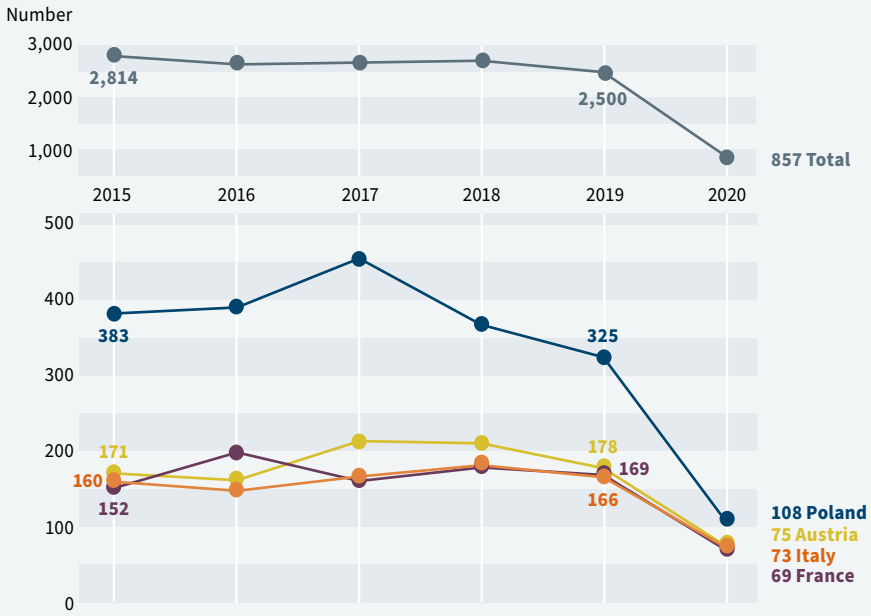
1 Erasmus statistics until 2014: the Erasmus year starts in the winter semester and ends in the summer semester of the following year. 2014 = WS 2013/14 + SS 2014. New Erasmus statistics since 2015: the Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2020 = 1 June 2019 to 31 May 2021.

2 Data on Erasmus guest lecturers by subject group are only available using the ISCED classification system.

represent business, administration and law. Social sciences, journalism and information, and education each account for 7%, with 6% domiciled in the natural sciences, mathematics and statistics. Health and welfare and information and communication technologies (5% each), services (2%) and agriculture, forestry, fisheries and veterinary (1%) are of little account. Compared to German Erasmus guest lecturers who go abroad for a temporary visit, there are no significant differences in the distribution of subject groups (see pp. 112/113).

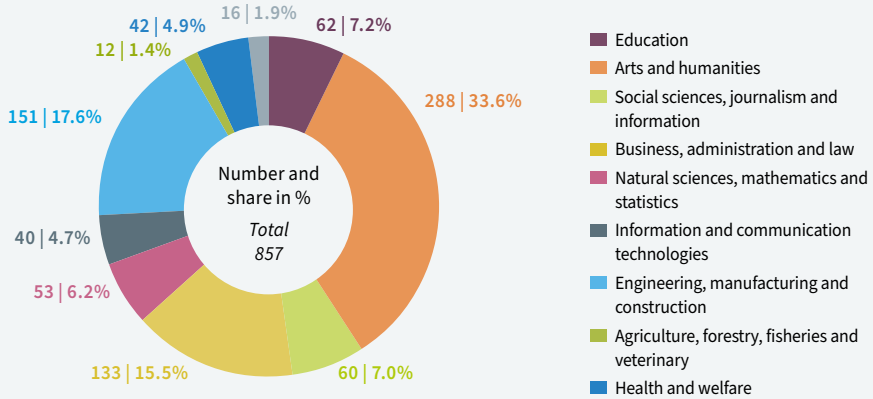
Although Erasmus guest lectureships can last for up to two months, lecturers in Germany only stayed for an average of 5.1 days. Although this figure is the same as the previous year, the exceptional conditions during the pandemic led to prolonged visits in some countries. On average, Erasmus guest lecturers from Croatia, Slovenia and Luxembourg spent between twelve and 17 days in Germany. By contrast, guest lecturers from Malta, Portugal, Latvia, Northern Macedonia, Norway and the Netherlands only spent between three and four days in Germany on average.

D3.10 Erasmus guest lecturers in Germany, by key countries of origin, since 2015



Source: DAAD, Erasmus statistics

D3.11 Erasmus guest lecturers in Germany, by subject group, in 2020[2]



Source: DAAD, Erasmus statistics

D3.12 Erasmus guest lecturers in Germany, by country of origin and average visit duration, in 2020

Country of origin	Duration Ø Days
Croatia	17.3
Slovenia	14.5
Luxembourg	12.0
Estonia	8.0
Romania	7.8
Bulgaria	6.0
Greece	5.7
Island	5.7
Lithuania	5.7
Hungary	5.7

Country of origin	Duration Ø Days
Czech Republic	5.5
Italy	5.3
Denmark	5.2
Slovakia	5.2
Ireland	5.1
Sweden	5.0
Spain	4.8
Turkey	4.8
United Kingdom	4.8
Belgium	4.5

Country of origin	Duration Ø Days
Finland	4.5
France	4.5
Austria	4.5
Poland	4.5
Norway	4.1
Northern Macedonia	4.0
Latvia	3.7
Netherlands	3.5
Portugal	3.5
Malta	3.0
Total	**5.1**

Source: DAAD, Erasmus statistics

GERMAN ACADEMICS AND RESEARCHERS ABROAD

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. 102/103), given the large number of doctoral students from Germany. Moreover, there are considerable differences in how the countries listed above collect data.[1]

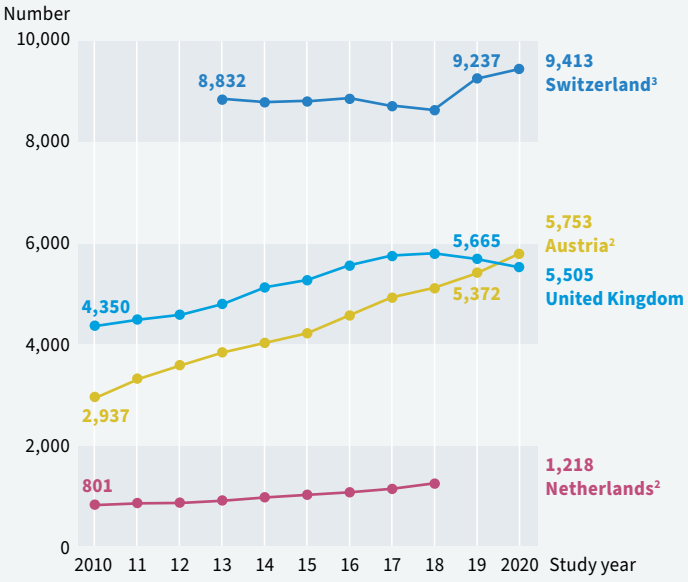
> “Approximately 9,400 German academics and researchers work at Swiss universities.

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 academic 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, most German academics and researchers are employed at universities in neighbouring Switzerland. Numbering approximately 9,400 in 2020, the vast majority of over 80% were employed at universities in the German-speaking cantons. The universities in Austria come second, with 5,800 German academics and researchers (2020), closely followed by the United Kingdom, with roughly 5,500 German academics and researchers (2020). Direct proximity to Germany and a common language are likely to be important factors in Austria’s attractiveness. In 2018, some 1,200 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 2018 and 2020, by 9% overall, there was a slight decline in the United Kingdom (–5%) in the same period, following steady increases for many years. This may be an initial consequence of the United Kingdom’s withdrawal from the European Union. Over the last two years, the number of German academics and researchers at Austrian universities has also grown by 13%; for the first time, then, more German academics and researchers are employed at universities in Austria than at universities in the United Kingdom.

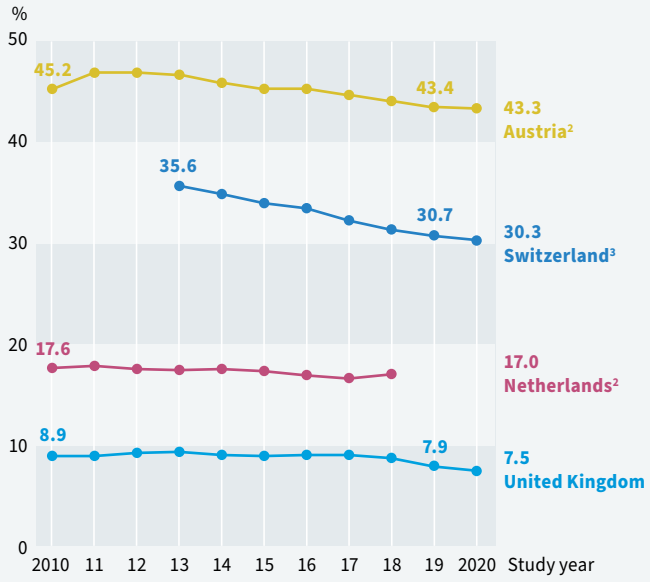
In addition to the number of German academics and researchers at universities in other countries, their share of all international academics and researchers is also a a revealing criterion for their success on academic labour markets. The highest proportion of German academics and researchers (43%) is found at Austrian universities, where they account for 13% of all academics and researchers. However, since 2015, they have dropped back by

E1.1 German academic staff at universities in selected host countries, since 2010



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 2010



Share in %

Sources: data provided by the respective statistical offices; DZHW calculations

two percentage points as a proportion of international academics and researchers. In Switzerland, too, they account for a substantial share (30%), although this has also declined by around three percentage points since 2015. As in Austria, they thus represent 13% of all academics and researchers at Swiss universities. 17% of international academics and researchers at universities in the Netherlands and 8% at universities in the United Kingdom are German nationals.

The number of German professors abroad corresponds to that of German academics and researchers. For 2020, Switzerland leads the field with 1,300, followed by Austria with 889 (2020) and the United Kingdom with 820 German professors (2018). Some 188 German professors were teaching and researching at Dutch universities in 2018. In all the countries considered here, the number of professors has increased since 2015. The number of German professors has risen dramatically in Austria, at +39%.

> “The number of German professors in Austria rose by 39% between 2015 and 2020.

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%). These percentages have barely fluctuated over the last five years.

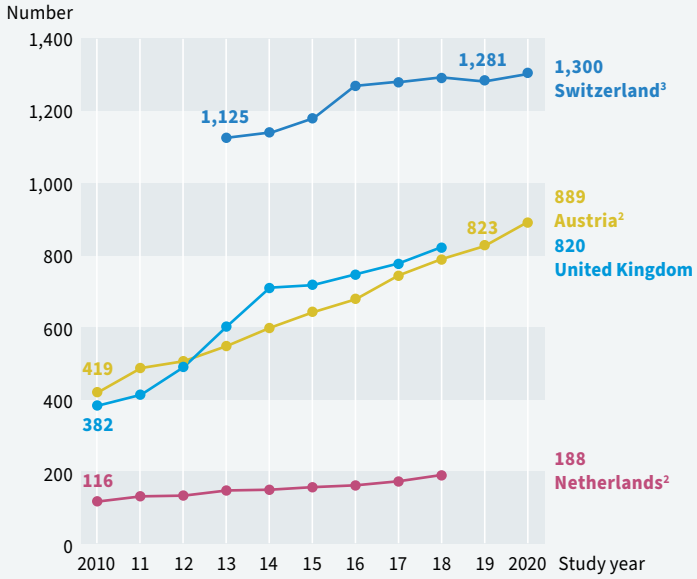
Footnotes

1 Some of the 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.

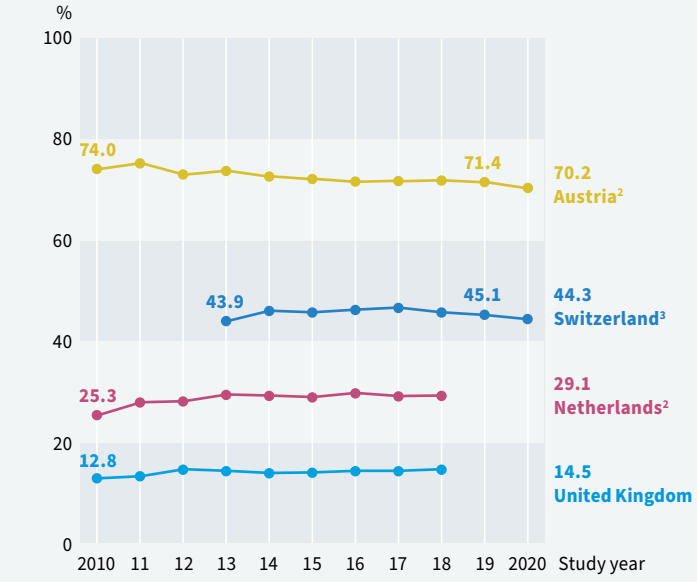
3 Data do not specify members of university administration.

E1.3 German professors at universities in selected host countries, since 2010



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 2010



Share in %

Sources: data provided by the respective statistical offices; DZHW calculations

1.2 Doctoral students

Overall, some 14,000 German doctoral students were recorded at foreign universities in 2019.[1] 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 university, relevant data are only missing for China and Russia. Most German doctoral students were enrolled at universities in Switzerland (2020: around 3,400), Austria (2019: around 2,100), the United Kingdom (2019: around 2,000) and the US (2020: around 1,300). German doctoral students 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 almost two thirds (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 students each, as well as France with around 400 doctoral students. In total, 79% of all German doctoral students abroad are based in these eight countries, while the remaining 21% are spread across a further 26 countries.

> “ 43% of all German students in Australia are studying for a doctorate.

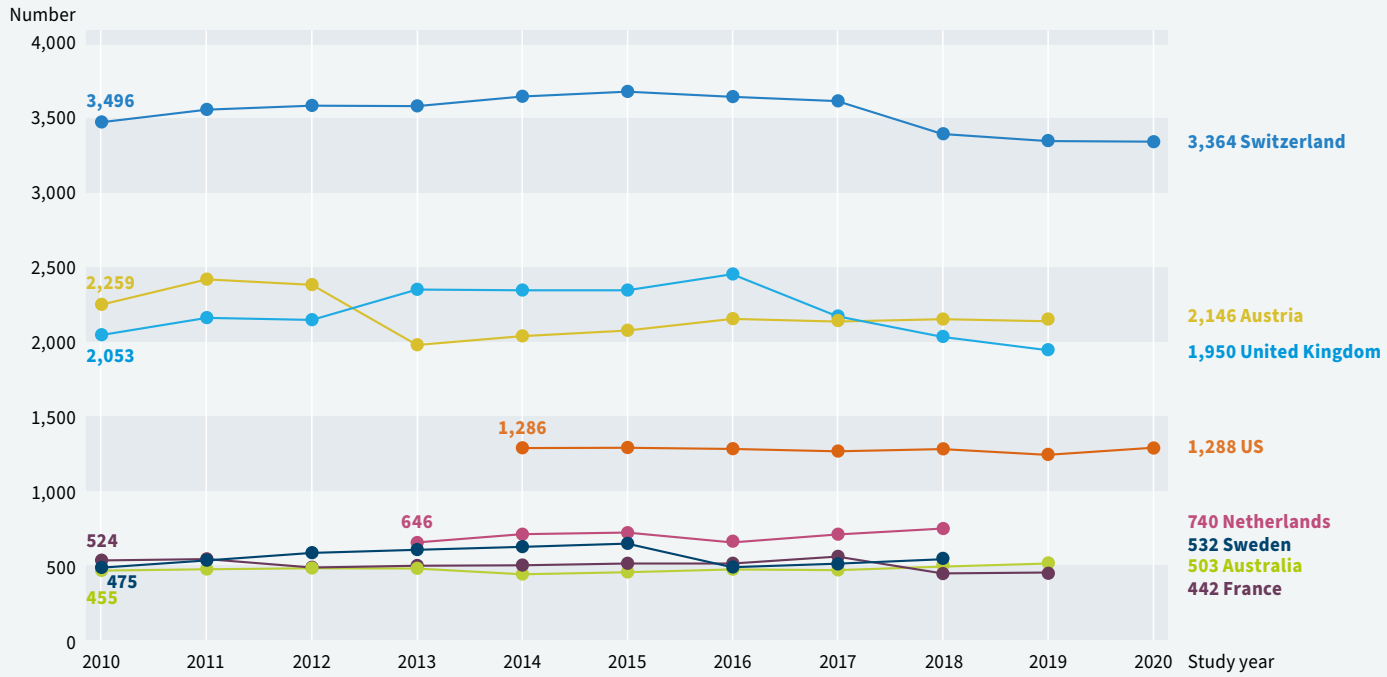
Broken down by region, the overwhelming majority (78%) of doctoral students from Germany conduct research in Western Europe, with 11% in North America, 6% in Central and South Eastern Europe and 4% in Australia and Oceania. The regional distribution of German doctoral students abroad thus closely resembles 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. 62/63). It can therefore be assumed that a fair number of German students who are awarded a master's degree abroad remain at the 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 their 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 there (see Fig. C1.6 on p. 65).

E1.5 German doctoral students at universities in selected host countries[1]

Host countries	Reference year	Number	Share of all doctoral students in %	Share of all German students in the country in %
			Share in %	
Switzerland	2020	3,364	24.2	28.2
Austria	2019	2,146	15.4	7.1
United Kingdom	2019	1,950	14.0	13.8
US	2020	1,288	9.2	14.4
Netherlands	2018	740	5.3	3.5
Sweden	2018	532	3.8	26.5
Australia	2019	503	3.6	43.1
France	2019	442	3.2	9.4
Denmark	2018	371	2.7	12.4
Spain	2019	361	2.6	18.4
Canada	2018	261	1.9	24.5
Czech Republic	2020	243	1.7	25.5
Norway	2019	194	1.4	29.9
Ireland	2019	194	1.4	29.9
Slovakia	2019	171	1.2	21.9
Italy	2019	160	1.2	10.4
Finland	2019	150	1.1	21.6
New Zealand	2020	104	0.7	39.8
Turkey	2019	91	0.7	2.3
Japan	2018	82	0.6	10.0
Portugal	2019	77	0.6	4.3
Romania	2020	75	0.5	4.4
Hungary	2020	73	0.5	2.1
Liechtenstein	2019	71	0.5	35.1
Bulgaria	2020	54	0.4	3.4
Israel	2019	54	0.4	23.1
Poland	2019	42	0.3	2.5
Belgium (Flem.)	2019	40	0.3	9.5
Latvia	2020	37	0.3	3.6
Island	2019	27	0.2	21.3
Estonia	2019	24	0.2	32.9
Brazil	2019	18	0.1	6.8
Greece	2018	14	0.1	1.3
Lithuania	2020	8	0.1	1.6
Total		**13,961**	**100**	**10.1**

Sources: Federal Statistical Office, German students abroad; 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 2010[1]



Sources: Federal Statistical Office, German students abroad; US Department of Homeland Security, SEVIS data (Student and Exchange Visitor Information System)

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 (43%) is in first place, followed by New Zealand (40%), Liechtenstein (35%), Estonia (33%) and Norway and Ireland (30% each). 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 students, however. A fairly steep decline can be observed in German doctoral students in Slovakia (–15%). By contrast, Bulgaria (+69%), Ireland (+60%), Poland (+56%) and the Netherlands (+31%) reported considerable 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 is striking that, since 2016, there has been a significant drop in the United Kingdom (–21%) in particular, as well as in France (–12%) and in Switzerland (–8%). Conversely, the number of German doctoral students has gone up in Australia during this period (+9%). In all countries for which data have been available since 2010, the number of German doctoral students has maintained a relatively high level of continuity throughout this period, 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.

Footnote

1 The numbers of German students abroad were primarily taken from the current survey of “Deutsche Studierende im Ausland” conducted by the 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, Denmark, Czech Republic, Slovakia, Brazil and Israel). In some cases, the data for the various host countries refer to different years.

1.3 Doctoral students on temporary doctoral-related visits abroad

Just as for students, there are two types of international mobility for doctoral students: firstly, spending their whole doctoral period abroad, including the examination process and, secondly, 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. 102/103). However, representative surveys are still needed to obtain information on temporary mobility. According to the National Academics Panel Study (Nacaps) conducted by the DZHW, 28% of all doctoral students embarking on their doctorate in 2017/18 had undertaken at least one doctoral-related temporary visit abroad by the second quarter of 2019. The study found that 17% of all doctoral students in this cohort had spent time abroad once with regard to their doctorate, 5% twice, 3% three times and a further 3% had completed at least four visits abroad.

There are clear variations across the different subject groups. Above-average shares of doctoral students with doctoral-related experience abroad can be found in the humanities (38%) and in art and art history (37%). In each subject group, 16% of all doctoral students had even undertaken several visits abroad in relation to their doctorate. Among other reasons, this is due to the fact that many doctoral topics in the humanities, especially in the subjects of linguistics and literature, refer to other cultures. This thematic orientation is also a characteristic feature of doctorates in art history. Above-average proportions of doctoral students spending doctoral-related visits abroad are also encountered in mathematics and natural sciences (31%) as well as law, economics and social sciences (29%). In contrast, a relatively small percentage of doctoral students with experience abroad are recorded in the medicine and health sciences subject group (12%), with just 3% completing more than one stays abroad. Doctorates in medical subjects are typically undertaken in parallel with specialised medical training, which limits the opportunities for doctoral visits abroad.

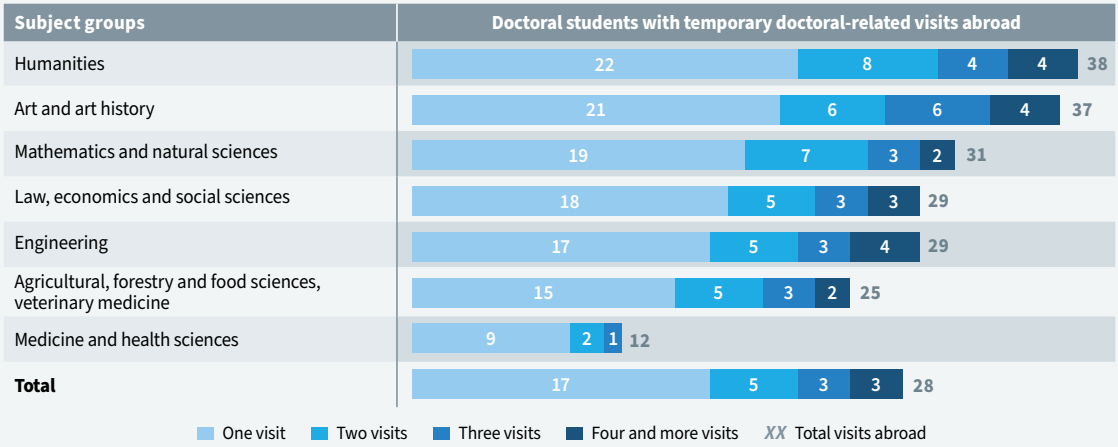
Methodology

Data on the temporary international mobility of doctoral students at German universities were collected during the DZHW's National Academics Panel Study (Nacaps). They refer to doctoral students who embarked on their doctoral studies in 2017/18. Of this cohort, approximately 22,500 doctoral students from 57 German universities that are entitled to confer doctorates took part in this national survey. The data yield no information about the overall scope of doctorate-related international mobility at the end of the doctoral phase but refer to the period from 2017 until the survey in 2019.

Over half the temporary visits abroad take place in Western Europe (53%). Other major host regions are North America (15%), Asia and Pacific (13%), plus Central and South Eastern Europe (8%). However, the world regions of Latin America (4%), North Africa and Middle East (3%), Sub-Saharan Africa (3%), and Eastern Europe and Central Asia (2%) do not figure prominently. The key host country for doctoral students is the US, where 13% of all doctoral-related temporary visits take place. Other notable host countries are the United Kingdom (8%), France (7%), Italy (6%), Austria, Switzerland and China (5% each), with the Netherlands and Spain (4% each) bringing up the rear.

Structured doctoral programmes are particularly effective at promoting temporary visits abroad. While the share of doctoral students in the 2017/18 cohort with doctoral-related experience abroad is 27% among those who are not part of such structured doctoral programmes, the figure rises to 31% among those working on doctorates within structured programmes and is as high as 33% among associate members of structured programmes. In addition to doctorates within

E1.7 Doctoral students in the 2017/18[2] cohort at German universities with temporary doctoral-related visits abroad, by subject group and share of visits abroad, in 2019



Source: DZHW, National Academics Panel Study (Nacaps), 2019

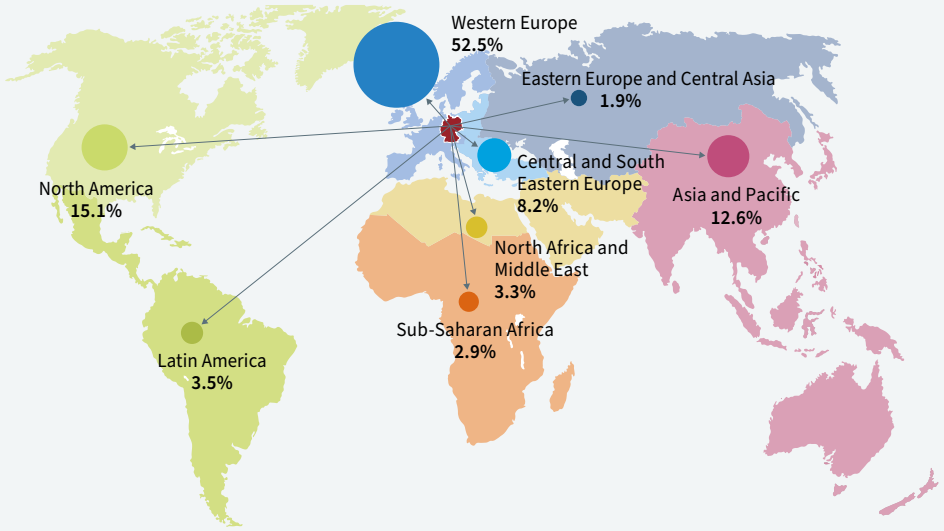
Footnotes

1 See also Netz/Hampel (2019).

2 Doctoral students who embarked on their doctoral studies in the 2017/18 academic year.

3 Deviations from 100 % are due to rounding.

E1.8 Temporary doctoral-related visits abroad undertaken by doctoral students in the 2017/18[2] cohort at German universities, by host region and key host countries, in 2019



Host countries	Share in %
US	12.7
United Kingdom	8.1
France	7.2
Italy	5.9
Austria	5.4
Switzerland	5.0
China	4.9
Netherlands	4.0
Spain	3.9
Canada	2.5
Japan	2.2
Belgium	2.2
Denmark	2.2
Sweden	2.0
Poland	2.0
Portugal	1.6
Australia	1.5
Czech Republic	1.5
Greece	1.4
Israel	1.3

Source: DZHW, National Academics Panel Study (Nacaps), 2019

structured programmes and being a part of certain disciplines, other factors that encourage mobility include an international working environment and concrete support for research visits, along with having spent time abroad while studying.

Doctoral students pursue various goals when undertaking their doctoral-related visits abroad. Approximately 50% of visits were purely for the purposes of research, 8% were also intended to continue professional development and a further 2% included teaching duties abroad. 12% of the doctoral-related visits abroad focused entirely on further training objectives, while 2% exclusively entailed teaching duties. Large shares of visits that were dedicated to research only can be observed in the humanities and in art and art history (62% each). Further education visits figured prominently in medicine and health sciences and in agricultural, forestry and food sciences (26% and 20% respectively). The combination of research and continuing professional development is most frequently encountered in mathematics and natural sciences (11%).

E1.9 Types of doctoral-related visits abroad undertaken by doctoral students in the 2017/18[2] cohort at German universities, by subject group, in 2019[3]

Subject groups	Types of doctoral-related visits abroad in %					
Humanities	62	6	2	7	4	20
Law, economics and social sciences	49	12	4	7	3	26
Mathematics and natural sciences	50	12	1	11	1	25
Medicine and health sciences	29	26	3	6	1	34
Agricultural, forestry and food sciences, veterinary medicine	44	20	1	5	2	28
Engineering	46	11	1	7	2	33
Art and art history	62	6	2	9	1	20
Total	50	12	2	8	2	26

Research only · Further education only · Teaching only · Research and further education · Research and teaching · Other

Source: DZHW, National Academics Panel Study (Nacaps), 2022

1.4 Doctoral students with temporary doctoral-related visits abroad – the benefits of and obstacles to visits abroad

The advantages of temporary doctoral-related visits abroad are not confined to new scientific findings and cultural experience. Instead, after spending time abroad, doctoral students stand to gain in ways that are a great deal more diverse. This is corroborated by respondents' testimony to the benefits of these visits abroad in the DZHW's National Academics Panel Study (Nacaps). This section begins with evaluations submitted by doctoral students who started their doctorate in 2017/18 and have already completed their visits abroad. As their opinions are based on actual experience, they can be regarded as the very real benefits of time spent abroad.

> "Being separated from their partner and financial difficulties are the greatest obstacles to undertaking doctoral-related visits abroad.

In each case, over 70% of the doctoral students indicated that the visits helped improve their research skills (74%) and were instrumental in establishing partnerships with academics and researchers outside Germany (72%). Thus, the doctoral students chiefly associated the period abroad with new scientific findings. Only about one tenth saw no advantage at all in either case. However, over half of doctoral students with experience abroad agreed that the improvement in their language skills (57%) and career prospects (55%) was crucial. Thus, it can be concluded that, for the majority of internationally mobile doctoral students, the effects of their visit abroad go beyond merely earning their doctorate.

44% view visits abroad as an integral part of the typical requirements in their subject, yet this consideration is irrelevant for 32%. Only a minority of doctoral students with experience abroad believe that visits to research institutes in other countries open more doors to interesting jobs. At the same time, they see greater opportunities for attractive positions within (38%) rather than outside academia (23%). Moreover, visits abroad tend to be rarely associated with access to international funding (19%) or the prospect of higher earnings (18%).

Among doctoral students who have not (yet) completed a doctorate-related visit abroad, these considerations of its usefulness may be interpreted as expectations. Therefore, their evaluations differ – quite substantially, in some cases – from those of doctoral students with experience abroad. Although they are somewhat less likely to place

E1.10 Benefits of temporary doctoral-related visits abroad according to doctoral students in the 2017/18 cohort[1], with and without doctoral-related experience abroad, at German universities[2]

Beneficial aspects	Doctoral students with experience abroad in %			Doctoral students without experience abroad in %		
Improved research skills	74	16	10	67	20	13
Collaboration with academics and researchers outside Germany	72	16	12	78	15	8
Improved language skills	57	14	29	78	12	10
Improved career prospects	55	22	22	66	21	13
Meeting typical subject requirements	44	24	32	33	28	40
Access to attractive positions in academia	38	24	38	57	24	19
Access to attractive positions outside academia	23	21	56	41	29	29
Access to international/foreign funding	19	22	59	35	32	34
The prospect of higher earnings	18	20	63	33	29	38

Very beneficial/rather beneficial | Somewhat beneficial | Rather not beneficial/Not beneficial at all

Figures in %, answers on a 5-point scale from 1 = Very beneficial to 5 = Not beneficial at all, values 1 + 2 and 4 + 5 combined

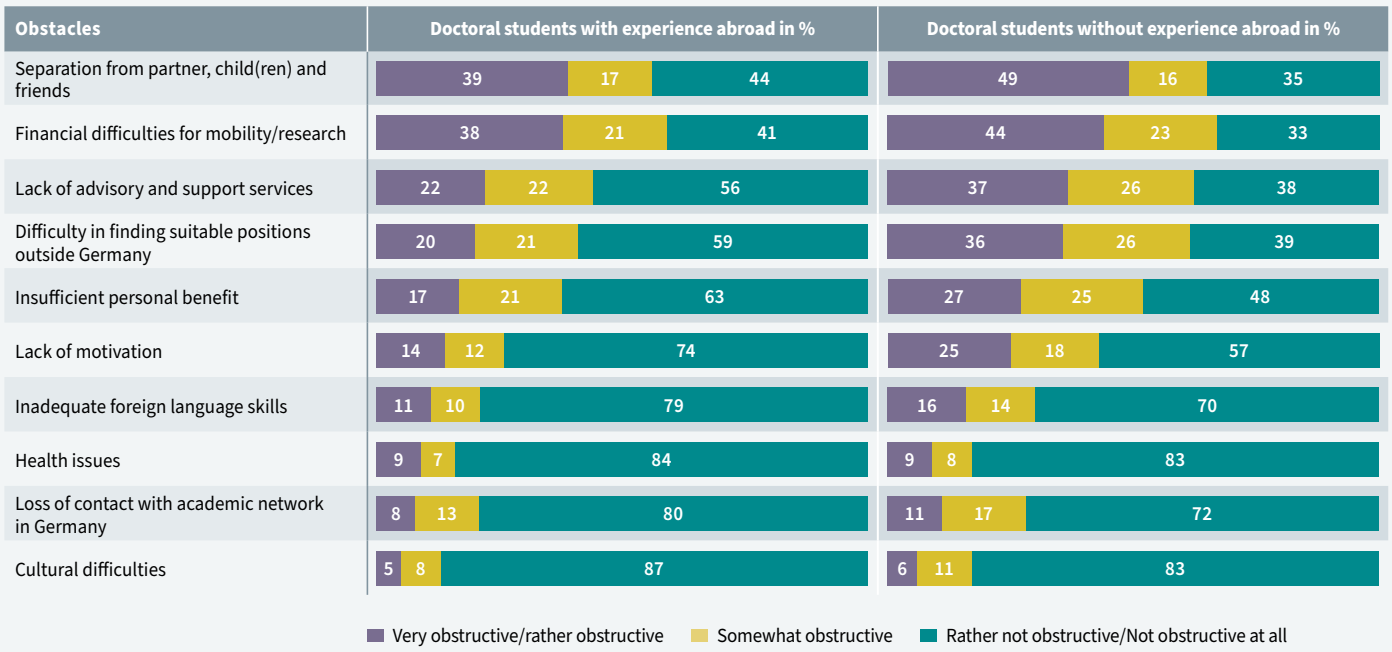
Source: DZHW, National Academics Panel Study (Nacaps), 2022

Footnotes

1 Doctoral students who embarked on their doctoral studies in the 2017/18 academic year.

2 Deviations from 100 % are due to rounding.

E1.11 Obstacles to temporary doctoral-related visits abroad according to doctoral students in the 2017/18[1] cohort, with and without doctoral-related experience abroad, at German universities[2]



Figures in %, answers on a 5-point scale from 1 = Very obstructive to 5 = Not obstructive at all, values 1 + 2 and 4 + 5 combined

Source: DZHW, National Academics Panel Study (Nacaps), 2022

emphasis on acquiring research expertise, they evidently regard improving their language skills (78%) and gaining easier access to attractive positions within (57%) and outside academia (41%) as a great deal more important. Being granted international funding (35%) and the prospect of higher earnings (33%) also define the expectations of a visit abroad to a larger extent. By contrast, the proportion of doctoral students aiming to meet the typical requirements in their subject by spending time abroad is lower (33%).

Besides this utilitarian thinking that motivates students to undertake doctoral-related visits abroad, there is a plethora of aspects that preclude visits abroad while studying for a doctorate. In this regard, the evaluations submitted by doctoral students who started their doctorate in 2017/18 and have not yet spent time abroad are particularly interesting. They reveal which problems have to be overcome first and foremost before they can spend time at a foreign institute. Half of doctoral students indicate that one obstacle to their international mobility is being separated from their partners, child(ren) or friends (49%). Anticipated difficulties in financing the visit or the associated research also play a major role (44%). In each case, roughly one third of the doctoral students assume that there will be a lack of advisory and support services or that they will have problems finding a position in their intended research field outside Germany (36% each). 27% presume that the personal benefit of a visit abroad would be insufficient and 25% cite a lack of motivation.

Other obstacles, such as inadequate foreign language skills (16%), health issues (9%) and cultural difficulties (6%) are of little account. 11% are concerned about losing contact with their academic network in Germany.

Doctoral students who have returned from a visit abroad consider these difficulties less important when contemplating a second stay abroad. This suggests that their experience of previous visits is more likely to be positive than it is presumed to be by doctoral students who are not yet internationally mobile. Their perception diverges widely regarding the difficulty of finding suitable positions abroad and the lack of advisory and support services. A mere fifth of doctoral students with experience abroad (20% and 22% respectively) actually encounter these problems, yet they are anticipated by more than one third of non-mobile doctoral students (36% each). Other striking contrasts can be observed in terms of their motivation, presumed lack of benefit and concerns at being separated from their partner, child(ren) and friends. Meanwhile, the differences in problems of financing visits are relatively minor.

2.1 Mobility trends, funding organisations and funded groups

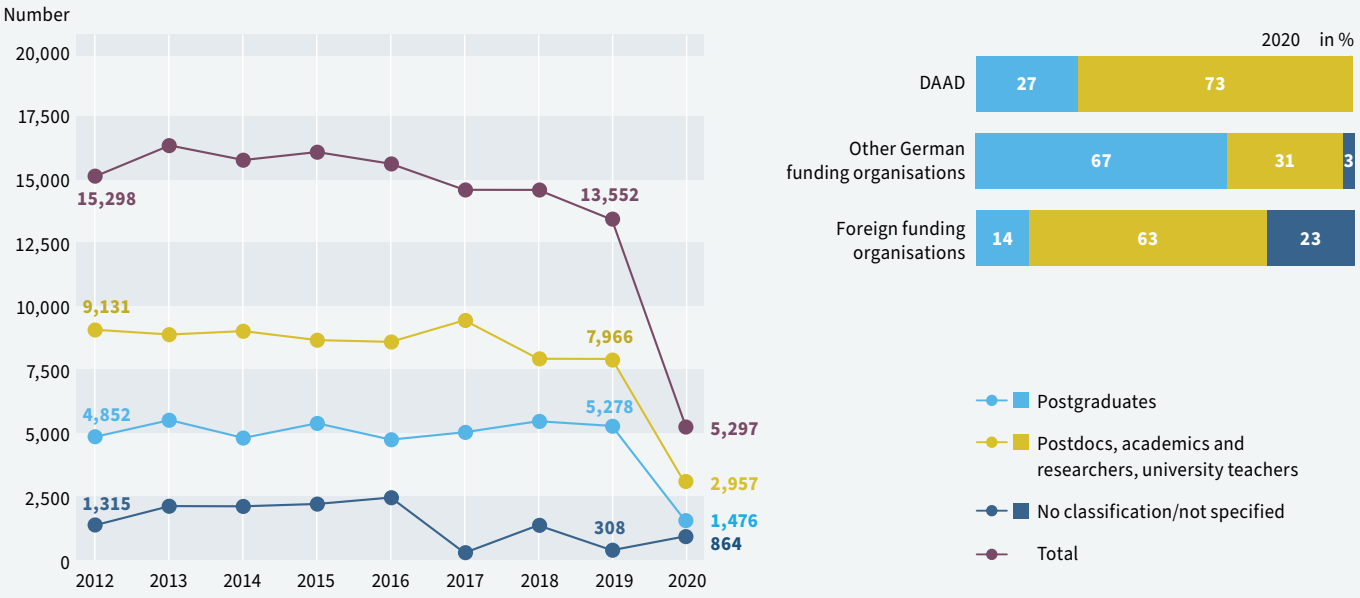
In 2020, domestic and foreign organisations funded a total of around 5,300 visits by German guest researchers abroad.[1] German guest researchers refer to individuals working in Germany as academics and researchers, but who receive financial support to spend a limited period abroad to teach and research 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 funded 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 and the Marie Skłodowska-Curie actions of the EU.

> “In 2020, 61% fewer visits abroad by German guest researchers were funded than the year before.

The number of funded visits abroad by German guest researchers is not just significantly lower than the corresponding number of grants awarded to foreign guest researchers in Germany (see pp. 92/93), it also traces an even greater decline in 2020, the first year of the pandemic. Compared to the previous year, a total of 8,300 or 61% fewer visits abroad by German academics and researchers were funded in 2020. Global mobility restrictions evidently made travelling 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 lower number of grants awarded to German academics and researchers is due to the incomplete records of both German and foreign funding organisations, in particular. Secondly, the data for the German Research Foundation (DFG) only include funded 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 (62%). However, the DAAD is also one of the organisations whose funding activities dropped dramatically compared to the previous year (–69%). The share of visits funded by the DFG came to roughly 15%, whereby the number of grants only fell by 9%. Another 20% of visits abroad were sponsored by smaller German funding organisations and 3% or thereabouts by the foreign organisations included here. Some of these organisations suffered a massive downturn in their funding activities, such as the Hans Böckler Foundation (–77%) and the Friedrich Ebert Foundation (–75%), while others only saw minor decreases (e.g. the Studienstiftung des deutschen Volkes: –3% or CERN fellowships: –5%). 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, it was still

E2.1 German guest researchers abroad, by scholarship group, since 2012[1]



Sources: data provided by funding organisations; DZHW survey

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 56% of all recipients of funding are academics and researchers with doctorates.

56% of all funded German guest researchers were academics and researchers with doctorates, including professors and experienced researchers, such as heads of research groups. Another 28% of the 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, 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 academics and researchers with doctorates to German universities and research institutes (73%). 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 (67%).

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.

4 Figure estimated.

E2.2 German guest researchers abroad, by funding organisation, in 2020

Funding organisations	Number
Key German funding organisations	
German Academic Exchange Service[1]	3,269
German Research Foundation[3]	805
Other German funding organisations	
Max Weber Foundation – German humanities institutes abroad	200
Alexander von Humboldt Foundation	196
Studienstiftung des deutschen Volkes	158
Gerda Henkel Foundation[4]	138
CERN fellowships	90
Hans Böckler Foundation	44
Cusanuswerk – Bischöfliche Studienförderung	39
Boehringer Ingelheim Fonds	34
Leopoldina – the German National Academy of Sciences	30
Heinrich-Böll-Stiftung	29
Friedrich Ebert Foundation	26
German National Committee of the Lutheran World Federation/Bread for the World	25
Fritz Thyssen Foundation	21
Rosa Luxemburg Foundation	20
Joachim Herz Foundation	5
Heinrich Hertz-Stiftung - MKW NRW	5
Avicenna-Studienwerk	4
ZEIT-Stiftung Ebelin und Gerd Bucerius	4
Deutsche Herzstiftung	4
Baden-Württemberg Stiftung	1
Foreign funding organisations and -programmes	
Japan Society for the Promotion of Science	37
EU Marie Skłodowska-Curie actions	76
German-American Fulbright Commission	30
The Austrian Science Fund (FWF)	7
Total	**5,297**

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 2020 were supported by the domestic and foreign funding organisations included in this report. 30% of these funded visits were to Western European countries. Other major host regions are North America (21%) and Asia and Pacific (13%). These three host regions alone thus account for around two thirds (64%) of all visits by German guest researchers. By contrast, the shares of Central and South Eastern Europe (11%), North Africa and Middle East (9%), Central and South Eastern Europe (6%), Latin America and Sub-Saharan Africa (5% each) are significantly lower. There are marked differences compared to the regions of origin of foreign guest researchers in Germany (see pp. 94/95). Only Central and South Eastern Europe and Sub-Saharan Africa are of similar importance in 2020, both as host regions and as regions of origin.

> “The US, the United Kingdom and France are the key countries for funded visits undertaken by German guest researchers.

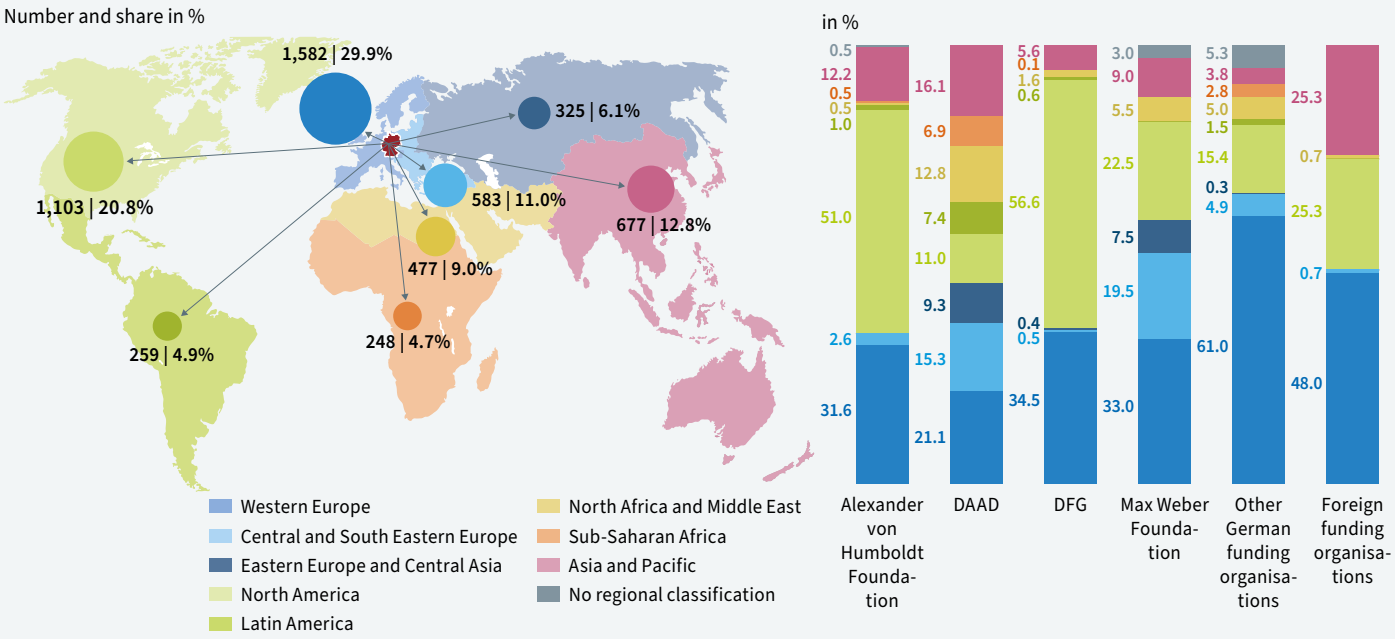
Otherwise, German academics and researchers tended to prefer Western Europe and, above all, North America as host regions, while a higher proportion of foreign academics and researchers came to Germany from Asia and Pacific, Latin America, and North Africa and Middle East. This focus on Western Europe 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 various funding organisations are characterised by their different regional emphases. The German Research Foundation (DFG) and the Alexander von Humboldt Foundation (AvH) reported particularly high shares of sponsored guest visits to North America (57% and 51% respectively). The smaller German funding organisations (61%) and the Max Weber Foundation (33%) primarily supported visits to Western European countries. 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 and France. The US alone accounts for 19% of all funded guest visits, the United Kingdom for 8% and France for 5%. Owing to the pandemic, there was a sharp decline in the number of funded visits abroad in all three countries, falling by 60% in France, by 52% in the US and by 44% in the United Kingdom. Other key host countries saw an even greater collapse, namely Japan (–78%), Russia (–67%), Canada (–65%) and Australia (–62%).

The two largest groups of German guest researchers abroad, with shares of 25% and 24% respectively, are mathematics and natural sciences, and the humanities, followed by law, economics and social sciences at 17%. Engineering (10%), medicine and health sciences

E2.3 German guest researchers abroad, by host region and funding organisation, in 2020[1, 2, 3]



Sources: data provided by funding organisations; DZHW survey

(9%), art and art history (3%), and agricultural, forestry and food sciences (1%) play a subordinate role. Compared to international guest researchers in Germany, where roughly half are categorised as working in mathematical and natural sciences subjects (see pp. 94/95), German guest researchers are more evenly distributed across the various areas of teaching and research.

> “84% of the German guest researchers sponsored by the Max Weber Foundation are from the humanities.

Clear distinctions can be drawn between the various funding organisations in terms of the specialist areas of the funded academics and researchers. At the Max Weber Foundation, the proportion of humanities scholars, 84%, was correspondingly high, given the profile of the associated institutes. By contrast, with shares of 67% and 49% respectively, the AvH and the DFG were much more likely to fund academics and researchers in mathematics and natural sciences. On the other hand, the visits funded by the DAAD are balanced more evenly across the subject groups.

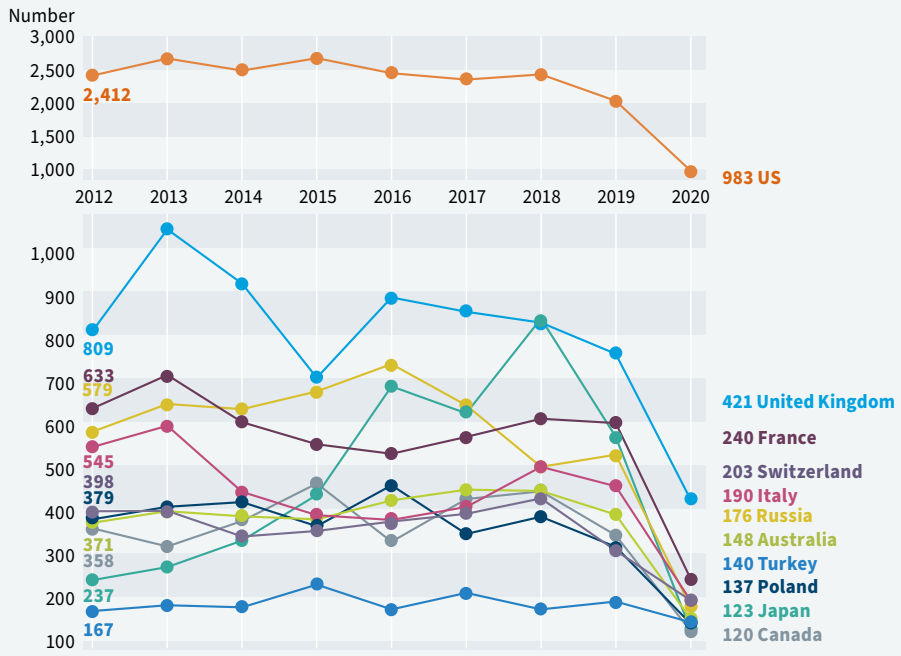
Footnotes

1 With the exception of EU funding under the Marie Skłodowska-Curie actions, 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: 5,297 (including 43 guest researchers who cannot be assigned to any host region).

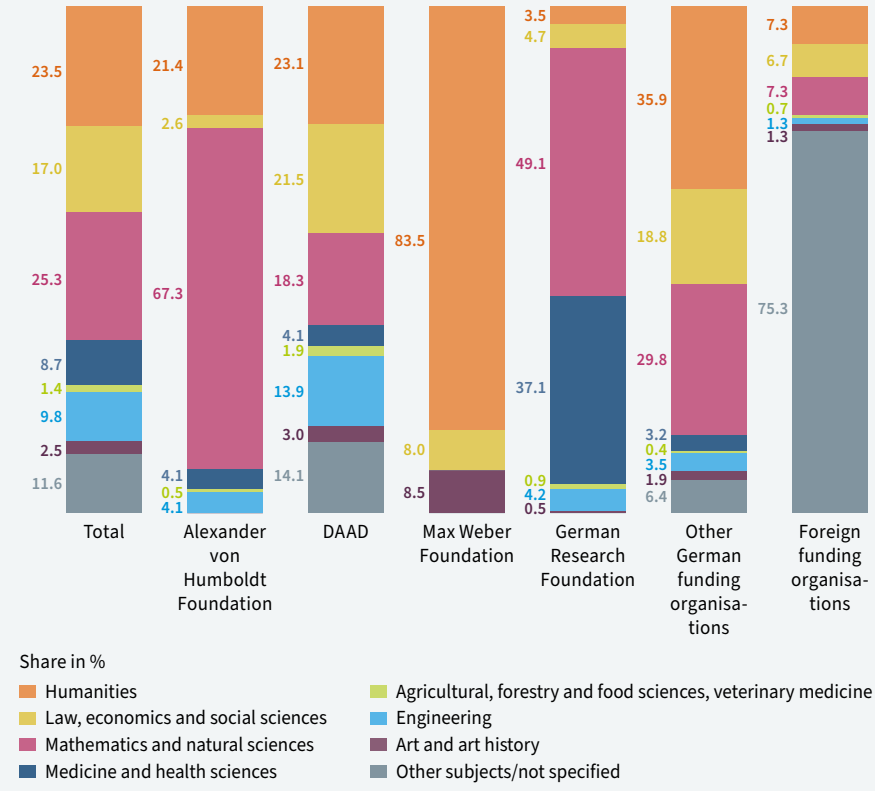
3 Deviations from 100% are due to rounding.

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 2020



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. The 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 country of assignment. Foreign academic staff at universities in the sending country can also participate in the programme. It is therefore possible for some Erasmus guest lecturers from Germany to be foreign nationals, although this percentage is likely to be very small.

In the 2020 Erasmus year[1], a total of around 1,200 Erasmus guest lecturers from Germany spent a period teaching abroad with Erasmus funding. Compared to previous years, their number therefore plummeted by 61%. Global travel restrictions in the wake of Covid-19 have evidently had an enormous impact on the relatively brief visits abroad undertaken by Erasmus guest lecturers.

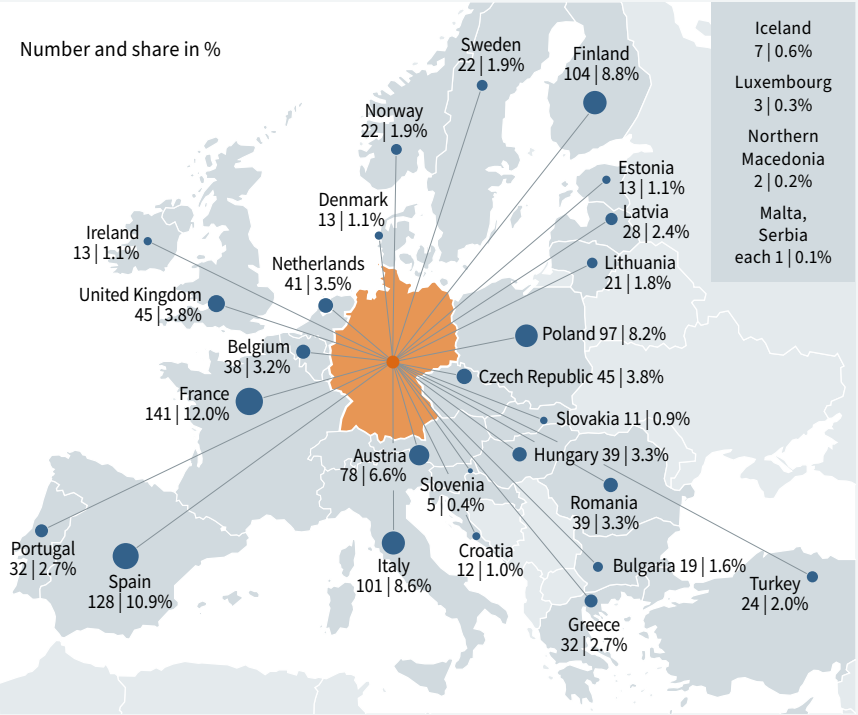
In 2020, most Erasmus guest lecturers spent time in countries in Western Europe (24%) and Central and Eastern Europe (23%), while 22% went to Southern Europe and 14% to Northern Europe. 10% of visits were to South Eastern Europe and 7% to Central Western Europe. The significance of the individual host regions and countries is probably connected to the prevailing travel regulations in each case.

The key host countries for Erasmus guest lecturers from Germany in 2020 were France and Spain, which account for 12% and 11% respectively. Finland and Italy are in third and fourth place with 9% each. Poland (8%), Austria (7%), the United Kingdom and the Czech Republic (4% each) continued to figure prominently.

> "In 2020, France and Spain were the key host countries for Erasmus guest lecturers from Germany.

With a share of 34%, most German Erasmus guest lecturers abroad are found in the arts and humanities.[2] 21% represent business, administration and law, while a further 13% are domiciled in the subject group engineering, manufacturing and construction. Social sciences, journalism and information account for 8%, natural sciences, mathematics and statistics for 7%, and health and welfare for 5%. Information and communication technologies (4%), services (2%), and agriculture, forestry, fisheries and veterinary (1%) play a subordinate role. Compared to foreign Erasmus guest lecturers who come to

E2.6 Erasmus guest lecturers from Germany, by host region and host country, in 2020



Host region	Number	Share in %
Western Europe	278	23.5
Central Eastern Europe	272	23.1
Southern Europe	262	22.3
Northern Europe	168	14.3
South Eastern Europe	116	9.9
Central Western Europe	81	6.9
Total	**1,177**	**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. 2020 = 1 June 2019 to 31 May 2021.

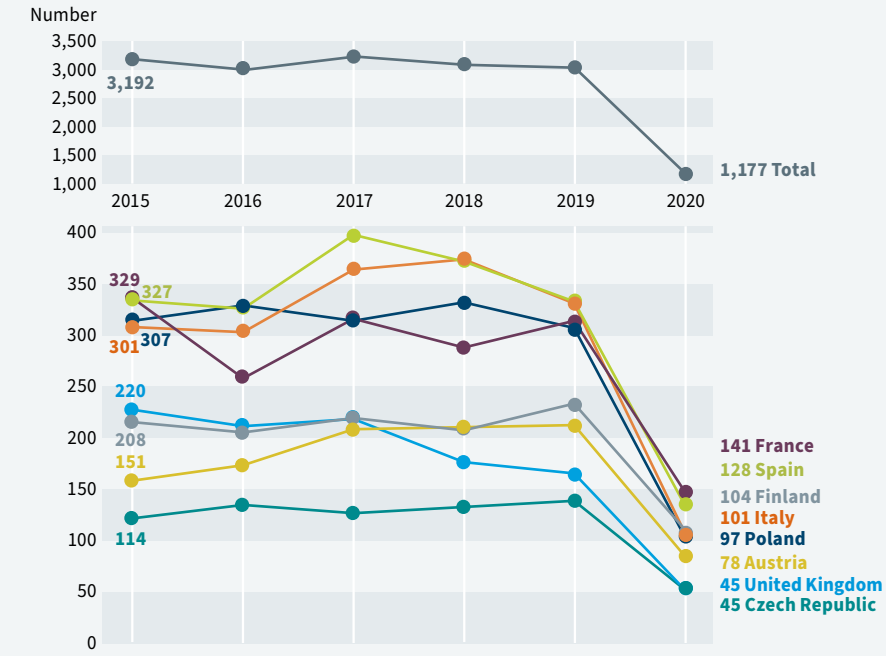
2 The distribution of Erasmus guest lecturers across the different subject groups is only available in the ISCED classification system.

Germany for a temporary visit, there are no significant differences in the distribution of subject groups (see pp. 98/99). 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.

> “On average, Erasmus guest lecturers from Germany spent eleven days in Ireland, but just four days in Denmark.

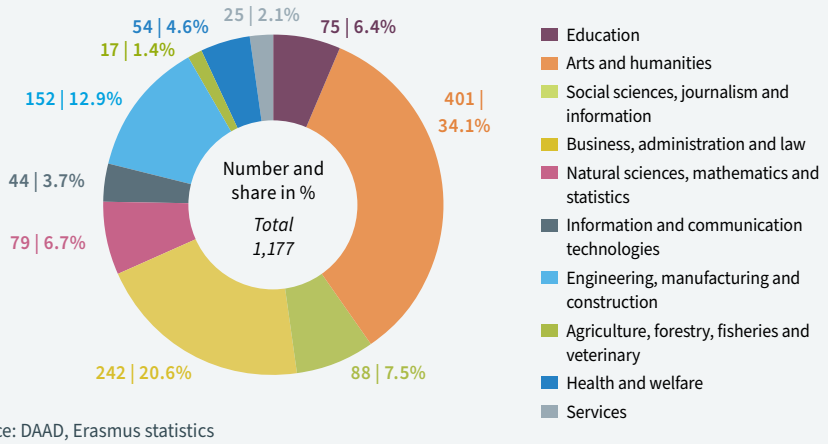
Although Erasmus guest lectureships can last up to two months, lecturers from Germany spend an average of just 5.9 days abroad. This figure is slightly up year-on-year. There are some significant differences between individual host countries. Erasmus guest lecturers spent an average of between eight and eleven days in Ireland, Serbia, Greece, Turkey, Portugal and Spain, but an average of just four days in Denmark, Slovenia, Belgium, the United Kingdom and Latvia.

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 2020[2]



Source: DAAD, Erasmus statistics

E2.9 Erasmus guest lecturers from Germany, by host country and average visit duration, in 2020

Host country	Duration Ø Days
Ireland	11.3
Serbia	9.0
Greece	8.8
Turkey	8.5
Portugal	8.1
Spain	7.6
Iceland	7.1
Luxembourg	7.0
Croatia	6.8
Estonia	6.5
Lithuania	6.5

Host country	Duration Ø Days
Romania	6.5
Italy	6.4
Bulgaria	6.0
Czech Republic	6.0
Austria	5.8
Sweden	5.7
Norway	5.6
Netherlands	5.3
Hungary	5.3
Malta	5.0
Finland	4.9

Host country	Duration Ø Days
Poland	4.9
France	4.6
Northern Macedonia	4.5
Slovakia	4.5
Latvia	4.4
United Kingdom	4.4
Belgium	4.3
Slovenia	4.2
Denmark	3.5
Total	**5.9**

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 tied 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 in higher education statistics. By comparison, 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 explains 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 Germany. 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.

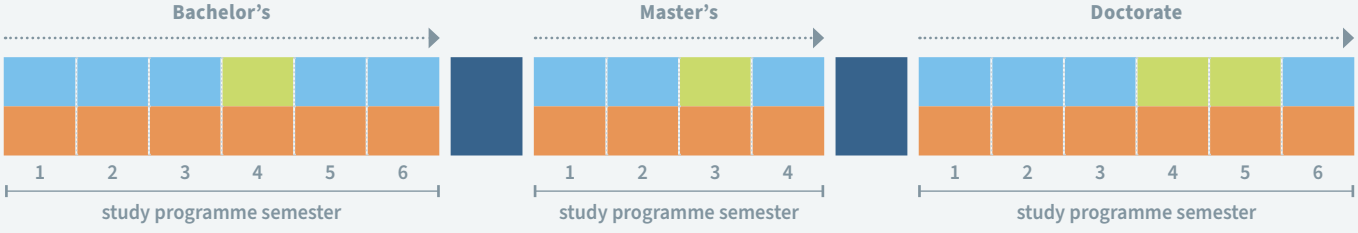
In line with the distinction between credit and degree mobility, *Wissenschaft weltoffen* distinguishes between temporary study-related visits abroad as part of a degree programme, where the degree is awarded in Germany, and degree-related international mobility, where visits abroad are undertaken with 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 the Federal Statistical Office Germany 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

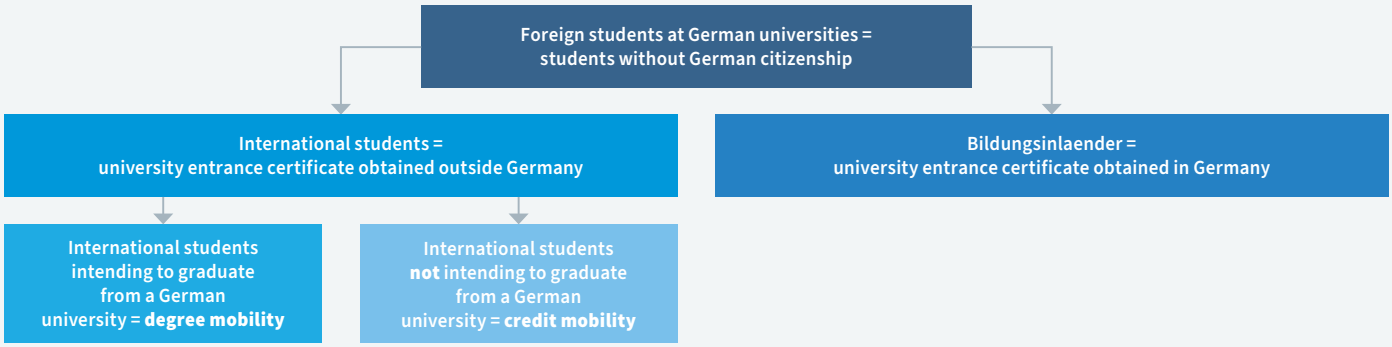
1 Forms of study-related international mobility during (ideal-typical) studies and doctoral studies



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 referred to 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). In addition, 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 point out 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 data 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 Research on Higher Education and Science Studies (DZHW) of the German National Association for Student Affairs (DSW) and, as soon as available, from the new, national "Student Survey in Germany" (Studierendenbefragung in Germany, 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. The data on Erasmus participants from abroad who spend temporary study periods at universities or placement visits in Germany are also analysed.

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 subjects 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). Moreover, 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,

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	Doctoral student statistics	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 major 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

and the 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 the author's institution is documented for each article. By this means, these databases can also be used to analyse the international mobility of academics and researchers as a comparison of the country of location of different articles submitted by authors 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 subjects, 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, all 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, a high degree of international comparability of the data from the different countries can be guaranteed in surveys of academics and researchers that are conducted internationally. 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 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 funded 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 is collected here, but not on their educational and research biographies. A differentiation between international academics, researchers and students 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**, this issue of *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 → 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 2020 academic year are thus the first-year students of the 2020 summer semester and the 2020/21 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.

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 2020 is the total number of graduates in the 2019/20 winter semester and the 2020 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
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.

Study programme semester (Fachsemester)
The term refers to the total number of semesters students have been enrolled in a specific study 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: degree or academic activity with the goal of gaining a doctorate.

University semester (Hochschulsemester)
The term refers to the total number of semesters students have been enrolled at a German university. This includes all → Study programme semesters (Fachsemester) plus any additional semesters spent studying in another programme, e.g. after changing the study programme. It also includes holiday semesters as well as semesters spent studying towards a second degree.

REFERENCES

Barnett, G.A. et al. (2016). The flow of international students from a macro perspective: A network analysis. In: Compare 46(4): 533–559. DOI: https://doi.org/10.1080/03057925.2015.1015965.

Baumeister, R.F./Leary, M.R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. Psychological Bulletin, 117(3), 497–529. DOI: https://doi.org/10.1037/0033-2909.117.3.497.

Bollen, K.A./Hoyle, R.H. (1990). Perceived cohesion: A conceptual and empirical examination. In: Social Forces 69(2): 479–504. DOI: https://doi.org/10.2307/2579670.

Deutscher Akademischer Austauschdienst – DAAD (2021a). Auswertung der DAAD-Schnellumfrage zu Einschreibezahlen der internationalen Studierenden im Wintersemester 2021/22 (20 December 2020). Bonn.

Deutscher Akademischer Austauschdienst – DAAD (2021b). Corona und die Folgen für die internationale Studierendenmobilität in Deutschland: Ergebnisse der zweiten DAAD-Befragung von International Offices und Akademischen Auslandsämtern im Wintersemester 2020/21 (DAAD-Arbeitspapier). Bonn.

Didelon, C./Richard, Y. (2012). The European Union in the flows of international students: Attractiveness and inconsistency. In: International Review of Sociology 22(2): 229–244.

Federal Statistical Office/Statistisches Bundesamt (2021a): Bildung und Kultur, Personal an Hochschulen, 2020. Fachserie 11, Reihe 4.4. Wiesbaden.

Federal Statistical Office/Statistisches Bundesamt (2021b): Bildung und Kultur, Studierende an Hochschulen, Wintersemester 2020/2021. Fachserie 11, Reihe 4.1. Wiesbaden.

Federal Statistical Office/Statistisches Bundesamt (2021c): Bildung und Kultur, Prüfungen an Hochschulen, 2020. Fachserie 11, Reihe 4.2. Wiesbaden.

Federal Statistical Office/Statistisches Bundesamt (2021d): Deutsche Studierende im Ausland, Ergebnisse des Berichtsjahres 2019. Ausgabe 2021. Wiesbaden.

Fox, W.F./Al Shamisi, S. (2014). United Arab Emirates' Education Hub: A Decade of Development. In: J. Knight (ed.): International Education Hubs. Student, Talent, Knowledge- Innovation Models (pp. 43–61). DOI: https://doi.org/10.1007/978-94-007-7025-6_5.

Fredrickson, B.L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. In: American Psychologist 56(3): 218–226. DOI: https://doi.org/10.1037/0003-066X.56.3.218.

Glass, C.R./Westmont, C.M. (2014). Comparative effects of belongingness on the academic success and cross-cultural interactions of domestic and international students. In: International Journal of Intercultural Relations 38: 106–119. DOI: https://doi.org/10.1016/j.ijintrel.2013.04.004.

Institute of International Education – IIE (2021). Fall 2021 International Student Enrollment Snapshot. New York.

Knight, J./McNamara, J. (2017). Transnational education: A classification framework and data collection guidelines. London.

Locks, A.M. et al. (2008). Extending notions of campus climate and diversity to students' transition to college. In: The Review of Higher Education 31(3): 257–285. DOI: https://doi. org/10.1353/rhe.2008.0011.

Lörz, M. et al. (2020). Studieren unter Corona-Bedingungen: Studierende bewerten das erste Digitalsemester. DZHW Brief 5/2020. Hannover. DOI: https://doi. org/10.34878/2020.05.dzhw_brief

Netz, N./Hampel, S. (2019). Welche Rolle spielt der Promotionskontext für die Auslandsmobilität von Promovierenden? In: Beiträge zur Hochschulforschung 41(4): 136–153.

Organization for Economic Co-operation and Development – OECD (2021): Bildung auf einen Blick 2021: OECD-Indikatoren. Paris. DOI: https://doi.org/10.3278/6001821ow.

Pineda, J. et al. (2022). Internationale Studierende in Deutschland zum Studienerfolg begleiten: Ergebnisse und Handlungsempfehlungen aus dem SeSaBa-Projekt. DAAD Studien. Bonn. DOI: https://doi.org/10.46685/DAADStudien.2022.01.

Preiss, B. (2012). Indian student numbers falling. The Sidney Morning Herald. In: https://www.smh.com.au/national/indian-student-numbers-falling-20121213-2bcnq.html (downloaded on 12.07.2022).

Ryan, R.M./Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. In: American Psychologist 55(1): 68–78. DOI: https://doi.org/10.1037/0003-066X.55.1.68.

Shields, R. (2013). Globalization and international Student Mobility: A Network Analysis. In: Comparative Education Review 57(4): 609–936. DOI: https://doi. org/10.1086/671752.

Shields, R. (2016). Reconsidering regionalisation in global higher education: Student mobility spaces of the European Higher Education Area. In: Compare 46(1): 5–23. DOI: https://doi.org/10.1080/03057925.2014.884348.

Westermann, R. et al. (1996). Identifikation und Erfassung von Komponenten der Studienzufriedenheit. In: Psychologie in Erziehung und Unterricht 43(1): 1–22.

Willige, J./Dölle, F. (2021). Internationalität der Promotion in Deutschland. Eine Analyse auf Basis der "National Academics Panel Study" (Nacaps), 1. Welle. DZHW project report. Hannover.

World Health Organization – WHO (1998). Use of well-being measures in primary health care: The DepCare Project Health for All. Target 12. E60246.

Yildirim, H.H. et al. (2021). The importance of a sense of university belonging for the psychological and academic adaptation of international students in Germany. In: Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie 53 (1–2): 15–26. DOI: https://doi.org/10.1026/0049-8637/a000234.

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

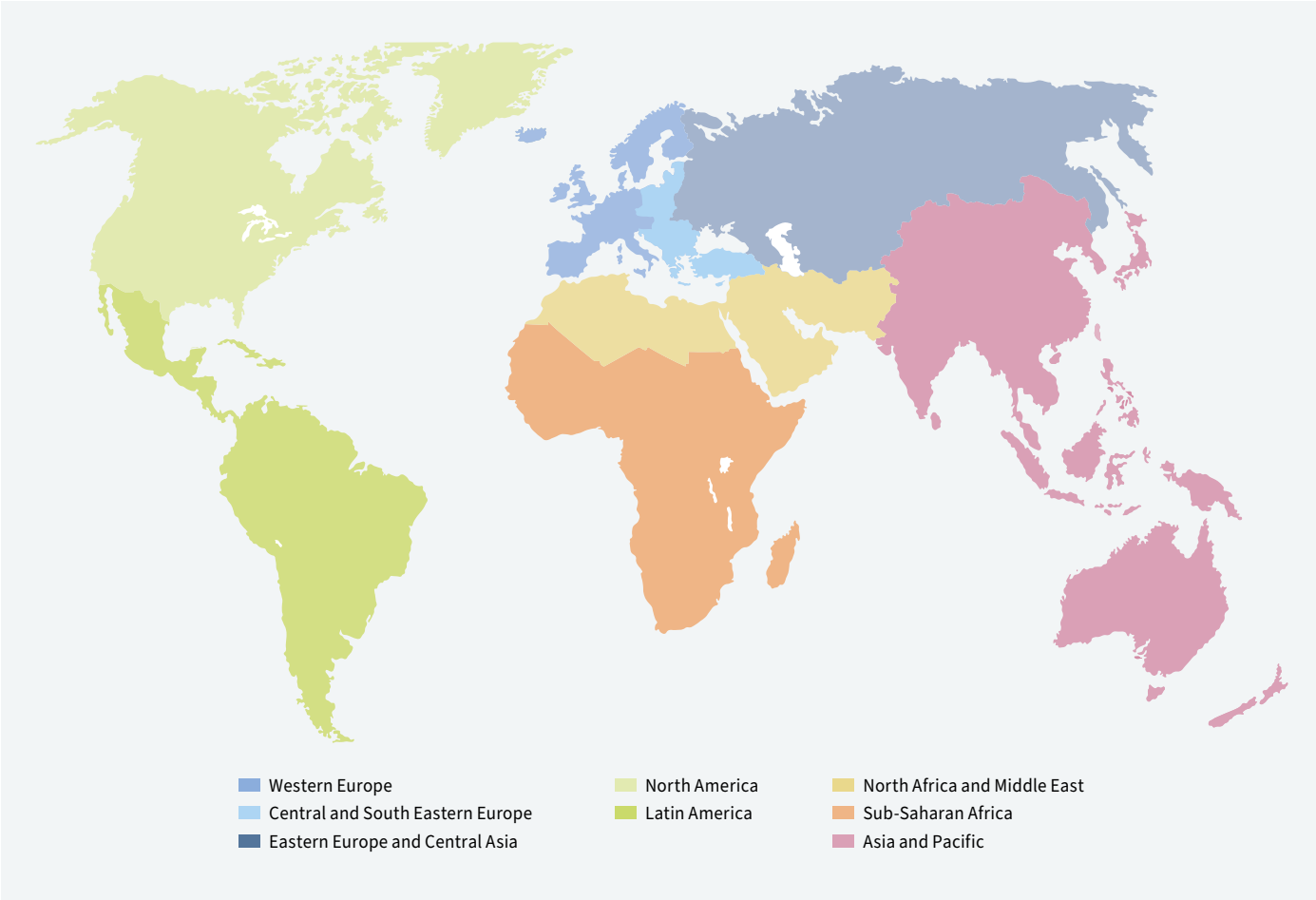
North America
Canada, United States of America (US)

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, Saint Lucia, Saint Vincent and the Grenadines, St. Kitts and Nevis, 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, Eritrea, Equatorial Guinea, 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, Fiji, Hong Kong (CN), India, Indonesia, Japan, Kiribati, Laos, Macao (CN), Malaysia, Maldives, Marshall Islands, (Federal States of) Micronesia, 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 2022

Internationalisation is one of the key prerequisites for the successful development of teaching and research at universities. Therefore, an empirical review of the international status of the German higher education system is carried out on a regular basis to provide a comprehensive overview for politics and society. Against this backdrop, *Wissenschaft weltoffen* has become established as the **central source of information on student, academic and researcher mobility**.

Three **spotlights** in this 22nd edition of *Wissenschaft weltoffen* explore the **repercussions of the global pandemic for the international mobility of students and teachers**. Chapter A traces the development of international student mobility in the key host countries around the world during the first year of the pandemic. Based on the current data, Chapter B presents a special, in-depth analysis for Germany of the evolution of the number of international students in 2021. Chapter C subsequently considers the development in the degree-related international mobility of German students in major host countries during the first year of the pandemic.

Moreover, a fourth spotlight, also part of Chapter B, is devoted to the research project on the "Success and withdrawal of international students in Germany" (SeSaBa), which has since been completed. The spotlight addresses the question of to what extent their sense of belonging to the respective university in Germany determines the **academic success of international students in Germany**. Finally, Chapter D includes a fifth spotlight on the employment situation and quantitative development of international doctoral students at German universities. It is based on the data from the DZHW's National Academics Panel Study (Nacaps).

Once again, this edition of *Wissenschaft weltoffen* has a number of **new features**. For the first time, it presents an analysis of data on the situation regarding fixed-term contracts for international university staff (Chapter D) and on the benefits of visits abroad and obstacles to mobility from the point of view of German doctoral students undertaking temporary doctoral-related visits abroad (Chapter E).

Important additions are the two new functions and contents on the *Wissenschaft weltoffen* **website**, which can be found as usual at www.wissenschaft-weltoffen.de. In future, a **blog** will offer interested readers the opportunity to obtain the latest data on and reviews of the international nature of studies and research and find out about international academic mobility between the publication dates of the major annual editions of *Wissenschaft weltoffen*. Moreover, the website will shortly offer an **interactive tool** for the analysis and evaluation of international student mobility that enables users to customise data representations and data export according to individual specifications and filters.

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. Supported by German universities and their students – in 2021, 242 universities and 106 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's head office is in Bonn. The second office, to which the renowned Artists-in-Berlin Program is attached, is based in Berlin. A worldwide network of 66 foreign offices, 408 lectureships and 81 long-term lecturers and German Studies teachers maintains contact with the most important partner countries on all continents and provides advisory service on the ground.

www.daad.de/en

DZHW

The **German Centre for Higher Education Research and Science Studies (DZHW)** is a research institute funded by the federal and state governments, and based in Hannover and Berlin. As an international competence centre for higher education research and science studies, the DZHW carries out data surveys and analyses, provides research-based services for higher education and science policy and supports the scientific community with a research infrastructure in the field of higher education research and science studies.

Research at the DZHW is theory-based and practice-oriented. One particular strength of the DZHW's research lies in the long-term observation of trends in the higher education and science sector, to some extent from an internationally comparative perspective. Its profile is defined by its studies, unique in Germany, of those qualified to study at university, students and university graduates. Research at the DZHW focuses on the subject areas of educational careers and graduate employment, research system and science dynamics, governance in higher education and science, and methods of empirical social sciences.

www.dzhw.eu/en

klimaneutral gedruckt
www.klima-druck.de
ID-Nr. 2088764
bvdm.

This publication was printed in sustainable ink on 100% recycled paper using a carbon-neutral process (certified with the German "Blue Angel" environmental label).

SPONSORED BY THE

Federal Ministry of Education and Research

Federal Foreign Office

wbv Publikation

ISBN: 978-3-7639-7279-1

wbv.de