

Deutsche  
Forschungsgemeinschaft

## **DFG Funding Activities in the Context of the COVID-19 Pandemic**

**Deutsche Forschungsgemeinschaft e. V.  
German Research Foundation**

Kennedyallee 40 • 53175 Bonn, Germany

Phone: +49 228 885-1

Fax: +49 228 885-2777

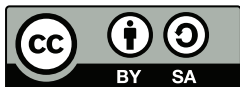
postmaster@dfg.de

www.dfg.de

All DFG publications are compiled with care. Nevertheless, the authors, editors and the DFG do not assume any liability whatsoever, including in relation to this document, for the correctness of any information, references or advice or for any potential printing errors.

The reproduction of product names, trade names or other distinguishing marks in this document does not give rise to the assumption that they may be freely used by anyone. These may in fact be registered trademarks or other legally protected marks, even if they are not specifically designated as such.

The text of this publication is licensed under the Creative Commons Attribution-ShareAlike 4.0 International (CC BY-SA 4.0) Licence. For the full text of the licence, see: <https://creativecommons.org/licenses/by-sa/4.0/legalcode.de>.



Licensing information relating to the image material:

Title graphic: Gerd Altmann/geralt, Pixabay License

<https://pixabay.com/de/service/license/>, via Pixabay

**December 2022**

Contact:

Laura Kaiser

Information Management

[laura.kaiser@dfg.de](mailto:laura.kaiser@dfg.de)

Contributors:

Richard Heidler

Last revised: 05.12.2022

Version 1.0

Download address:

[www.dfg.de/evaluation](http://www.dfg.de/evaluation)

DOI: 10.5281/zenodo.7400267

## Summary

### Increased number of proposal submissions during the pandemic

One characteristic feature of the DFG's funding activities in the two-year period of the pandemic under review was the high level of incoming proposals, which was particularly prominent in 2020 but continued in 2021. The two years of the pandemic, especially in 2020, saw an increase in the productivity of researchers with regard to planning research projects and subsequent proposal submissions to the DFG. Contrary to widespread assumptions that subject-specific restrictions with regard to access to research infrastructure, the conduct of empirical field research and research with test persons etc. might be reflected in reduced numbers of proposal submissions, numbers of proposal submissions in fact increased during the pandemic in most subject areas, or else underwent fluctuations that could not be directly attributed to the pandemic. Subject-related declines in proposal submissions were only very sporadic during the pandemic. With regard to the demographics of applicants, the proportion of women in individual grants programmes continued to rise during the pandemic, mainly in its second year. Funding rates declined during the pandemic, in particular in 2021 – a consequence of the increased number of proposals received in 2020. As a demographic group, women under 42 were affected to a lesser extent than others.

### Processing duration remained stable, increased acceptance rate for panel and on-site reviews

In spite of the increased number of proposal submissions to be processed, there was no increase in processing duration during the pandemic on average. Unlike the return of written reviews, where the declining trend of previous years continued during the pandemic, an increasing acceptance rate was observed for panel and on-site reviews during this period. One factor is likely to have been the fact that in many cases there was a switch to digital or hybrid review formats, thereby facilitating participation.

### Significant drop in demand for mobility-oriented research funding, hardly any change in international research cooperation and international participations

While an increasing number of proposal submissions was also observed in the programme areas that involve the funding of international research collaborations, there was a significant decline in the number of proposal submissions in 2020 and 2021 for programmes dedicated to the funding of international mobility and in-person international researcher exchange – presumably a consequence of the restricted travel opportunities during the pandemic. Across all DFG funding programmes, there were hardly any changes in the submission of proposals for research projects involving researchers from abroad: the proportion remained almost the

same over the pandemic period under review. Nonetheless, there were temporary declines in participation on the part of individual countries such as Canada, the UK and France, especially in 2020, the first year of the pandemic.

**Around €80 million approved for pandemic research – broad thematic fields identified for the first time using text mining methodology to analyse proposal content**

In 2020 and 2021, the DFG approved some €80 million for research into epidemics, pandemics and COVID-19. Pandemic research proposals focused on the two fields of the life sciences and the humanities/social sciences, though pandemic-related research is characterised by numerous cross-references and transitions between subject areas and thematic fields.

## Table of contents

<b>Summary .....</b>	<b>1</b>
<b>Tables .....</b>	<b>4</b>
<b>Figures .....</b>	<b>5</b>
<b>1 Introduction .....</b>	<b>6</b>
<b>2 Development of incoming proposals and proposal decisions .....</b>	<b>7</b>
<b>3 Development of the processing procedure .....</b>	<b>19</b>
<b>4 International research projects and international participations .....</b>	<b>23</b>
<b>5 Funding research into pandemics and COVID-19 .....</b>	<b>28</b>
<b>Data basis and definitions .....</b>	<b>35</b>
<b>Literature .....</b>	<b>40</b>

## Tables

Table 1: Development of incoming proposal submissions by research area, 2017 to 2021 .....	9
Table 2: Incoming proposal submissions for individual grants and coordinated programmes by programme, Q1 2017 to Q4 2021 .....	11
Table 3: Decisions relating to the funding of research into pandemics and COVID-19, 2020 and 2021 .....	28
Table 4: Topics of proposals for research funding in the thematic area of epidemics, pandemics and COVID-19.....	33
Table 5: DFG programme classification .....	37
Table 6: DFG subject classification for the term 2020–2024 – scientific disciplines, research areas and review boards .....	39

## Figures

Figure 1:	Development of incoming proposals and proposal decisions, Q1 2017 to Q4 2021 .....	8
Figure 2:	Development of incoming draft proposals under coordinated programmes, 2017 to 2021 .....	13
Figure 3:	Development of proposal submissions for individual grants by age group and gender, 2017 to 2021 .....	14
Figure 4:	Relative annual change in proposal submissions for individual grants by age group and gender, 2018 to 2021 .....	15
Figure 5:	Development of funding rates for individual grants by age group and gender, 2017 to 2021 .....	16
Figure 6:	Development of funding rates for individual grants by programme, 2017 to 2021 .....	18
Figure 7:	Average processing time for proposals, Q1 2017 to Q4 2021 .....	19
Figure 8:	Development of the average processing time per processing phase, Q1 2017 to Q4 2021 .....	21
Figure 9:	Development of the return rate for written reviews and the rate of acceptance to conduct panel and on-site reviews, 2017 to 2021 .....	22
Figure 10:	Incoming proposal submissions in selected programmes involving mobility funding and international cooperation, 2017 to 2021 .....	24
Figure 11:	Share of proposal submissions with international involvement, 2017 to 2021 .....	25
Figure 12:	Proposals with international involvement by country, 2017 to 2021 – Top 10 .....	26
Figure 13:	Subject distribution of proposals under the “Call for Proposals for Multi-disciplinary Research into Epidemics and Pandemics in Response to the Outbreak of SARS-CoV-2” and the seven calls for proposals under the COVID-19 Focus Funding .....	29
Figure 14:	Two-dimensional representation of the proximity of research areas and thematic fields .....	31

# 1 Introduction

The COVID-19 pandemic confronted the DFG with major challenges in 2020 and 2021. In the very short term, there were changes both in terms of the framework conditions for the DFG's funding activities in the research system and regarding the work processes on which these activities are based. Some of the main points here include the closure of universities and laboratories, restrictions on research travel, work from home, and additional burdens due to care and support responsibilities among researchers as well as among staff at the DFG Head Office. In addition, the DFG has a particular responsibility to society to establish the scientific basis for a response to the pandemic.

This report documents and describes the effects of these altered framework conditions in the pandemic period by looking at developments over the five-year period from 2017 to 2021. On the one hand, the aim is to provide information on how funding activities developed in terms of proposal submissions, review practice and decision-making procedures in the context of the pandemic. In addition, this report will aim to shed light on the scope and characteristics of DFG research funding in the thematic areas of COVID-19, epidemics and pandemics in general.

In order to highlight possible effects that occurred during the pandemic, chapter 2 starts by examining two key indicators of DFG funding over time, namely the number of incoming proposals and proposal decisions. In chapter 3, procedural characteristics are also considered with an analysis of processing duration and reviews. In view of the limited travel opportunities and the resulting mobility restrictions during the pandemic, chapter 4 focuses on DFG-funded international research and cooperation, thereby highlighting any changes during the pandemic period with regard to the scope of international research projects and participations. Finally, chapter 5 looks at research funding in the thematic areas of epidemics, pandemics and COVID-19.



## 2 Development of incoming proposals and proposal decisions

### Volume of proposal submissions

Figure 1 shows the number of proposals received along with the number of proposal decisions issued per quarter over the past five years. For both proposal submissions and decisions, the annual totals initially indicate that the trend of increasing numbers between 2017 and 2019 remained unbroken during the pandemic period.

While incoming proposals in 2020 show the largest year-on-year increase of 5.1 percent to 22,456 proposals received (in the previous two years the increase was 3.5 and 4.1 percent respectively), the largest number of decisions within the five-year period were issued in 2021 (22,551).

Looking at the quarterly development, a cyclical pattern of proposal numbers emerges. Normally, most proposals are received in the first quarter and most proposal decisions are issued in the last quarter of each year. The pandemic period differs here: the number of proposals received saw a greater increase in the third quarter of 2020 than was the case in previous years – in the third quarter of 2020, the number of proposals received increased by around 21 percent compared to the previous quarter. In the third quarter of the preceding two years, the increase was only around four percent (2019) and 13 percent (2018).

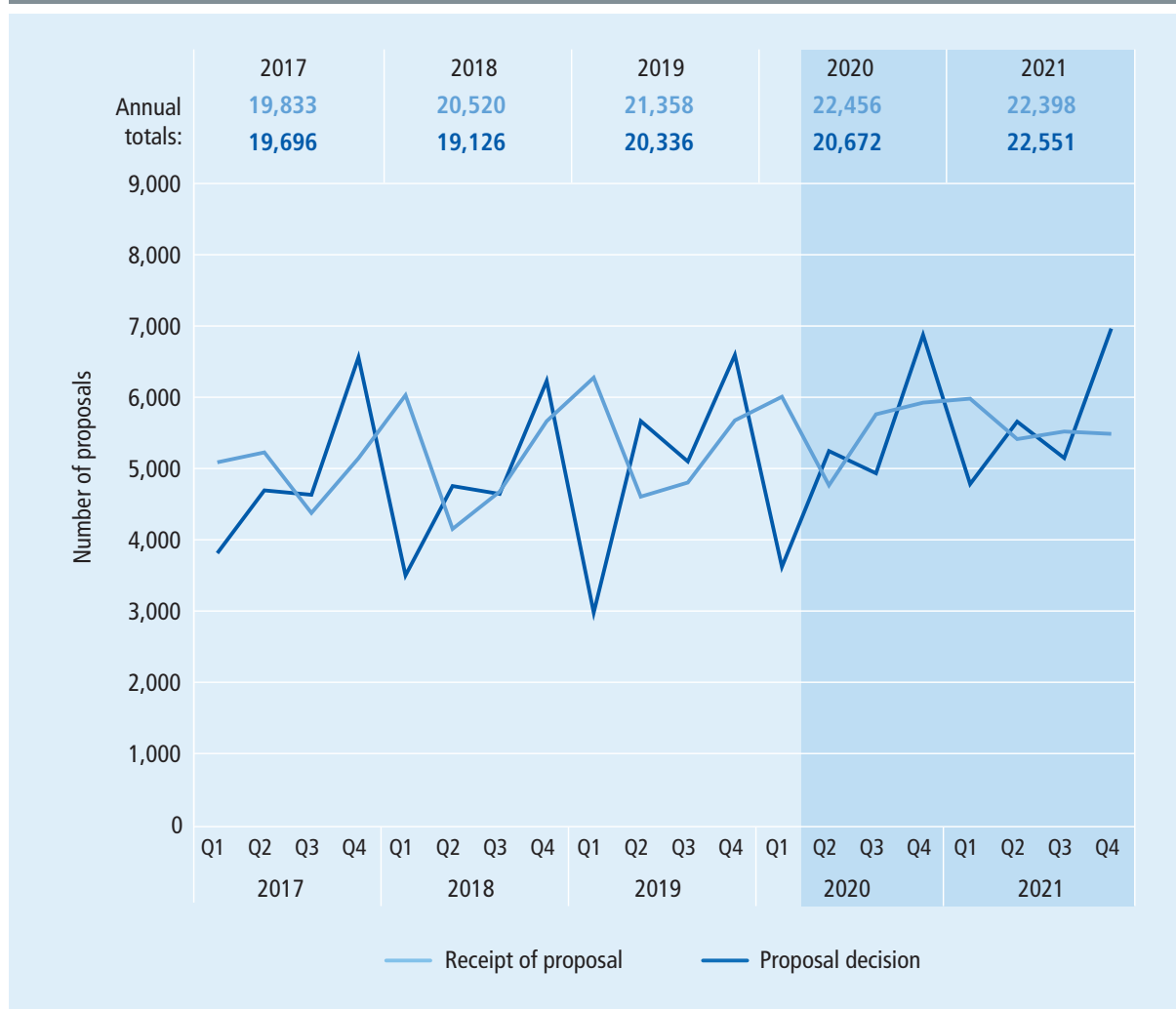
Furthermore, it can be seen that during the pandemic in 2021, after a peak of around 6,000 proposals were received in the first quarter, demand did not fall as sharply in the following quarters but remained at a high level, although it did not increase in the second half of the year as was regularly the case in previous years. In terms of proposal decisions, the development reflects a time lag, with an increased number of decisions across all quarters but especially in the first two quarters of 2021 compared to the respective quarters of the previous years. Furthermore, it is noticeable in the pandemic period that the total number of proposals received in the second year, 2021, did not increase further but remained almost at the same high level as in 2020.

In summary, it can be said that the number of proposals received increased markedly during the pandemic and was distributed more evenly throughout the year. The otherwise observable annual cycle in incoming proposal submissions was less striking.<sup>1</sup>

---

1 Clearly, proposal decision numbers essentially depend on or respond to the development in the number of proposals received. For this reason, the focus in the remainder of this chapter will be on the number of proposals received: this reflects the demand on the part of applicants and will tend to reveal any effects of the pandemic along the timeline.

**Figure 1:**  
Development of incoming proposals and proposal decisions, Q1 2017 to Q4 2021



**Basis:**

New and renewal proposals received between 2017 and 2021 and proposals for which decisions were issued between 2017 and 2021 under all DFG funding programmes excluding the Excellence Initiative, the Excellence Strategy and the NFDI. Joint proposals are counted by applicant.

### Incoming proposal submissions differentiated by research area

Table 1 shows the annual number of proposals received, differentiated by research area, in absolute numbers as well as in terms of the development over time relative to the respective subject-related average over the five years. It reveals that the increase in proposal submissions during the pandemic period described above cannot be attributed equally to all disciplines, while at the same time showing differing subject-specific emphases along the timeline.

For example, the rising trend in the number of proposals received in the research area of Medicine is relatively significant due to the high level of proposal submission numbers. Relative to the subject-related average of the five years under review, the number of proposals received in Medicine in 2020 was around ten percent higher and in 2021 around eight percent higher. The abso-

**Table 1:**  
Development of incoming proposal submissions by research area, 2017 to 2021

Research area	Number of proposals received during the year					Comparison by year relative to the subject-related average, 2017 to 2021 (in %)
	2017	2018	2019	2020	2021	
11 Humanities	1,930	2,158	2,354	2,396	2,418	
12 Social and Behavioural Sciences	1,853	1,935	1,970	2,123	2,181	
21 Biology	1,992	2,029	2,128	2,089	2,020	
22 Medicine	4,508	4,580	4,758	5,390	5,313	
23 Agriculture, Forestry and Veterinary Medicine	512	404	441	515	510	
31 Chemistry	1,385	1,381	1,361	1,264	1,403	
32 Physics	1,381	1,457	1,475	1,418	1,409	
33 Mathematics	400	382	592	536	380	
34 Geosciences	1,274	1,384	1,433	1,280	1,343	
41 Mechanical and Industrial Engineering	866	942	933	1,131	1,135	
42 Thermal Engineering / Process Engineering	513	654	736	734	796	
43 Materials Science and Engineering	897	928	948	1,089	891	
44 Computer Science, Systems and Electrical Engineering	1,288	1,465	1,295	1,624	1,770	
45 Construction Engineering and Architecture	376	385	488	458	383	

**Basis:**

New and renewal proposals classified by subject received between 2017 and 2021 under all DFG funding programmes, excluding the Excellence Initiative, the Excellence Strategy and the NFDI. Joint proposals are counted by applicant.

lute increase in proposal submissions in 2020 compared to 2019 was 632: this is comparatively high compared to the overall increase in proposals received in the same year of around 1,100.

The increase in proposal submissions in the research area of Computer Science, Systems and Electrical Engineering during the pandemic period was also comparatively high and therefore significant. Compared to the subject-related average, however, the main increase for this research area is to be observed in the second half of the pandemic period under consideration: in 2021, the number of proposal submissions in Computer Science, Systems and Electrical Engineering was 1,770, about 19 percent higher than the five-year average, while in 2020 it was 1,624, about nine percent higher.

In the Humanities and the Social and Behavioural Sciences, the increased proposal numbers in the two years of the pandemic show a continuation of rising trends that began earlier. The same applies to the research area of Thermal Engineering/Process Engineering, where the number of proposals received in 2020 was at the same level as in 2019, but in 2021 again saw an increase of around eight percent relative to the two preceding years. In the research area of Materials Science and Engineering, however, the number of 1,089 proposal submissions in 2020 stands out in relative terms. In the first year of the pandemic, the number of proposals received was 15 percent above the subject-related average, while the number of incoming proposals before this and in the second year of the pandemic was below average.


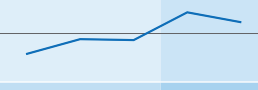
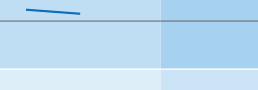
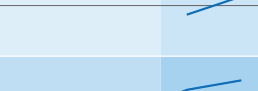



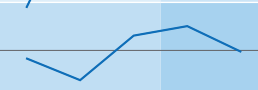

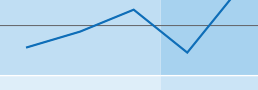


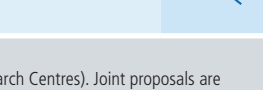
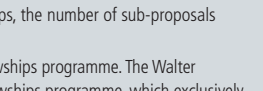
Specifically during the period of the pandemic, subject-specific declines in the number of proposals received are only to be observed in isolated cases. For example, the number of proposals received in Chemistry in the first pandemic year of 2020 was 1,247, around seven percent below the five-year average. In the other years, there were only minor fluctuations around the average between zero and three percent. The rising trend observed in the Geosciences since 2018 was interrupted in 2020: here the number of proposals received in the first year of the pandemic was 1,280, about five percent below the average. In the second pandemic year, the number of proposals received in the Geosciences climbed back up to the five-year average. In Mathematics, a decrease is also to be seen during the pandemic period, particularly in 2021, compared to the number of proposals received in 2019, but this is equally pronounced compared to 2017 and 2018.

In summary, it should be noted that greater subject-specific restrictions in research due to such factors as limited access to research infrastructure, field research and research with test persons, etc. are not reflected in the number of proposal submissions shown here, or only very slightly.

### **Incoming proposal submissions differentiated by funding programme**

A look at the number of proposals received differentiated by programme (cf. Table 2) shows that the number of proposal submissions under the Research Grants Programme in particular

**Table 2:**  
Incoming proposal submissions for individual grants and coordinated programmes by programme, Q1 2017 to Q4 2021

Programme	Number of proposals received during the year					Comparison by year relative to the programme-related average 2017 to 2021 (in %)
	2017	2018	2019	2020	2021	
<b>Individual grants</b>	<b>13,382</b>	<b>14,499</b>	<b>14,541</b>	<b>16,654</b>	<b>15,987</b>	
Research Grants Programme	11,967	13,061	12,993	15,041	14,302	
Research Fellowships*	633	620	535	61	60	
Walter Benjamin Programme*	–	–	117	602	664	
Emmy Noether Programme	343	371	387	432	452	
Heisenberg Programme	251	220	265	256	261	
Reinhart Koselleck Projects	41	48	49	49	56	
Clinical Trials	18	66	49	60	58	
Further individual grants	129	113	146	153	134	
<b>Coordinated programmes</b>	<b>4,488</b>	<b>4,269</b>	<b>5,012</b>	<b>4,445</b>	<b>4,918</b>	
Research Units	745 (63)	819 (72)	920 (73)	721 (59)	1,028 (89)	
Priority Programmes	1,770	1,842	2,143	1,428	1,917	
Collaborative Research Centres	1,901 (91)	1,540 (73)	1,884 (88)	2,216 (102)	1,911 (88)	
Research Training Groups	72	68	65	78	62	

**Basis:**

New and renewal proposals received between 2017 and 2021 for individual grants and in coordinated programmes (not including Research Centres). Joint proposals are counted by applicant. For Research Units and Collaborative Research Centres, the new and renewal framework proposals received each year are also stated in brackets. The sub-proposals received each year cannot be directly assigned to the framework proposals received each year. For Research Training Groups, the number of sub-proposals corresponds to the number of framework proposals.

\* Since November 2019, it has only been possible to submit renewal proposals and proposals for Return Grants under the Research Fellowships programme. The Walter Benjamin Programme was launched in July 2019 and is gradually replacing the expiring Research Fellowships. Unlike the Research Fellowships programme, which exclusively funds research projects abroad, the Walter Benjamin Programme also includes a domestic module (so-called "positions") in addition to a foreign module ("fellowships"). In looking at the development relative to the programme-related average, only the figures for the years 2017 and 2018 were taken into account for Research Fellowships, while the figures for the years 2020 and 2021 were taken into account for the Walter Benjamin Programme.

increased. In 2020, the number of proposals received was around 15,000 – almost 16 percent higher than the same figure for the previous year (around 13,000). In relative terms, there was also an increased demand for research funding in the area of Clinical Trials: the number of proposals received for 2020 was 22 percent higher than in the previous year (absolute figures for 2020: 60; 2019: 49). Due to the low overall level of absolute figures, however, the relative development is volatile; moreover, developments of a comparable or higher magnitude are to be found in previous years, too. In 2021 the level remained the same as that of the preceding year. The Emmy Noether Programme also saw increased proposal numbers, from 343 proposal submissions in 2017 to 452 in 2021 at the last count. Here the relative increase was the greatest in 2020 compared to 2019 at almost twelve percent (in the preceding years the figures were four and eight percent respectively).

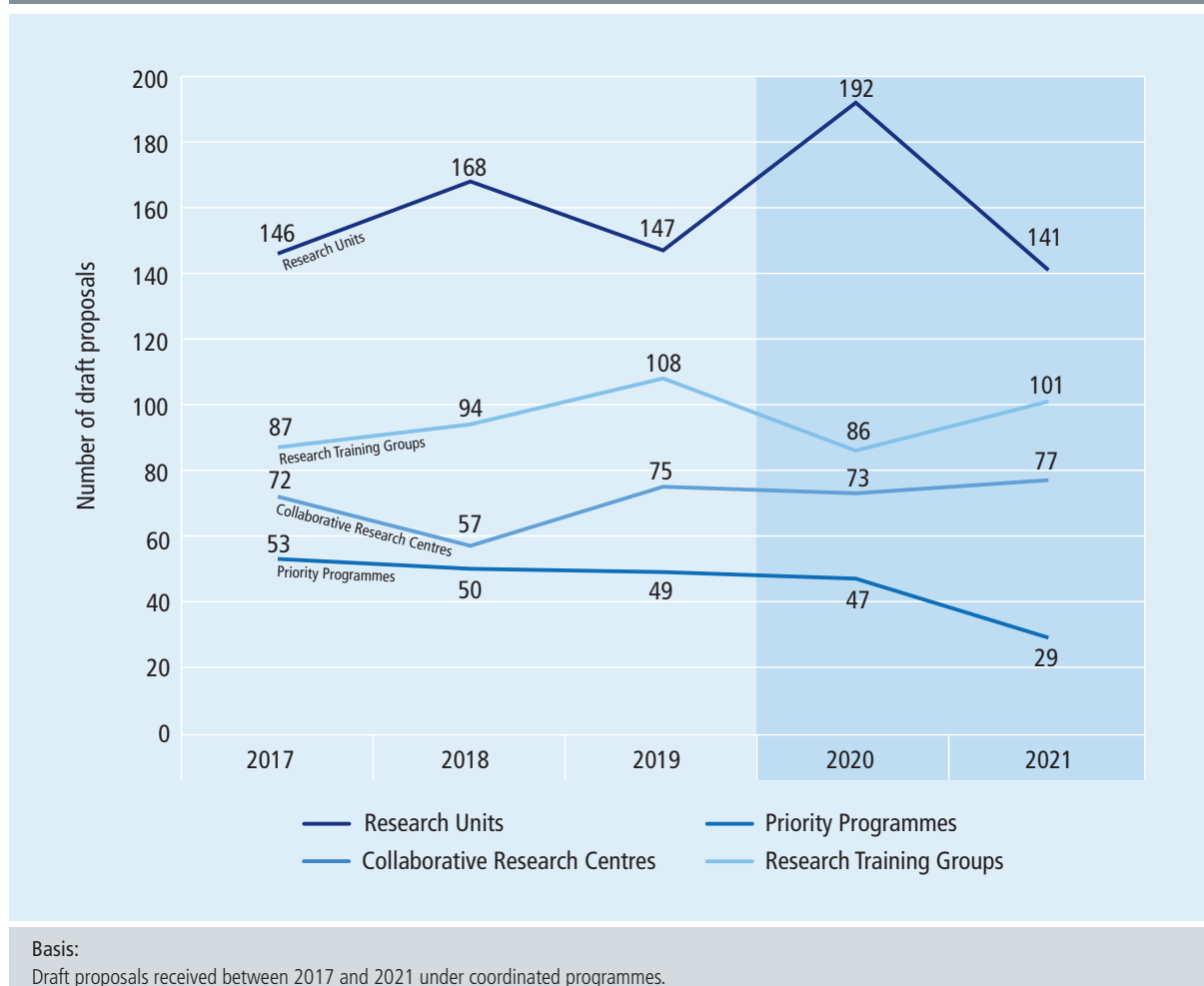
Looking at individual grants programmes overall, it can be seen that the high increase in the number of proposal submissions under the Research Grants Programme mentioned above has an impact in both relative and absolute terms. The increase in the number of proposal submissions in 2020 compared to 2019 was almost 15 percent.

No clear pattern emerges for the coordinated programmes during the pandemic period. In the case of Collaborative Research Centres, there was an almost 18 percent increase in the number of sub-proposals received in 2020 compared to 2019, while in 2021, with around 1,900 sub-proposals, figures were once again at a comparable level to that already seen in 2019 (and in 2017). There was also an increase in the number of Research Training Groups, with 78 proposal submissions in 2020 compared to 65 proposal submissions in 2019, though comparable numbers of proposals were observed in previous years. For projects in Research Units and Priority Programmes, there was initially a decline in the number of sub-proposal submissions in 2020, but this was followed by an increase in the second year of the pandemic. This development also applies to the number of sub-proposal submissions under coordinated programmes as a whole: after decreasing by around 11 percent compared to 2019 to around 4,450 sub-proposal submissions in 2020, the figure for 2021 returned to almost the same level as in 2019 at around 4,900.

In addition to the pattern shown in Table 2, which primarily refers to sub-proposal submissions under the coordinated programmes, the receipt of draft proposal submissions in Figure 2 is another indicator for the coordinated programmes: since draft submissions precede proposal submissions, this reflects the effects of the pandemic earlier on.

Here, Research Units show a figure of 192 draft proposals received, with a five-year comparison indicating an increase in incoming draft proposals in the first year of the pandemic. In 2017 to 2019, this number ranged between 146 and 168, while in the second year of the pandemic it was again below this level at 141. By comparison, the other three funding programmes show less fluctuation at lower overall levels. For the pandemic period, however, it is noticeable that

**Figure 2:**  
Development of incoming draft proposals under coordinated programmes, 2017 to 2021



there was a decline in the number of draft proposals received for Research Training Groups in the first year of the pandemic: the 2020 figure of 86 draft proposals was around 20 percent lower than in the previous year, although it had increased previously from 87 in 2017 to 108 in 2019. Under Priority Programmes, the number of draft proposals submitted in the second year of the pandemic was lower (29) than in the previous four years, when the number ranged from 47 to 53.

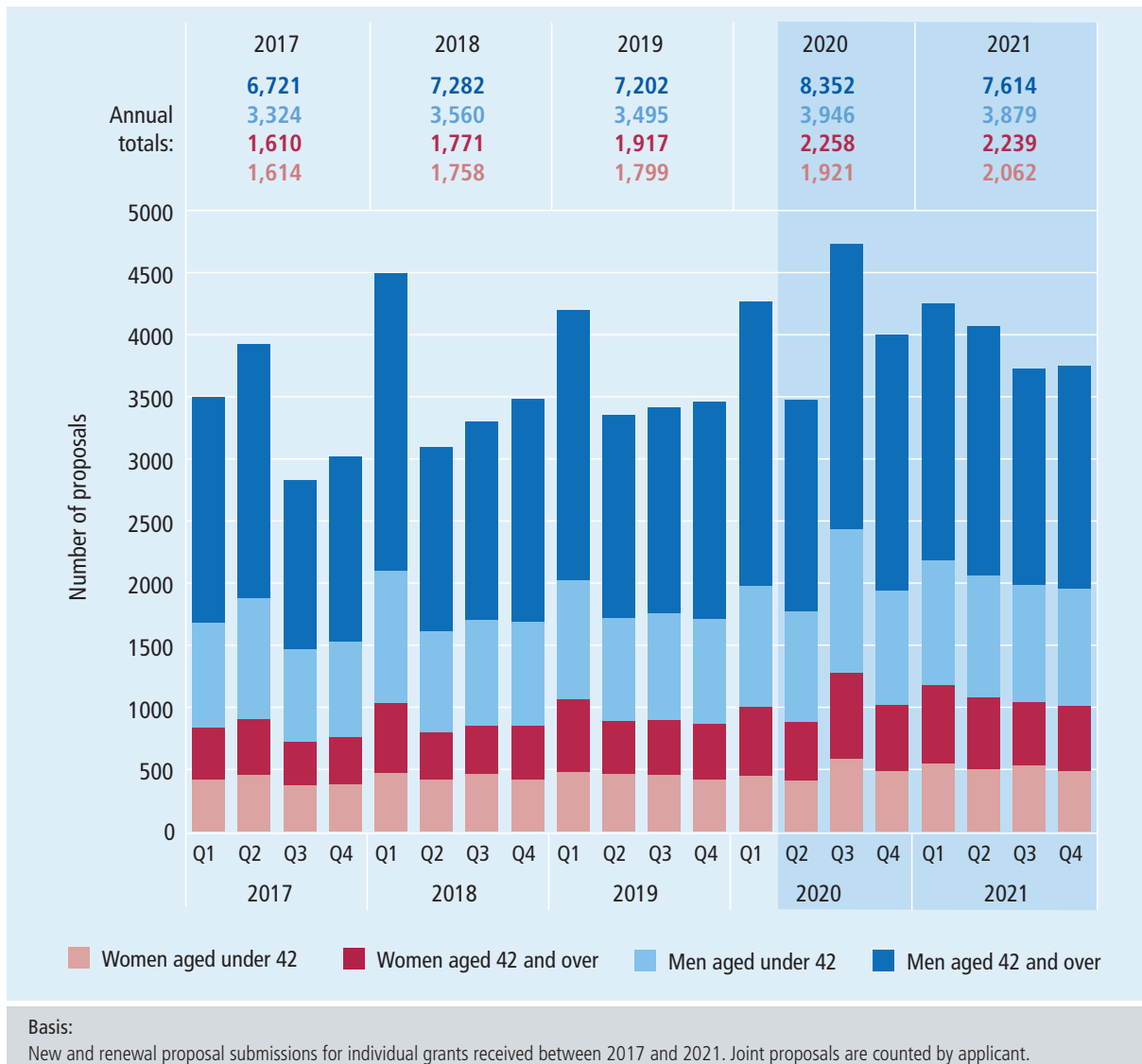
All in all it can be said that the rising trend in the pandemic period – as was noted in the preceding observations relating to proposal submissions for individual projects – tended not to apply to the receipt of draft proposals.

### Proposals received by demographic applicant groups

By contrast, an increased number of proposal submissions was noted in Table 2, especially in the area of individual grants. In previous analyses of proposal submissions for individual grants in issue 1.21 of the DFG Infobrief (DFG 2021), gender-specific differences were identified in

proposal activity during and before the pandemic. In order to be able to view the development of this phenomenon as the pandemic progressed further, Figure 3 shows how the number of incoming proposals developed by age and gender. Here, an average age of around 42 at the time of first-time appointments to W2 professorships was taken as a basis for the age grouping (cf. Konsortium Bundesbericht Wissenschaftlicher Nachwuchs 2021).

**Figure 3:**  
Development of proposal submissions for individual grants by age group and gender, 2017 to 2021



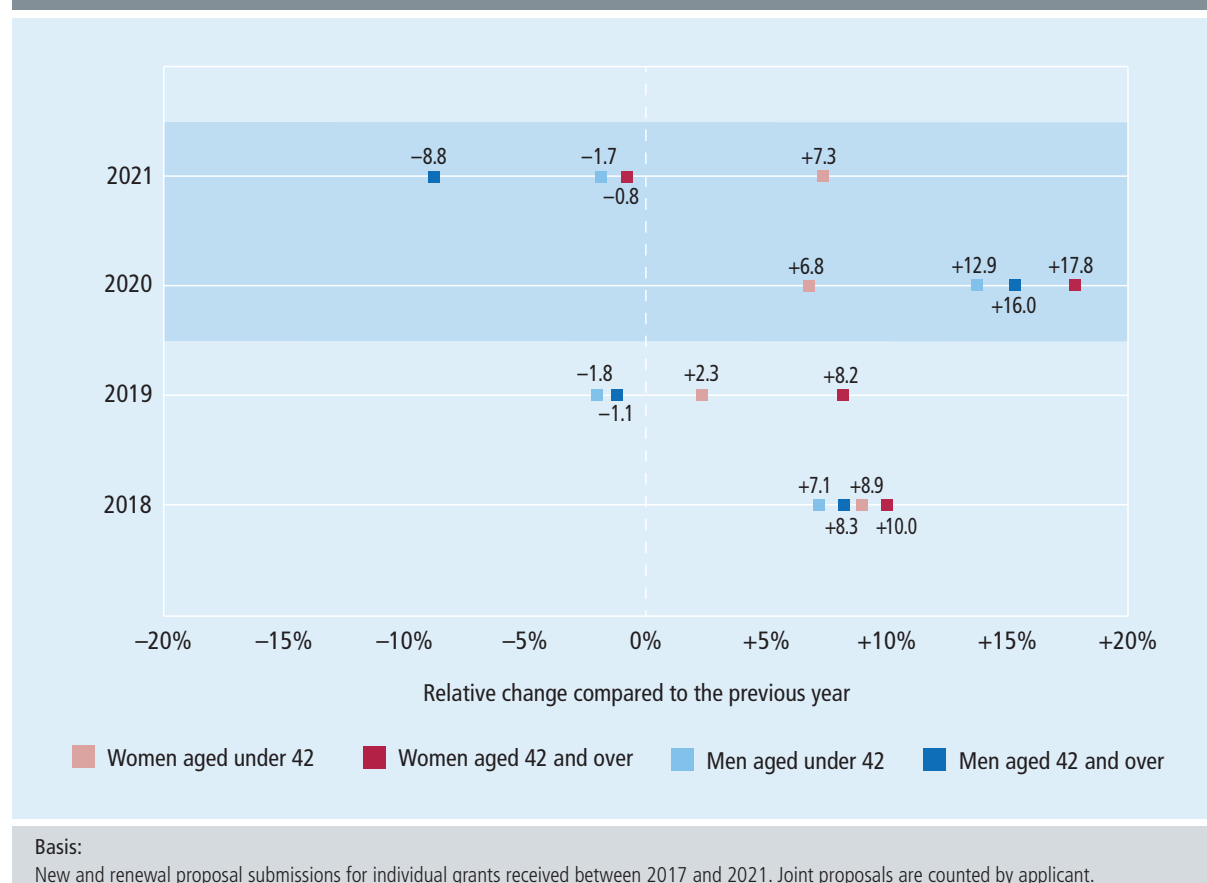
The initial point to note here is this: an upward trend in the number of proposal submissions had already been observed in previous years, but it continued at an accelerated pace during the pandemic. This trend affects all demographic groups depicted here – albeit subject to differences in terms of scope and intensity. Nevertheless, this did not bring about any fundamental shift in terms of the age and gender distribution of applicants: both age groups show higher numbers of proposals submitted by men compared to women, a difference which is more pro-



nounced in the over-42 age group. While the number of proposal submissions by women in the age group of 42 and older was 74 percent lower on average than that of men over the quarterly periods, it was only 50 percent lower in the younger age group of the under 42-year-olds.

The trend of increasing female representation already noted in the previous analysis (DFG 2021) continued in the second year of the COVID-19 pandemic, increasing by about two percentage points from 25.4 percent in 2020 to 27.2 percent in 2021. Compared to the results shown in the Infobrief, however, the breakdown over time shown here per completed reporting year for the first year of the pandemic, 2020, shows a slight decrease in the proportion of women by 0.4 percentage points compared to 2019 or, in other words, a greater increase in the number of proposals submitted by male applicants compared to female applicants. In order to be able to look at these aspects in detail, Figure 4 shows the relative changes in the number of proposals received for the age groups by gender each year compared to the preceding year.

**Figure 4:**  
Relative annual change in proposal submissions for individual grants by age group and gender, 2018 to 2021



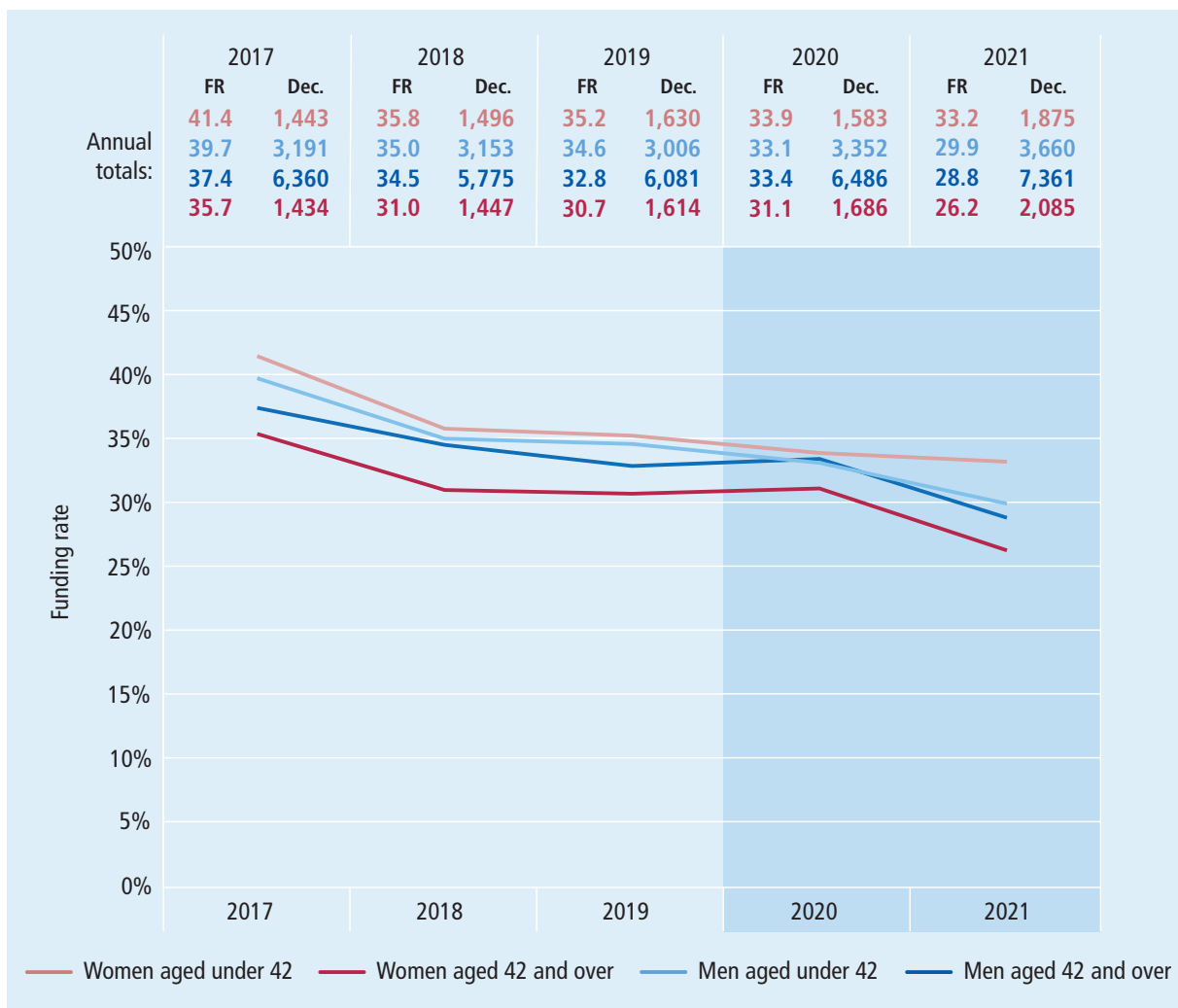
This indicates that the ratios between the relative changes per demographic group shift over the five-year period. Relative to the starting level in the preceding year, a stronger increase was observed for women in 2018 and especially also in 2019 as compared to men. This relationship shifted in 2020. Here, the relative increase for women under 42 in 2020 was around seven percent, i.e. less than the increases of between 13 and 18 percent for all other demographic

groups, while for the group of women aged 42 and over, the largest increase in relative terms continued. In 2021, on the other hand, it was the women under 42 years of age who, in relative terms, saw the biggest rise in proposal volume, with an increase of around seven percent compared to 2020, while only minor changes are to be observed among the men in this age group, as well as among the group of women aged 42 and over. Men aged 42 and over, on the other hand, submitted around nine percent fewer proposals in 2021 than in the preceding year.

### Funding rates for individual grants

With regard to the differences in proposal activity by age and gender to be seen in Figure 3 and Figure 4, it is also interesting to note to what extent these are reflected in the funding rates, too. Figure 5 shows the funding rates and – in order to provide the necessary perspective – the underlying proposal decisions during this period by demographic group.

**Figure 5:**  
Development of funding rates for individual grants by age group and gender, 2017 to 2021



**Basis:**

New proposals for individual grants for which decisions were issued between 2017 and 2021. Joint proposals are counted by applicant.

Abbreviations: FR = funding rate (in %); Dec. = Number of proposal decisions

Women under 42 years of age consistently saw the highest funding rate over the five-year period, while women over 42 consistently had the lowest rate. These age-specific differences are visible among male researchers too, but they are less pronounced. In the pandemic period, it is noticeable that the funding rates markedly decreased in 2021 – an obvious consequence of the high number of proposal decisions, especially in 2021, as shown in Figure 1. Nonetheless, a comparable decline in funding rates was already evident in 2018.

For the groups of men and women aged 42 and over, the decrease in 2021 compared to the previous year was around five percentage points in each case, so the funding rate was 26.2 percent for women and 28.8 percent for men in this age group. For men under 42, the funding rate fell by about three percentage points to 29.9 percent in the same period. By contrast, the decrease of 0.7 percentage points to a funding rate of 33.2 percent in 2021 for women under 42 was comparatively slight.

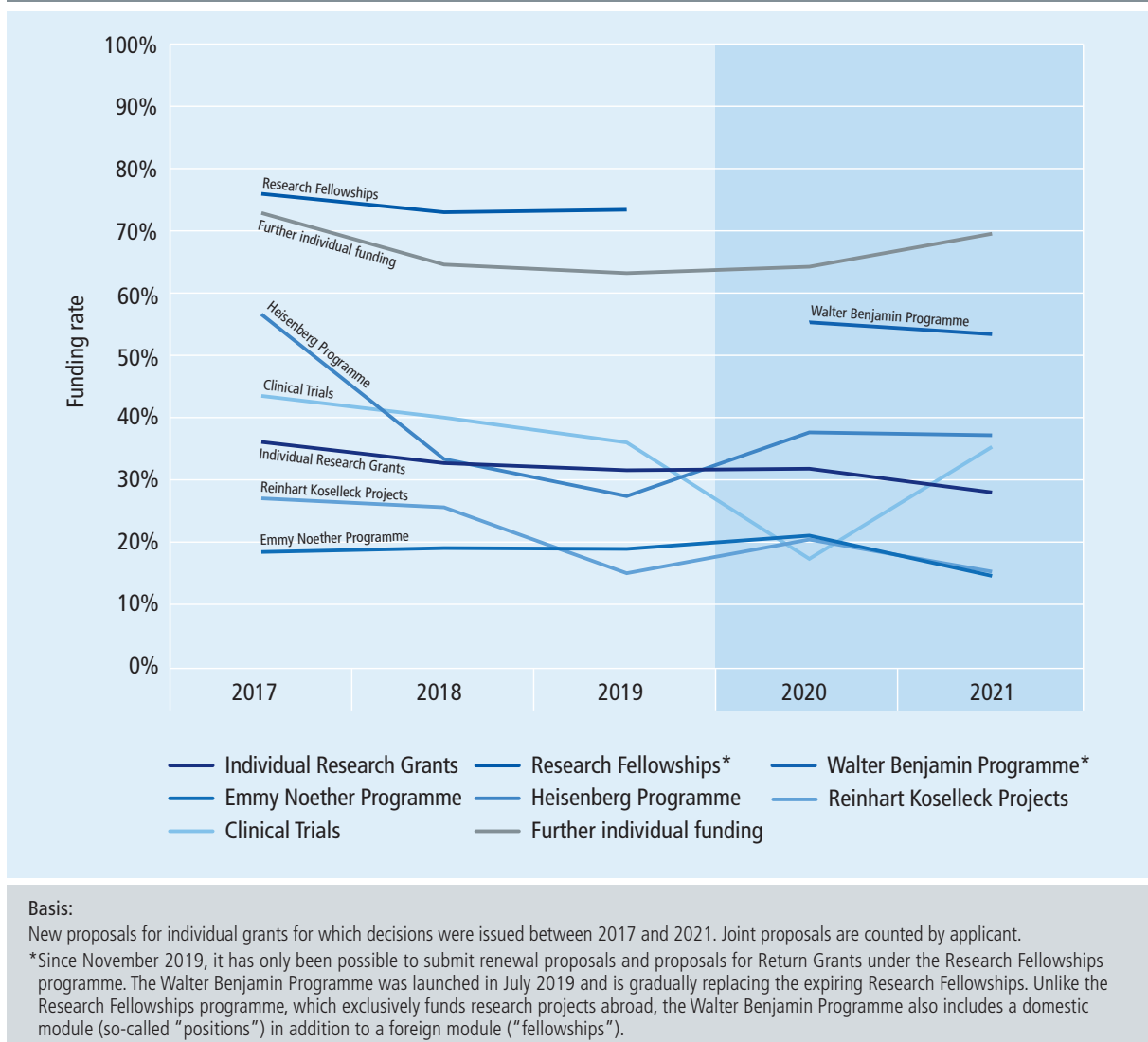
As a result of the development of proposal submissions shown above, the share of proposals submitted by women of both age groups in the decisions increased again in 2021 compared to 2020, so here it is possible to observe a shift in the ratios of funding rates in favour of women under 42 years of age.

The development of funding rates differentiated by funding programme as shown in Figure 6 indicates that decreasing funding rates did not affect all programmes equally. The increase in proposal submissions under the Research Grants Programme of almost 16 percent in the first year of the pandemic, as shown in Table 2, did not have an immediate impact in the form of a decrease in the funding rate, though the time lag between proposal submission and proposal decision has to be taken into account when analysing the development of these two key indicators. While the funding rate for Research Grant proposals in 2020 was at a comparable level to 2019 (31.5 percent) at 31.8 percent, it only fell by just under four percentage points to 28.0 percent in 2021, the second year of the pandemic. However, a comparable development in the five-year period also occurred once before in 2018, when the funding rate of 32.7 percent was 3.4 percentage points lower than in 2017.

The changes in the funding rate for the Emmy Noether Programme are comparable to the development for the Research Grants Programme, albeit at a lower starting level. While the rate here ranged from a minimum of 18.4 percent (2017) to a maximum of 21.0 percent (2020) in 2017 to 2020, it fell to 14.6 percent in 2021, the second pandemic year.

In the case of Clinical Trials, where a relatively large increase in the number of proposal submissions was previously observed in Table 2, the funding rate fell by 18.7 percentage points to 17.3 percent in 2020, while in previous years smaller declines of around four percentage points each were observed. In 2021, the second year of the pandemic, the funding rate went back up to 35.3 percent, almost the same level as in 2019, which was 36.0 percent. Due to

**Figure 6:**  
Development of funding rates for individual grants by programme, 2017 to 2021



the low level of proposal numbers in the Clinical Trials Programme as a whole, however, and the volatility this entailed, these comparatively strong fluctuations in the funding rate for this programme only have limited validity.

The funding rate for the Heisenberg Programme was above 37 percent in both years of the pandemic, which is higher than in the previous two years (2019: 27.4 percent; 2018: 33.3 percent), but it remained below the comparatively high funding rate of just under 57 percent in 2017.

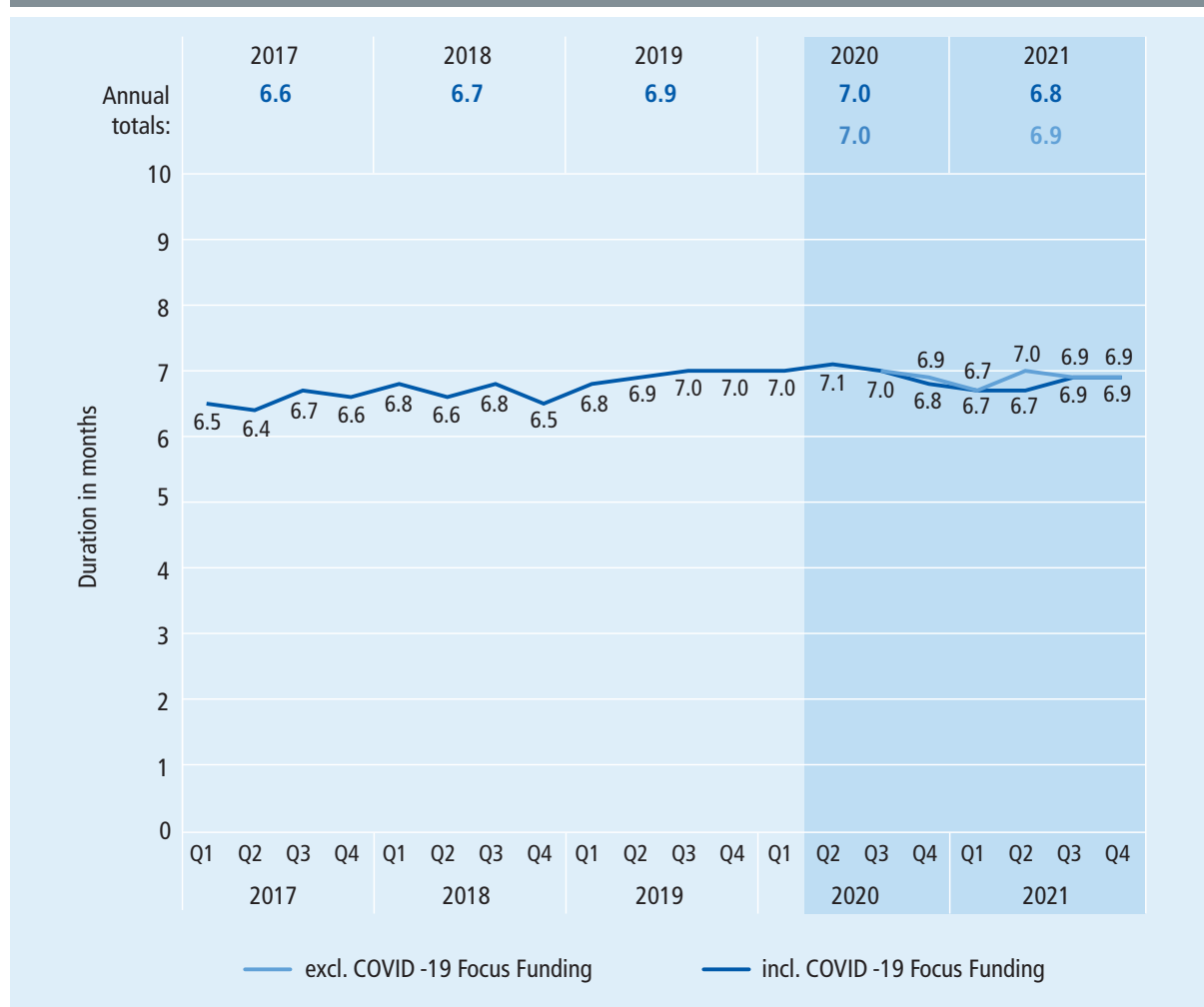
### 3 Development of the processing procedure

While the previous chapter primarily dealt with incoming proposals, i.e. the demand side of the DFG's funding activities, this chapter will seek to shed light on the processing and decision-making procedures involved in DFG funding during the pandemic.

#### Processing time

To begin with, Figure 7 shows the average processing time of proposals by quarter for the years 2017 to 2021. Allocation to the time axis is made here – as in all subsequent figures in this chapter – based on the date on which the decision was issued for a proposal. As such, any potential effects of the increased number of proposal submissions during the pandemic can be observed with a time delay.

**Figure 7:**  
Average processing time for proposals, Q1 2017 to Q4 2021



**Basis:**

Proposal decisions issued between 2017 and 2021 for individual grants, Priority Programmes and Research Units, excluding those issued under international calls.

Over the entire period, the processing time per quarter was between 6.4 and 7.1 months. Proposals decided on between the third quarter of 2019 and the third quarter of 2020 took the longest to process. During the pandemic period, however, it can be seen that despite the increased volume of proposal submissions described in the previous chapter, the processing time did not increase, remaining at less than seven months after the third quarter of 2020. Proposals submitted under COVID-19 Focus Funding with an accelerated decision-making procedure only had a slightly shortening effect on the calculated processing time in the second quarter of 2021. Decisions for the 396 proposals submitted by 653 applicants under the Focus Funding were issued within an average of 3.3 months. Due to the relatively small number, however, the overall impact on processing time was slight.

By differentiating the three processing phases in the analysis, as in Figure 8, it can be seen that the majority of the proposal processing time (4.2 to 4.4 months on average per year for the years 2017 to 2021) was accounted for by the review procedure. The longest review phase was for proposals decided on in the first year of the pandemic, at an average of 4.4 months. However, the range for the annual averages is only 0.3 months, and the duration in the second pandemic year of 2021 was again lower on average than in 2019, at 4.3 months.

The quarterly analysis for 2017 to 2020 shows that proposals for which decisions were issued in the first quarter of the year saw the longest review period per year. The second year of the pandemic is an exception: at an average of 4.2 months, the review period for proposals for which decisions were issued in the first quarter of 2021 is below the peak value for that year, which was 4.5 months in the second quarter. All in all, the more fluctuating progression which was observed in previous years subsequently smoothed out somewhat to an average level during the pandemic.

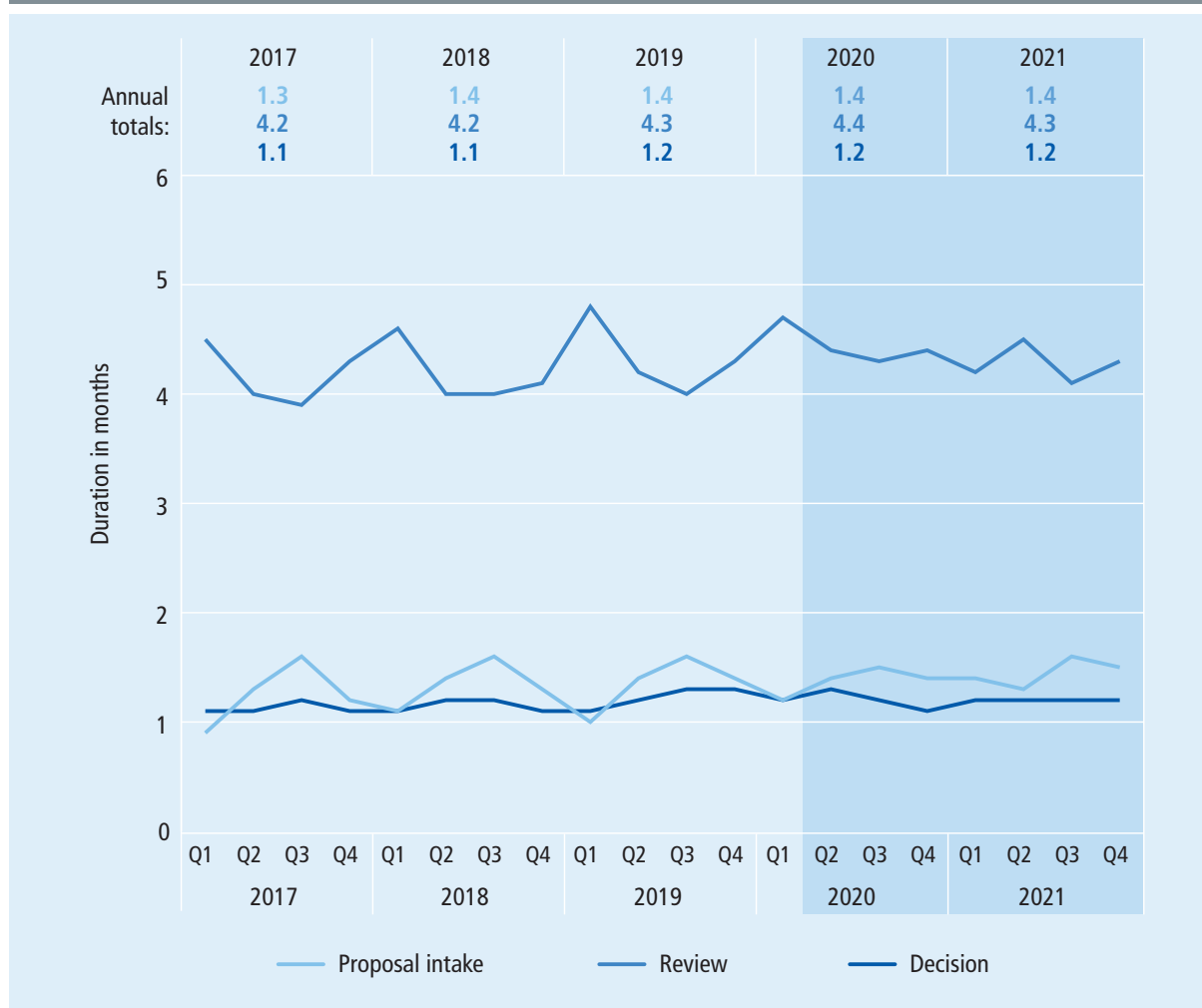
There is a similar development to be observed in the duration of the first processing phase, namely proposal intake. Here, one particularly striking feature is the comparatively even progression of the average duration of intake in the pandemic, especially between Q2 2020 and Q2 2021 with figures of 1.3 to 1.5 months. Although quarterly proposal intake duration previously saw greater variation (and did so again after Q2 2021) – in 2017 to 2019, the annual range of average duration per quarter was between 0.5 and 0.6 months – it was stable over the years on the whole, at an annual average of 1.4 months since 2018.

The decision-making phase lasted 1.1 to 1.2 months on average per year, and here again, no extended duration was observed for this process during the pandemic. The quarterly development also shows a stable average progression of between 1.1 and 1.3 months for proposal decisions.

### **Recruitment of reviewers**

In view of the fact that the review accounts for a large share of the total proposal processing time, as already established, it is also interesting to look at the development of the return rate for written reviews and the acceptance rate for panel and on-site reviews.

**Figure 8:**  
Development of the average processing time per processing phase, Q1 2017 to Q4 2021



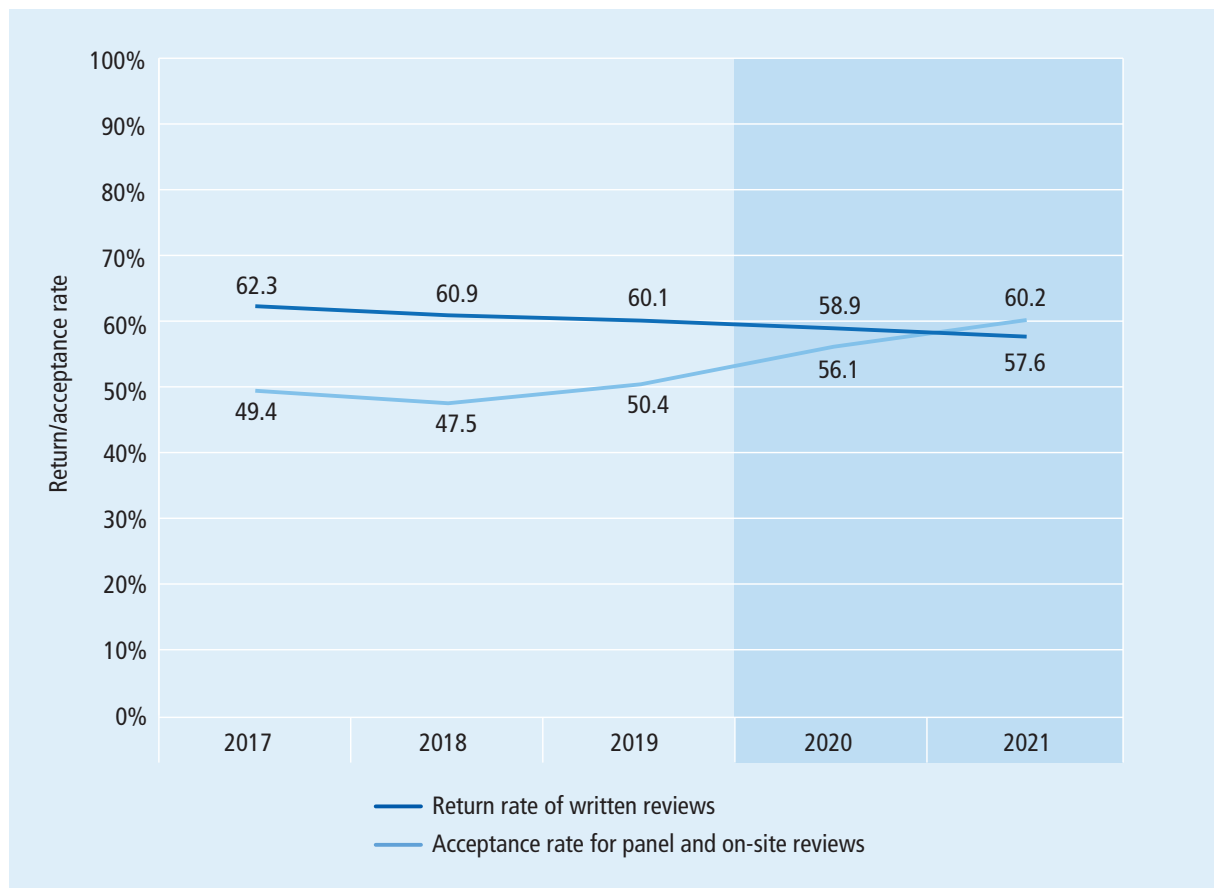
**Basis:**

Proposal decisions issued between 2017 and 2021 for individual grants, Priority Programmes and Research Units, excluding proposals under international calls and calls for COVID-19 Focus Funding.

The annual development of the return rate to written review requests shown in Figure 9 indicates that the trend of decreasing response to written review requests which has been observed since (at least) 2018 remained ongoing in the pandemic. The ratio of reviews received to review requests declined annually by 0.8 to 1.4 percentage points, and there were no anomalies during the pandemic. The return rate for written reviews was most recently 57.2 percent in 2021.

For panel and on-site reviews, on the other hand, the five-year analysis indicates a striking increase in the ratio of requests and acceptances to attend meetings during the pandemic. While the acceptance rate was between 47.5 and 50.4 percent between 2017 and 2019, it increased by 5.7 percentage points to 56.1 percent in 2020 compared to 2019, followed by a further increase of around four percentage points to 60.2 percent in 2021. In view of the digitalisation of many processes, such as the switch to digital or hybrid events and meetings, it can be assumed

**Figure 9:** Development of the return rate for written reviews and the rate of acceptance to conduct panel and on-site reviews, 2017 to 2021



**Basis:**

Requests for which data was recorded in a structured manner concerning the preparation of written reviews as well as concerning participation in oral review meetings in connection with proposals submitted under the Excellence Strategy, for Collaborative Research Centres and for Research Training Groups. The data covers involvement as a reviewer, so it does not include participation on an ex officio basis as a review board member, for example. The allocation to the time axis is based on the date on which the decision was issued for the proposal in question.

that the elimination of travel time to and from virtual oral review meetings and the resulting reduction in the time and logistical effort required led to a greater willingness on the part of those concerned, possibly also an increase in capacity. This may well explain the positive trend in the rate of acceptance to participate in reviews.

Based on the observations made regarding processing time and the recruitment of written and oral reviewers, it is possible to state in summary that the pandemic had no negative impact on these procedural aspects; indeed, positive trends were discernible during the pandemic in terms of people's willingness to participate in panel and on-site reviews.



## 4 International research projects and international participations

With regard to the opportunities for implementing international research and cooperation that the DFG offers through its funding portfolio, various developments are conceivable for the pandemic period. On the one hand, it can be assumed that the limited travel opportunities will have led to a decline in the demand for mobility funding. Another consequence could also be difficulties in international research cooperation due to problems of international in-person collaboration. On the other hand, worldwide progress in terms of the digitalisation of day-to-day working life gave rise to increased potential for virtual collaboration and communication – something that it was possible to tap into for the purpose of international research collaboration. In the light of this aspect, the opposite notion of an increase in the demand for research funding for international cooperation projects would also seem plausible.

### Proposal submissions in funding areas for international mobility and cooperation

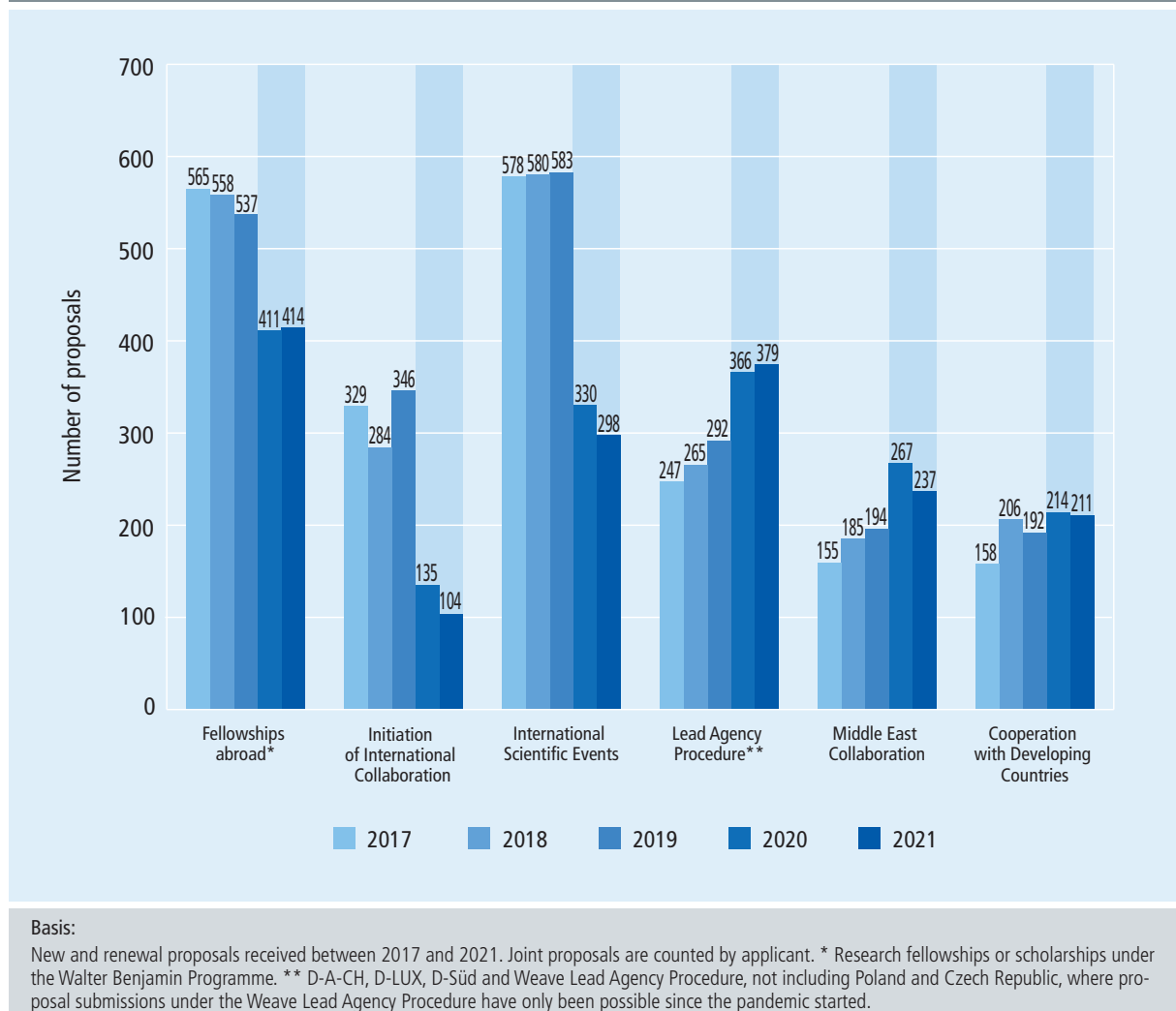
Figure 10 shows the number of proposals received in selected programmes and categories of DFG funding for international research projects and cooperation.

The number of fellowships abroad applied for under Research Fellowships and the Walter Benjamin Programme dropped significantly during the two years of the pandemic. While there were between 537 and 565 such proposal submissions per year between 2017 and 2019, only just over 400 were received in 2020 and 2021.

A similar pattern of declining demand during the pandemic emerges for the funding of International Scientific Events in Germany. While around 580 proposal submissions of this nature were submitted per year from 2017 to 2019, such proposal submissions dropped by 43 percent in 2020, the first year of the pandemic. In 2021, the number of proposal submissions was another ten percent below the level of the first year of the pandemic. During the pandemic, there were also fewer proposal submissions to take up the DFG's offer to support the Initiation of International Collaboration, including "Exploratory Workshops", "Project-related Trips Abroad" and "Project-related Guest Visits" as possible components. The number of proposals received here dropped from 346 in 2019 to 135 in 2020, a 61 percent decrease. The second year of the pandemic saw a further decrease, with a total of 104 proposal submissions in the second year of the pandemic.

A descriptive view of the three programmes mentioned above indicates that DFG funding focusing on international mobility and cross-border researcher meetings was applied for less frequently during the pandemic than in previous years, in line with the assumption proposed at the beginning. However, this trend does not apply to DFG funding opportunities aimed at

**Figure 10:** Incoming proposal submissions in selected programmes involving mobility funding and international cooperation, 2017 to 2021



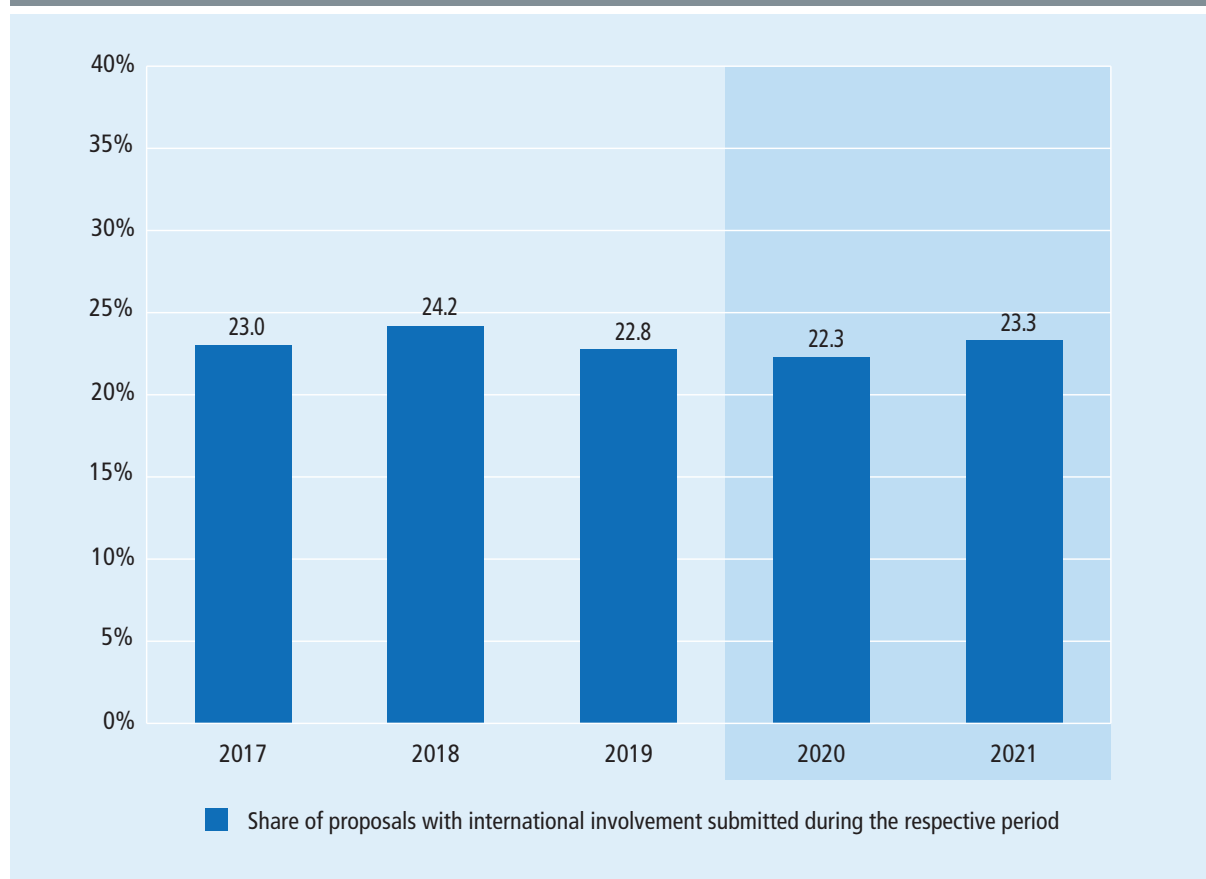
international project collaborations: here there was a tendency towards higher numbers of incoming proposals.

For example, there was a steady increase in the receipt of proposals in the Lead Agency Procedure from 247 in 2017 to 379 in 2021. However, the increase in 2020 compared to 2019 was more pronounced for the first year of the pandemic, at around 25 percent, than for the other years of the period under consideration, where it was between around four and ten percent in each case. Middle East Cooperation also reveals a peak in the number of proposals received in 2020 with 267 submissions: this stands out in comparison to the figures for the other reporting years (2017: 155, 2018: 185, 2019: 194, 2021: 237). By contrast, there was hardly any change in the number of proposal submissions for Cooperation with Developing Countries. With around 210 proposals being submitted each year during the pandemic, it was at roughly the same level as in previous years (2017: 158, 2018: 206, 2019: 192, 2020: 214, 2021: 211).

## International participations

Another indicator of the volume of international research projects and cooperation is the number of projects where individual international researchers are directly involved. Figure 11 shows the proposals received each year between 2017 and 2021 for such projects with international participants as a share of the total number of proposals received. The share of proposals received involving participants from abroad ranged annually from a minimum of 22.3 percent (2020) to a maximum of 24.2 percent (2018), with no anomalies observed during the pandemic. The overall range over the five-year period is small, at 1.9 percentage points, and after reaching a minimum for the past five years in the first year of the pandemic, the proportion rose again in the second year of the pandemic, reaching 23.3 percent in 2021.

**Figure 11:**  
Share of proposal submissions with international involvement, 2017 to 2021

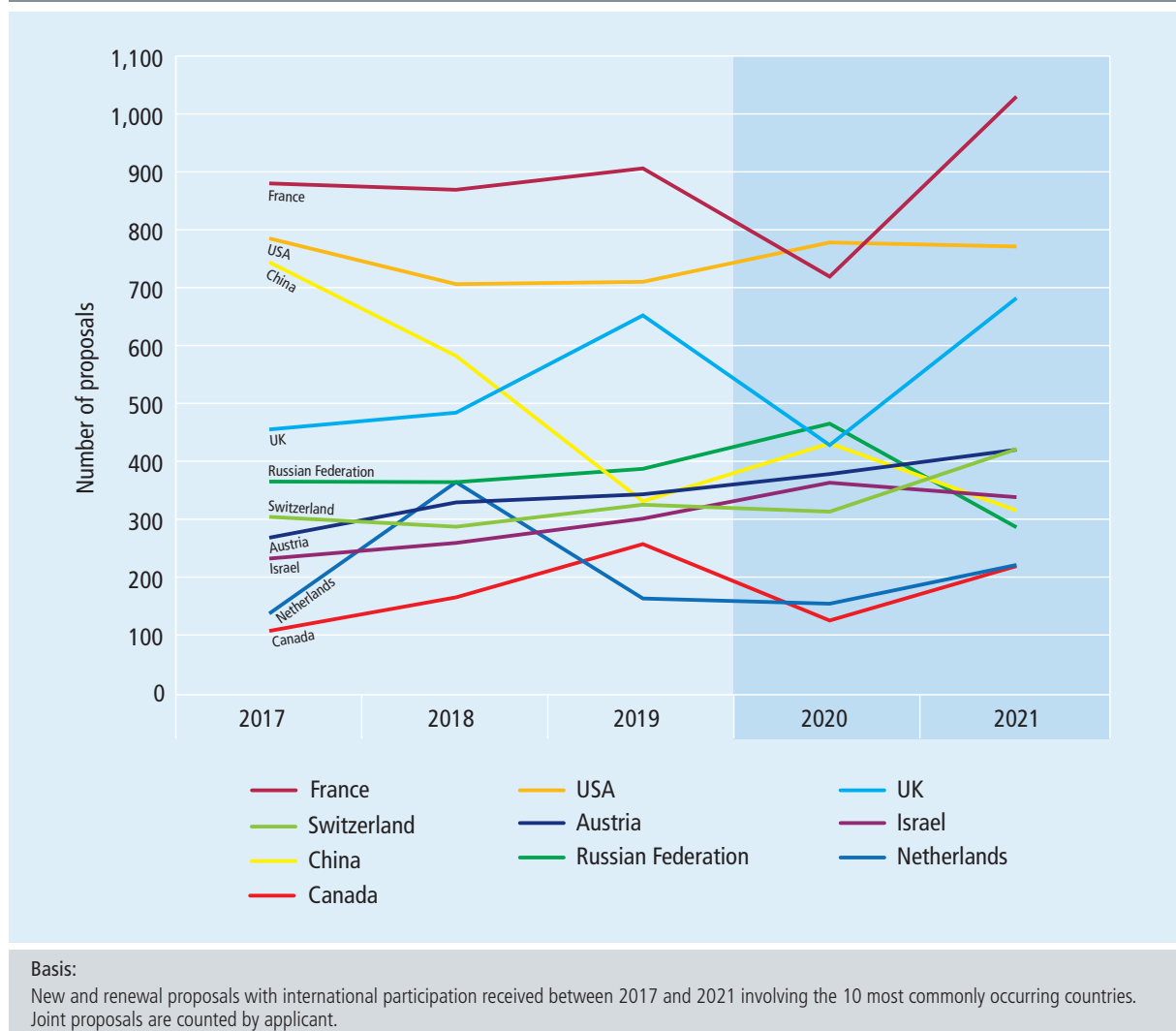


**Basis:**

New and renewal proposals received between 2017 and 2021. Joint proposals are counted by applicant. International involvement here refers to the time at which the proposal was submitted.

Figure 12 shows the development of the number of proposal submissions with international participation involving the ten most commonly occurring countries in the period 2017 to 2021: this provides insights into any changes that may have occurred within this area of international involvement.

**Figure 12:**  
Proposals with international involvement by country, 2017 to 2021 – Top 10



Here it is possible to see isolated shifts among the top three countries over the five-year period as well as varying changes in the number of proposal submissions by country of the international participants.

The top two ranking positions are consistently held by France and the USA. It is striking that in 2020, i.e. in the first year of the pandemic, the number of proposals received involving participants from France fell markedly by 187 compared to 2019, while the number of proposal submissions with participants from the USA increased slightly by almost 70. After this, 2020 saw a single instance where the largest number of international proposals involved participants based in the USA, while the same was true of France beforehand, as well as subsequently in the second year of the pandemic. The number of proposals received involving participants from France was 1,030 in 2021, about 43 percent higher than in the first year of the pandemic and also 14 percent higher than in 2019.

Another conspicuous feature concerns proposal submissions involving participants from China. While in 2017 China ranked third in terms of involvement in DFG proposals, with a figure of 744 submissions, this number fell very significantly in the following two years by a total of 56 percent to 331 proposals in 2019. In the same period, the number of proposal submissions involving participants from the UK increased, putting this country in third place among the most frequently represented countries in 2019 with around 650 proposal submissions, and again in 2021 with 682 – in spite of both Brexit and the pandemic. By contrast, the first year of the pandemic saw an interim decline of 34 percent compared to 2019, so in 2020 the increase in proposal submissions involving participants from Russia to 465 resulted in a further, albeit temporary, shift in the three top-ranking countries in terms of involvement in DFG proposals.

Looking at country-specific developments throughout the period of the pandemic as a whole, declining participation was observed for France, the UK and Canada in particular during the first year of the pandemic, while the number of proposal submissions involving participants from the USA, China and Russia each saw a slight increase.

In summary, the extent of participation on the part of international cooperation partners in DFG projects hardly changed during the pandemic period. Nonetheless, there are shifts to be observed in terms of the regional origin of cooperation partners. The number of collaborative projects applied for involving researchers in China declined significantly even before the pandemic, while researchers from Europe – in particular France and the UK – and from the USA were involved in DFG proposal submissions much more frequently.

## 5 Funding research into pandemics and COVID-19

As a result of the COVID-19 outbreak and the ensuing pandemic, the DFG issued several calls for proposals for research projects relating to COVID-19, epidemics and pandemics. The aim of the “Call for Proposals for Multidisciplinary Research into Epidemics and Pandemics in Response to the Outbreak of SARS-CoV-2” and the seven calls for proposals under COVID-19 Focus Funding was to promote an interdisciplinary and thematically broad spectrum within this topical thematic field.<sup>2</sup> Separately from the COVID-19 pandemic and these calls for proposals, it was also possible to apply for research funding relating to the above-mentioned thematic complex under all open-topic DFG funding programmes.

### Funding decisions relating to pandemic research proposals

Table 3 provides an overview of topic-related research funding in the three areas mentioned, including the figures for decisions and approvals, and also the funding rates by number and value during the two years of the pandemic.

**Table 3:**  
Decisions relating to the funding of research into pandemics and COVID-19, 2020 and 2021

	Proposals			Applicants			Amount (in €1,000)		
	dec.	app.	FRN (in %)	dec.	app.	FRN (in %)	dec.	app.	FRV (in %)
<b>COVID-19 Focus Funding in total</b>	<b>396</b>	<b>112</b>	<b>28.3</b>	<b>653</b>	<b>214</b>	<b>32.8</b>	<b>66,287.9</b>	<b>14,710.5</b>	<b>22.2</b>
Immunity, Host Susceptibility and Pathomechanisms of SARS-CoV-2 Infection	89	33	37.1	135	47	34.8	17,232.1	3,568.8	20.7
Measures to Prevent Infection in Social Settings and Population Groups	50	12	24.0	84	19	22.6	7,426.1	1,501.0	20.2
SARS-CoV-2 Sequencing Projects	26	6	23.1	67	32	47.8	6,697.7	1,607.3	24.0
Impacts of the Coronavirus Pandemic in the Global South: Health Systems and Society	93	21	22.6	147	52	35.4	15,892.5	3,008.7	18.9
Aerosol Particles and their Distribution	58	16	27.6	96	26	27.1	8,765.8	2,191.3	25.0
Education and Corona: The Impact of the Coronavirus Pandemic on Educational Processes in the Life Course	49	14	28.6	71	22	31.0	4,860.0	1,270.4	26.1
Exploiting Spatial Data as a Basis for Decision-making as Part of Pandemic Control	31	10	32.3	53	16	30.2	5,413.7	1,563.1	28.9
<b>Call for Proposals for Multidisciplinary Research into Epidemics and Pandemics in Response to the Outbreak of SARS-CoV-2</b>	<b>270</b>	<b>51</b>	<b>18.9</b>	<b>628</b>	<b>138</b>	<b>22.0</b>	<b>167,295.8</b>	<b>31,980.5</b>	<b>19.1</b>
<b>Further Pandemic Research</b>	<b>241</b>	<b>79</b>	<b>32.8</b>	<b>364</b>	<b>112</b>	<b>30.8</b>	<b>109,824.1</b>	<b>33,442.0</b>	<b>30.5</b>
<b>Total</b>	<b>907</b>	<b>242</b>	<b>26.7</b>	<b>1,645</b>	<b>464</b>	<b>28.2</b>	<b>343,407.8</b>	<b>80,133.0</b>	<b>23.3</b>

Basis:

New proposals for which decisions were issued in 2020 and 2021 under the above-mentioned calls, as well as new and renewal proposals in the field of pandemic research which were not submitted under these calls. Abbreviations: dec. = decisions issued; app. = approvals; FRN = funding rate by number; FRV = funding rate by value.

2 In 2021, another call for proposals was issued entitled “Recovery, Renewal and Resilience in a Post- Pandemic World” on the Trans-Atlantic Platform for Social Sciences and Humanities (T-AP). 2022 is the year of the funding decisions for the latter, however, so they do not fall within the period under consideration here.

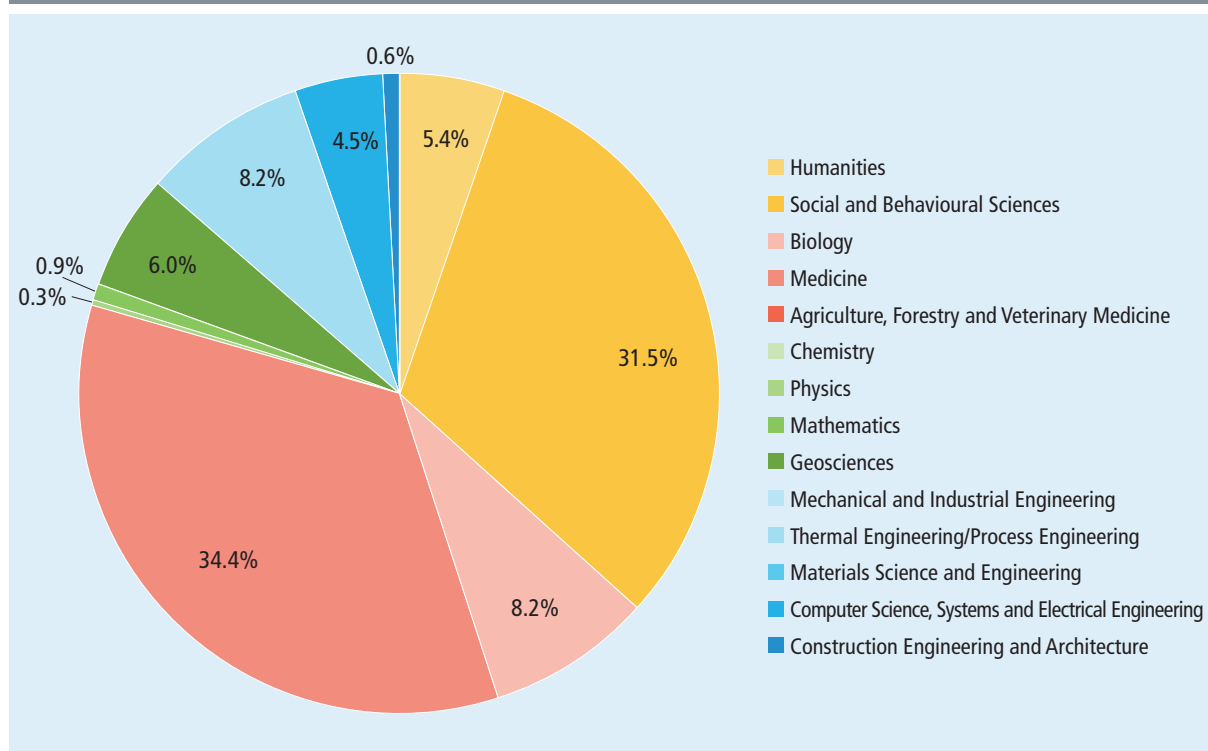
In 2020 and 2021, decisions were issued for a total of 907 proposals in this topic area with a proposed funding volume of around 343 million euros; 242 proposals were approved with a funding volume of around 80 million euros. Accordingly, the overall funding rate by number was 26.7 percent; this is below the funding rate for new proposals in individual grants, which was 33.1 percent in 2020 and 29.3 percent in 2021.

While the rate was higher for the seven calls for proposals under COVID-19 Focus Funding at a total of 28.3 percent (minimum: 22.6 percent, maximum: 37.1 percent), and also for other pandemic research outside the calls for proposals at 32.8 percent, it was comparatively low at 18.9 percent under the “Call for Proposals for Multidisciplinary Research into Epidemics and Pandemics in Response to the Outbreak of SARS-CoV-2”.

### Subject distribution of proposals under the calls for proposals relating to pandemics

The aim of the eight calls mentioned above was to promote broad-based research into epidemics, pandemics and COVID-19. Figure 13 provides an overview of the distribution of the primary subject base of the approved proposals under these calls for proposals.

**Figure 13:** Subject distribution of proposals under the “Call for Proposals for Multidisciplinary Research into Epidemics and Pandemics in Response to the Outbreak of SARS-CoV-2” and the seven calls for proposals under the COVID-19 Focus Funding



**Basis:**

Approved new proposals under the “Call for Proposals for Multidisciplinary Research into Epidemics and Pandemics in Response to the Outbreak of SARS-CoV-2” and the seven focus funding calls “Aerosol Particles and their Distribution”, “Education and Corona: The Impact of the Coronavirus Pandemic on Educational Processes in the Life Course”, “Exploiting Spatial Data as a Basis for Decision-making as Part of Pandemic Control”, “Immunity, Host Susceptibility and Pathomechanisms of SARS-CoV-2 Infection”, “Measures to Prevent Infection in Social Settings and Population Groups”, “SARS-CoV-2 Sequencing Projects”, “Impacts of the Coronavirus Pandemic in the Global South: Health Systems and Society”. Joint proposals are counted by applicant.

At around 43 percent, most of the approved proposals fall within the scientific discipline of the Life Sciences – predominantly Medicine (34 percent). A further eight percent can be attributed to Biology.

Around 32 percent of the proposals are primarily within the research area of the Social and Behavioural Sciences. Around five percent are assigned to the Humanities. At 37 percent, the scientific discipline of the Humanities and Social Sciences therefore account for the second-largest share of approvals in connection with calls for proposals for pandemic-related research.

A further 13 percent of proposals are in the research areas of Engineering Sciences. Among these, the research area of Mechanical and Industrial Engineering is most strongly represented, accounting for around eight percent of approved proposals. The smallest proportion of proposals are those primarily relating to the Natural Sciences, which account for only about seven percent in total, with proposals in the research area of Geosciences (and here in particular the Geography Review Board) accounting for the largest proportion with a share of about six percent of approved proposals.

### Topic modelling of the content of pandemic research proposals

Beyond the subject-based categorisation of submissions under the calls for proposals, it is also interesting to pursue questions of the thematic allocation and breadth of proposals in the area of pandemic research. What is the subject matter of the proposals submitted to the DFG? Which thematic fields can be identified? In order to answer these questions, a more in-depth, explorative statistical method of text analysis was carried out for the first time at the DFG using topic modelling based on proposal content.<sup>3</sup>

Using this method, it was possible to identify ten topics addressed by the proposals submitted to the DFG in the area of pandemic research. These are shown in Table 4. Figure 14 indicates the range of the topics in terms of the research areas with which they are associated. Here it is possible to see how the topics relate to each other and also to the primary subject classification of the proposals submitted. Topics that are positioned close to each other are also more closely related in terms of the way in which they are worded. If their representation

---

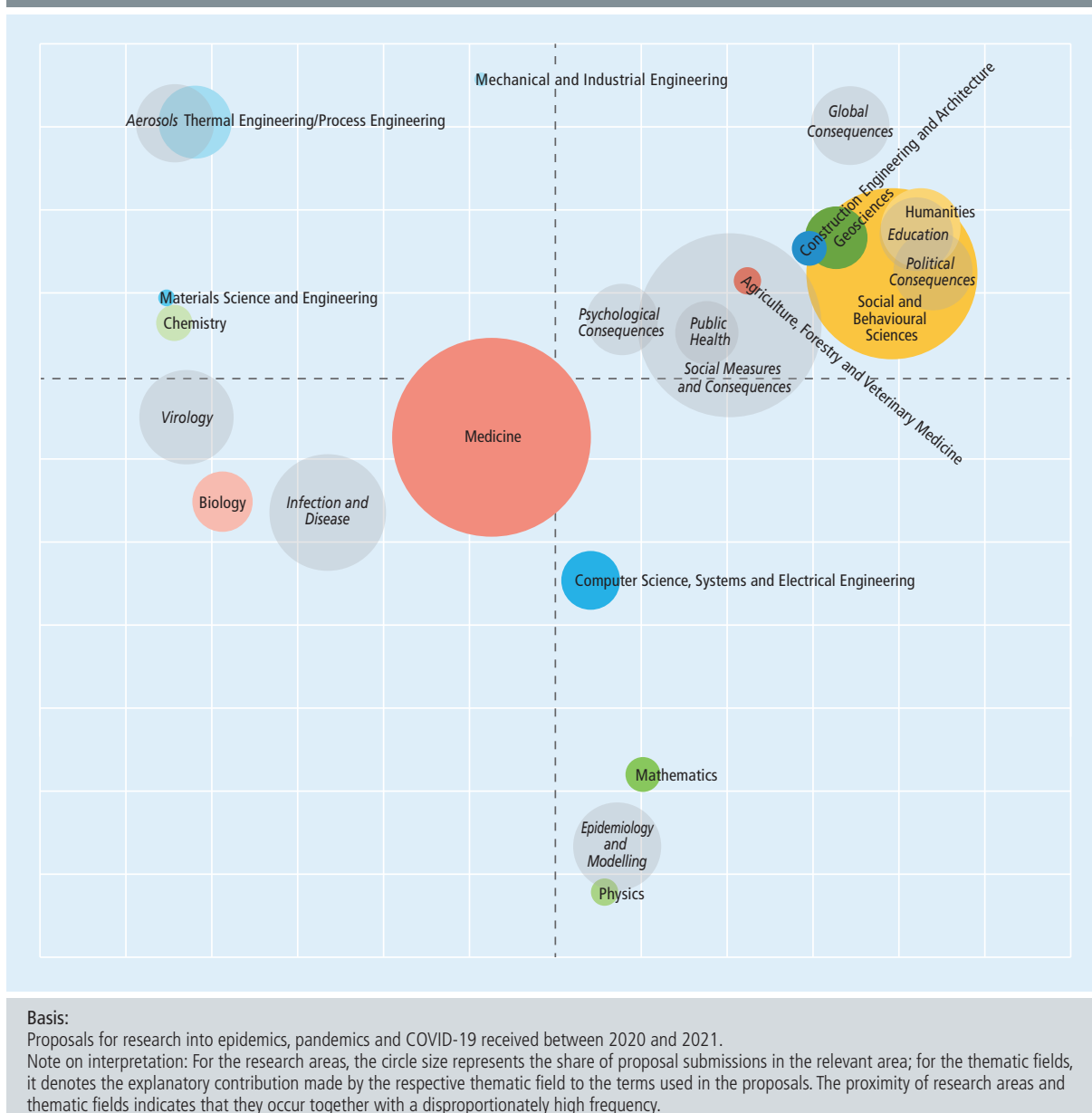
3 While this chapter started by looking at proposals for which decisions were issued in the thematic field of pandemic research, subsequently examining the subject-based distribution of proposals under the relevant calls, the focus now shifts to using the proposals received in 2020 and 2021 in the thematic field of epidemics, pandemics and COVID-19 as a data basis to obtain as up-to-date and comprehensive an impression as possible of the topics that researchers formulated in their proposals. In addition to the proposals received under the eight calls already considered, this also includes those submitted in the context of another thematic call – “Recovery, Renewal and Resilience in a Post-Pandemic World” in connection with the Trans-Atlantic Platform for Social Sciences and Humanities (T-AP) – plus any other pandemic research proposals submitted outside these calls. The following analysis does not include the 61 proposals for which no German-language abstract was available, including 43 proposals submitted under the call “Trans-Atlantic Platform 2021: Recovery, Renewal and Resilience in a Post-Pandemic World”. Ultimately, this topic modelling is based on a data basis of 1,040 proposals.



is disproportionately high in a research area, this research area is also positioned close to the respective topic.

The figure reflects the interdisciplinary nature of the field of pandemic research and shows that all four scientific disciplines are represented with their 14 research areas. All in all it is possible to distinguish four thematic quadrants, with transitions and cross-references between them.

**Figure 14:**  
Two-dimensional representation of the proximity of research areas and thematic fields



The top right quadrant contains thematic fields that deal with the social dimension of the pandemic in the broadest sense. These include the thematic fields of “Political Consequences”,

“Global Consequences” and “Education”, which are particularly linked to the Humanities and the Social and Behavioural Sciences. In addition, the research areas of Geosciences (and here in particular the Human Geography Review Board), Construction Engineering and Architecture are represented here, as well as Agriculture, Forestry and Veterinary Medicine. Two topics positioned close to these disciplines, though with a greater proximity to Medicine, are “Social Measures and Consequences” and “Public Health”, where issues of healthcare and health research are often approached from an interdisciplinary perspective involving both Medicine and the Social Sciences. “Social Measures and Consequences” is also the largest topic.

From here, there is a transition to the lower left quadrant with the topic “Psychological Consequences”, which is considerably closer to medicine. In this quadrant, Medicine and Biology are the underlying research areas with the topics of “Infection and Disease” and “Virology”, the latter being closer to Biology and the former closer to Medicine. The topic of “Virology” also has a link with Chemistry (especially with regard to diagnostics).

The quadrant at the top left mainly reflects the topic of “Aerosols”, for which the research area of Thermal Engineering/Process Engineering mainly provides the relevant subject basis (with the Fluid Mechanics, Technical Thermodynamics and Thermal Energy Engineering Review Board, and the Process Engineering, Technical Chemistry Review Board).

A relatively independent thematic field emerges for the quadrant at the bottom right, with the research area of Computer Science, Systems and Electrical Engineering as a kind of bridging discipline. The Computer Science review board in particular provides the interface with “Epidemiology and Modelling”, which is based in particular on knowledge and methods from physics and mathematics (as well as the subject areas of Epidemiology and Medical Biometry/Statistics, Medical Informatics and Medical Bioinformatics within the Medicine Review Board).

Table 4 captures the individual topics identified in the form of word clouds, along with a brief summary of the content of the proposal abstracts which are closely related to the topic. The size of the words in the word clouds corresponds to the probability of their use in the respective thematic area. Since the original analysis is based on the German abstracts, the word clouds are in German.

The identified topics described in Table 4 and the thematic map clearly show that the pandemic and all related aspects are approached by the applicants as a multidimensional problem on both an interdisciplinary basis and broken down according to subject specialisations. The different research areas address the topic primarily within their respective areas of competence, drawing on their own specific methodology and expertise. Nevertheless, a number of transitions, cross-boundary areas and overlaps can be found in the thematic fields identified, both between the topics themselves and with regard to their links to the research areas.



Table 4 (continuation):

Topics of proposals for research funding in the thematic area of epidemics, pandemics and COVID-19

Word cloud of the topic	Topic incl. brief summary
	<p><b>Public Health</b></p> <p>Proposals in this thematic field are primarily concerned with medical care and health research (public health) and the effects that the measures associated with the pandemic and the overburdening of the health system have on medical care in general, as well as on the prevention of other diseases (e.g. cancer). The focus here is frequently not on COVID-19 patients but on other population groups and people suffering from illnesses (e.g. those who are chronically sick) who are affected as a consequence of the pandemic or whose care has been impaired as a result.</p>
	<p><b>Infection and Disease</b></p> <p>This thematic field particularly concerns the causes, symptoms, manifestations and consequences of an infection with SARS-CoV-2, i.e. the disease COVID-19, as well as the body's reactions or immune response to an infection. The focus here is on specific symptoms such as loss of smell or taste, as well as causes and consequences of severe progressions. In some cases, questions regarding the duration, progression and potential long-term consequences of the disease are also investigated. Proposals focusing particularly clearly on this thematic field were often submitted under the COVID-19 Focus Funding call: "Immunity, Host Susceptibility, and Pathomechanisms of SARS-CoV-2 Infection".</p>
	<p><b>Virology</b></p> <p>In contrast to the topic "Infection and disease", the focus here is not on COVID-19 or the host organism but on the pathogen SARS-CoV-2, including its properties, possibilities of detection and potential antiviral therapy. Topics include viral reproduction and spread as well as the identification of starting points for targeted immunotherapy or pharmacotherapy. Questions of diagnostics and the development of the required tests are dealt with here, as well as the causes and consequences of viral mutations.</p>
	<p><b>Epidemiology and Modelling</b></p> <p>This thematic field deals with statistical, empirical and simulation-based modelling of the spread of the SARS-CoV-2 virus to develop scenarios and prediction models to depict the spread of the virus geographically and over time. The focus here is often on the development of methods or software that take into account human behaviour and the spread of infections via social networks and mobility and other mechanisms, or which can assist in the selection and implementation of parameters for modelling.</p>
	<p><b>Aerosols</b></p> <p>This thematic field focuses on aerosols. The proposals submitted here deal with the physics of motion of these particles and the environmental factors on which they depend. In addition, investigations are carried out into their role in infections as well as possible protective measures and their impact under different conditions. Proposals in this thematic field were often submitted under the Focus Funding call "Aerosol Particles and their Distribution".</p>

**Basis:**

Proposals for research into epidemics, pandemics and COVID-19 received between 2020 and 2021.

Note on interpretation: The larger the words are in a word cloud, the more likely they are to be used in relation to the topic in question. The words with the 40 highest probabilities are shown in each case.

## Data basis and definitions

### Data basis

The data basis for this report is provided by the proposals in the period under review, 2017 to 2021. In order to be able to answer the question regarding distinct developments in the context of the pandemic, proposals received during this period were considered. This deviates from standard DFG reporting, which usually considers proposals by their decision date. Here, proposal decisions are only considered where the data representations do not allow for an analysis based on the date of receipt for methodological reasons. The data basis for the individual figures is to be found in the relevant captions.

### Period under review

For analyses of developments during the pandemic on a quarterly basis the period from the second quarter of 2020 to the fourth quarter of 2021 is considered as the pandemic period. Where the focus is on yearly developments, on the other hand, 2020 and 2021 are taken to be the two years of the pandemic, though here it should be noted that Germany was not yet affected by the pandemic at the beginning of 2020, so any changes have less of an impact when applied to the year as a whole. The period of the pandemic is visually highlighted in all figures and tables for greater clarity. The preceding years 2017 to 2019 are used for the purpose of comparison; when considering developments by quarter, the comparison period is from the first quarter of 2017 to the first quarter of 2020.

### Counting of proposal submissions

In the case of joint proposals (where several researchers submit a joint proposal with separate allocation of research funds), the individual parts of the proposal are regarded as distinct cases. Example: A proposal with two approved funding recipients is counted twice. A joint proposal with one approved and one rejected funding recipient is counted once under approved and once under rejected.

### Funding rate (FR)

The funding rate is the ratio of the number of approvals to the number of proposal submissions for which decisions were issued in the given period.

### **Allocation of reviews to years**

Requests for reviews and reviews themselves are assigned based on the year in which the decision was issued for the proposal in question. Example: A review was obtained in August 2020. The decision on the proposal in question was issued in January 2021. In the analysis, the review is attributed to the year 2021.

### **Return and acceptance rate for review requests**

The return rate is the ratio of reviews received to the total number of requests for written reviews. The acceptance rate is the ratio of the number of acceptances to participate in oral review meetings to the total number of requests to participate.

Rejections due to bias are not taken into account in the total number. Experience indicates that the review request is not always recorded in the case of a rejection, so the actual return or acceptance rate is lower.

Since there is a systematic under-reporting of rejected requests for oral review, particularly in connection with Priority Programmes and Research Units, as well as individual grants and infrastructure funding programmes, these were not taken into account in calculating the acceptance rate.

### **Topic modelling methodology**

The explorative method of topic modelling enables large amounts of text to be reduced to a range of different topics. The method generates probabilities of the affiliation of words and documents (in this case proposals) to a fixed number of topics. Proposals and words are not exclusively assigned to individual topics by the method but are assigned a certain probability for each of the topics. Individual proposals can therefore correspond relatively exclusively to one topic or be made up of several topics. The analysis is based on the German-language titles, abstracts and project keywords of proposals.

The words were first converted into their basic forms and cleaned up by filtering out punctuation marks, numerals, conjunctions and pronouns. A table with the proposals from the data basis and the respective frequencies of a total of 28,000 terms then served as the basis for the topic modelling. Even where individual terms that occur in the word clouds appear to be less substantial, they still contributed to the generation of a topic (due to certain wordings that are typical of a subject, for example), so they are included.

## Comparability with other analyses

The analyses are based on data generated in the course of proposal processing by the DFG. These data are subject to change within limited error ranges: for example, approvals may not be utilised, approval amounts can be reduced or increased and proposals can be assigned to other programmes. This “living” quality of the source material means that the reported figures may be subject to minor fluctuations and may not always fully correspond to previous year’s figures or other reports. The present analyses reflect the data status as of January 2022.

## Programmes and programme groups

The DFG’s various funding programmes are clustered into so-called “programme groups” for statistical and other informational purposes. This DFG programme classification is shown in Table 5.

Table 5: DFG programme classification	
<b>Individual grants</b>	<b>Excellence Strategy</b>
Research Grants	Cluster of Excellence
Research Fellowships	University allowance
Walter Benjamin Programme	<b>Infrastructure funding</b>
Emmy Noether Programme	Major Research Instrumentation
Heisenberg Programme	Instrumentation-related Funding
Reinhart Koselleck Projects	Central Research Facilities
Clinical Trials	Scientific Library Services and Information Systems
Further individual grants	National Research Data Infrastructure
<b>Coordinated programmes</b>	<b>Scientific prizes, other funding</b>
Research Units	Scientific Prizes
Priority Programmes	International Scientific Contacts
Collaborative Research Centres	Committees and Commissions
Research Training Groups	
Research Centres	

## DFG subject classification

The subject classification system maps the operational structures of DFG proposal processing in terms of its subjects and review boards. If a funding proposal is submitted under a general research funding programme – this mainly includes individual grants – a decision is made by the Head Office, based on the thematic description contained in the proposal, as to which subject the proposal is primarily to be assigned to. Here, the question of allocation is operational, i.e. it has a direct impact on how proposals are processed (staff responsible), reviewed (relevant reviewers) and finally evaluated (usually the responsible review board). By contrast, the subject classification of Collaborative Research Centres, Research Training Groups, Priority Programmes and Scientific Prizes is carried out solely for statistical and public relations purposes. In the case of Collaborative Research Centres and Priority Programmes, and also in the case of Research Units, each individual project is classified separately according to subject.

The DFG subject classification system distinguishes between a total of four levels: 211 subjects, 49 review boards, 14 subject areas and four academic disciplines. Table 6 below shows the three highest levels of the DFG subject classification system – review boards, subject areas, academic disciplines. For the complete subject classification, including the structure at the level of the 211 subject areas, see [www.dfg.de/en/dfg\\_profile/statutory\\_bodies/review\\_boards/subject\\_areas](http://www.dfg.de/en/dfg_profile/statutory_bodies/review_boards/subject_areas).



**Table 6:**  
DFG subject classification for the term 2020–2024 – scientific disciplines, research areas and review boards

Review board	Research area	Scientific discipline
101 Ancient Cultures 102 History 103 Art History, Music, Theatre and Media Studies 104 Linguistics 105 Literary Studies 106 Social and Cultural Anthropology, Non-European Cultures, Jewish Studies and Religious Studies 107 Theology 108 Philosophy	11 Humanities	1 Humanities and Social Sciences
109 Educational Research 110 Psychology 111 Social Sciences 112 Economics 113 Jurisprudence	12 Social and Behavioural Sciences	
201 Basic Research in Biology and Medicine 202 Plant Sciences 203 Zoology	21 Biology	2 Life Sciences
204 Microbiology, Virology and Immunology 205 Medicine 206 Neurosciences	22 Medicine	
207 Agriculture, Forestry and Veterinary Medicine	23 Agriculture, Forestry and Veterinary Medicine	
321 Molecular Chemistry 322 Chemical Solid State and Surface Research 323 Physical Chemistry 324 Analytical Chemistry 325 Biological Chemistry and Food Chemistry 326 Polymer Research 327 Theoretical Chemistry	31 Chemistry	
307 Condensed Matter Physics 308 Optics, Quantum Optics and Physics of Atoms, Molecules and Plasmas 309 Particles, Nuclei and Fields 310 Statistical Physics, Soft Matter, Biological Physics, Nonlinear Dynamics 311 Astrophysics and Astronomy	32 Physics	3 Natural Sciences
312 Mathematics	33 Mathematics	
313 Atmospheric Science, Oceanography and Climate Research 314 Geology and Palaeontology 315 Geophysics and Geodesy 316 Mineralogy, Petrology and Geochemistry 317 Geography 318 Water Research	34 Geosciences	
401 Production Technology 402 Mechanics and Constructive Mechanical Engineering	41 Mechanical and Industrial Engineering	4 Engineering Sciences
403 Process Engineering, Technical Chemistry 404 Fluid Mechanics, Technical Thermodynamics and Thermal Energy Engineering	42 Thermal Engineering/ Process Engineering	
405 Materials Engineering 406 Materials Science	43 Materials Science and Engineering	
407 Systems Engineering 408 Electrical Engineering and Information Technology 409 Computer Science	44 Computer Science, Systems and Electrical Engineering	
410 Construction Engineering and Architecture	45 Construction Engineering and Architecture	

## Literature

**DFG – Gruppe Informationsmanagement der Deutschen Forschungsgemeinschaft (2021).**

*Corona, Gender und Forschungsförderung. Das Antrags- und Begutachtungsverhalten von Wissenschaftlerinnen im ersten Jahr der Coronavirus-Pandemie.* DFG Infobrief. Zahlen und Fakten zur Forschungsförderung. Issue 1.21. Bonn.

**Konsortium Bundesbericht Wissenschaftlicher Nachwuchs (2021).** *Bundesbericht*

*Wissenschaftlicher Nachwuchs 2021. Statistische Daten und Forschungsbefunde zu Promovierenden und Promovierten in Deutschland.* wbv Publikation. Bielefeld.





**Deutsche Forschungsgemeinschaft**

Kennedyallee 40 • 53175 Bonn

Postal address: 53170 Bonn

Phone: +49 228 885-1

[postmaster@dfg.de](mailto:postmaster@dfg.de)

[www.dfg.de/en](http://www.dfg.de/en)

**DFG**