

AT A GLANCE

## Only strict coronavirus regulations for vacationers affect passenger air traffic between Germany and Mallorca

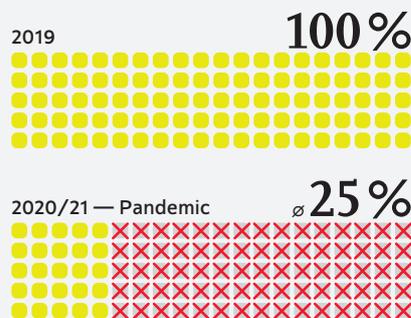
By Albert Banal Estañol, Wolfgang Grimme, Sven Maertens, Jo Seldeslachts and Christina Stadler

- While almost five million Germans fly to Mallorca every year, during the pandemic air travel was reduced to roughly 25 percent of the 2019 level on average
- Passenger air traffic varied greatly between ten and 86 percent of the 2019 level depending on the week
- Local restrictions such as curfews or outdoor mask requirements and indirect mechanisms such as publicly advising against flying had no effect on air travel
- Only strict travel restrictions such as entry bans and quarantine regulations significantly impacted air travel
- Vaccination may have a major impact on air travel beyond the legal effect on travel and local restrictions

### Entry bans and quarantine regulations had a significant impact on air travel



Almost five million Germans fly to Mallorca every year.



During the pandemic air travel to Mallorca was reduced to roughly 25 percent of the 2019 level on average.



Only strict travel restrictions such as entry bans and quarantine regulations significantly reduced air travel.

Source: Author's own depiction.

© DIW Berlin 2021

### FROM THE AUTHORS

*The results of this study suggest that strict restrictions are the most effective way to limit air travel during a pandemic—provided a government deems them necessary.*

— Jo Seldeslachts —

### MEDIA



Audio Interview with Jo Seldeslachts (in English)  
[www.diw.de/mediathek](http://www.diw.de/mediathek)

# Only strict coronavirus regulations for vacationers affect passenger air traffic between Germany and Mallorca

By Albert Banal Estañol, Wolfgang Grimme, Sven Maertens, Jo Seldeslachts and Christina Stadler

## ABSTRACT

Mallorca is the most popular foreign travel destination for German tourists, with almost five million flying to the Balearic island every year. However, the coronavirus pandemic brought passenger air traffic to a virtual standstill in March 2020. Flights to Mallorca resumed in June 2020, but the seat offerings were only between ten and 86 percent of the 2019 level depending on the week. This Weekly Report shows which coronavirus restrictions especially impacted air travel between Germany and Mallorca. For example, local restrictions such as curfews or outdoor mask requirements had little effect. Publicizing infection rates or publicly advising against flying also did little to influence travel behavior. Only strict travel restrictions such as entry bans and quarantine regulations had a significant impact on air travel. Thus, policymakers can only effectively manage travel by using such measures. At the same time, initial vaccination data shows that they significantly mitigate the effects of the strict travel restrictions.

With almost five million Germans flying to Mallorca every year, no other country has more vacationers traveling to the Balearic Islands.<sup>1</sup> However, the COVID-19 pandemic brought air travel to a brutal halt, as the German government, together with its European counterparts, put travel restrictions in place to contain the pandemic. But the pandemic might have also reduced people's appetite for airline travel because of the (perceived) risk of infection. Air transport may not represent a large share of the gross domestic product,<sup>2</sup> but it is a key driver of numerous other economic activities in many other sectors such as tourism. Travel and tourism are among the most affected sectors of the pandemic.

This Weekly Report documents the impact of the COVID-19 pandemic and of the different government measures on passenger airline traffic. It focuses on seat offerings between German airports and Mallorca, as Spain is the number one destination for Germans traveling abroad and the Balearic Island of Mallorca its most popular destination.<sup>3</sup> Mallorca is also suitable for this study because the majority of German vacationers travel by air.<sup>4</sup> In particular, this report analyzes the total weekly seat offerings by all airline companies on all flights from German airports to Mallorca between January 2019 and July 2021.

Since the beginning of the pandemic, governmental measures and lower demand have pushed airlines to offer significantly fewer seats between Germany and Mallorca. However, the supply of seats compared to 2019 varied greatly depending on the week. Especially during the main holiday periods, relaxations in travel restrictions led to abrupt increases

<sup>1</sup> Agència de Turisme de les Illes Balears, *El turisme a les Illes Balears. Anuari 2019 (2020)* (in Spanish; available online, accessed on September 1, 2021. This applies to all other online sources in this report unless indicated otherwise).

<sup>2</sup> Still, in Germany, around 1.1 percent of GDP and 421,000 jobs are directly linked with air transport (see Janina Scheelhaase et al., "Wirtschaftspolitische Implikationen der COVID-19 Pandemie im Luftverkehr," *Wirtschaftsdienst* (2021): 4, 106–113).

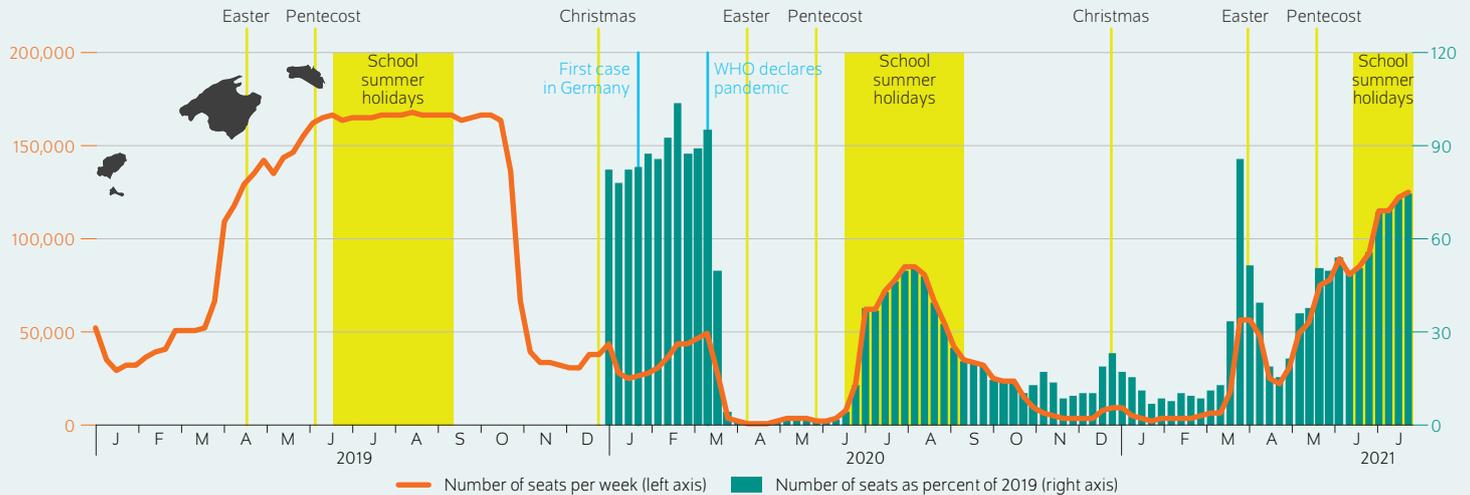
<sup>3</sup> In 2018, for instance, the Balearic Islands recorded more German leisure travellers than Greece and Turkey together (see Deutsche Welle, *The Germans' favorite travel destinations and Die Reisewirtschaft, Destinationen* (in German)).

<sup>4</sup> Balearic Islands Tourism Board (ATB), *Balearic Islands regional context survey*. (European Projects Department: 2017) (available online). Only 4 percent of all tourists use maritime transport to come to Mallorca.

Figure 1

**Number of available seats for flights from Germany to Mallorca**

Number of seats per week (left axis) and number of seats as percent of the same week in 2019 (right axis)



Sources: Authors' own calculations.

© DIW Berlin 2021

The seat availability for flights to Mallorca fluctuated to varying degrees during the pandemic.

in air traffic to Mallorca. For example, in mid-March 2021, German authorities stopped declaring the Balearic Islands a risk area for COVID-19, effectively eliminating all German travel restrictions to Mallorca. Travel agencies, consequently, saw an abrupt increase in their Easter bookings despite high infection rates in Germany at the time.<sup>5</sup> Some politicians worried that the incidence might rise even further afterward. Vice Chancellor Olaf Scholz, for instance, advised against flying to holiday destinations, particularly Mallorca.<sup>6</sup>

The Mallorca case is a good illustration of how the pandemic has influenced tourists' travel behavior. Travel regulations appear to have had a significant impact on flight trips but local destination restrictions as well as infection rates seem to have had little effect.

### Seat offerings for flights to Mallorca fluctuated greatly during the pandemic

Various data sources provide detailed information on individual flights, such as Flightradar24, OpenSky Network, FlightAware, and EUROCONTROL.<sup>7</sup> This flight data has been combined with aircraft data on seat capacities provided by Cirium's Fleet Analyzer in order to obtain the number of

seats offered per flight.<sup>8</sup> In the time frame between January 2019 to July 2021, flights from more than 13 different airline groups<sup>9</sup> between 23 German airports<sup>10</sup> and Mallorca were identified. The final dataset includes the weekly total number of seats from German airports to Mallorca for the mentioned study period.

The total number of seats available each week is seasonal in a typical year such as 2019, varying from fewer than 40,000 seats in some weeks between November to February to more than 160,000 seats per week during the summer months (Figure 1). Therefore, to assess the impact of the pandemic on seat availability, the number of seats available in each week of 2020 and 2021 is compared as a percentage of the same week of 2019.<sup>11</sup>

After the World Health Organization (WHO) classified the COVID-19 outbreak as a pandemic and the German government issued a global travel warning as a result, seat availability dropped to almost zero by the end of March 2020

<sup>8</sup> We only consider flights with aircraft types exceeding 21 seats to exclude most general and business aviation activities with smaller aircraft ("private jets").

<sup>9</sup> The airline groups operating flights with more than 21 seats (and a weekly market share of at least one percent) are Norwegian, EasyJet, TUIfly, Ryanair, LufthansaGroup, IAG, ThomasCook, Germania, Condor, CorendonAirlines, Sundair, AirEuropa, and Wizzair.

<sup>10</sup> Berlin, Bremen, Cologne, Dortmund, Dresden, Dusseldorf, Erfurt, Frankfurt, Friedrichshafen, Hahn, Hamburg, Hanover, Karlsruhe/Baden-Baden, Kassel-Calden, Leipzig/Halle, Memmingen, Muenster/Osnabrueck, Munich, Nuremberg, Paderborn/Lippstadt, Saarbruecken, Stuttgart, and Weeze.

<sup>11</sup> Notice that seat availability also oscillates slightly year-on-year outside the pandemic: the number of seats available in most of the first weeks of 2020, corresponding to January and February, were slightly lower than in the same week of 2019 (90 to 80 percent).

<sup>5</sup> Timo Kotowski and Sarah Obertreis, "Mallora-Reisen sorgen für Streit," *Frankfurter Allgemeine Zeitung*, March 16, 2021 (in German; available online).

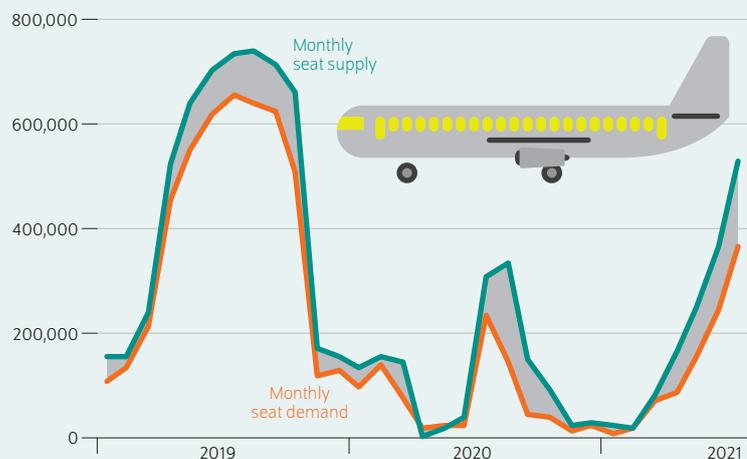
<sup>6</sup> Bundesministerium der Finanzen, *Interview mit Finanzminister Olaf Scholz für die Bild am Sonntag* (2021) (in German; available online).

<sup>7</sup> See their respective websites (available online): Flightradar24, OpenSky Network, FlightAware, and EUROCONTROL.

Figure 2

**Seat supply and seat demand for flights to Mallorca**

Number of seats



Sources: Authors' own calculations.

© DIW Berlin 2021

The utilization of flights during the pandemic is as high as before the pandemic.

(week 13).<sup>12</sup> It partially increased in summer 2020, reaching 80,000 seats (50 percent compared to 2019) in some weeks of the summer school vacations.

There was also a smaller increase in the relative number of seats during the Christmas period (an average of 20 percent occupancy in 2019). However, the relative number of seats increased the most during the week before Easter 2021, when more than 57,000 seats were offered, or more than 80 percent compared to 2019.<sup>13</sup>

Thereafter, seat availability dropped significantly, but gradually increased again shortly before Pentecost 2021 and with the start of the 2021 summer vacations, reaching its highest level—over 125,000 seats (76 percent compared to 2019)—toward the end of July 2021.

Overall, therefore, seat availability between Germany and Mallorca fell sharply during the pandemic. However, the decline fluctuated to varying degrees. While air travel was essentially grounded to a halt during the initial phase of the pandemic, it nearly reached pre-pandemic levels during other periods, particularly in Easter 2021 and summer 2021. Overall, the decline in air travel was smaller in the main holiday periods (Easter, summer, and Christmas) than in the non-holiday periods.

<sup>12</sup> In this Weekly Report, the term “week” does not refer to the calendar week. Instead, week 1 (w1) begins on January 1 of each year and comprises seven days.

<sup>13</sup> Note that in 2019, Easter was at the end of April (week 16) and in 2021, it was at the beginning of April (week 14).

The evolution of the actual number of passengers followed a similar pattern as the number of seats available (Figure 2). This illustrates that the utilization of flights during the pandemic is as high as before the pandemic. However, as passenger volume data (demand) are only available on a monthly basis, the weekly number of seats offered (supply) is used in the rest of the report.

**Travel regulations had a significant impact on flight trips**

Travel regulations in both countries had a significant impact on air travel to Mallorca (Figure 3). Travel restrictions between Germany and the Balearic Islands include hard measures such as entry bans for non-citizens, border controls, testing, and quarantine regulations, as well as soft measures such as a travel warning for non-essential tourist travel or completion of an entry declaration.<sup>14</sup>

Following the WHO’s declaration of the pandemic, several travel restrictions were introduced throughout the Schengen area, including border controls that prohibited the entry of non-citizens. This meant that there were de facto reciprocal entry bans, as German nationals could not enter Spain due to the Spanish ban and vice versa. This brought air traffic to a complete standstill.

Travel to Mallorca began to recover somewhat in mid-June when Spain lifted the entry ban and Germany replaced its global travel warning with region-specific risk warnings for foreign countries. In mid-August 2020, the Balearic Islands were classified as a *basic risk area* for the first time, which meant that returning travelers had to enter a 14-day quarantine, which could, however, be lifted by a negative test result after entry.<sup>15</sup> Despite this minor restriction, air traffic began to drop significantly again, possibly due to the end of the school summer vacation.

Relative seating capacity remained very low (15 percent on average compared to 2019) after a minimum five day-quarantine period was made mandatory for basic risk areas.<sup>16</sup> The fact that the Balearic Islands were classified as a *high-risk area* on January 24, 2021, further reduced seat availability (to an average of ten percent compared to 2019).<sup>17</sup> The reason for this reduction could also be the restrictions in Germany and in particular the partial lockdown (“lockdown light”) from November 2, 2020, (week 44) and the subsequent second lockdown from December 16, 2020 (week 51).<sup>18</sup>

<sup>14</sup> Information obtained from the websites of the Robert Koch Institute (RKI), the Foreign Office, and the Federal Ministry of the Interior (BMI).

<sup>15</sup> Website of the Robert Koch Institute (RKI).

<sup>16</sup> A mandatory ten-day quarantine, which could be ended by a negative test after five days at the earliest, was introduced.

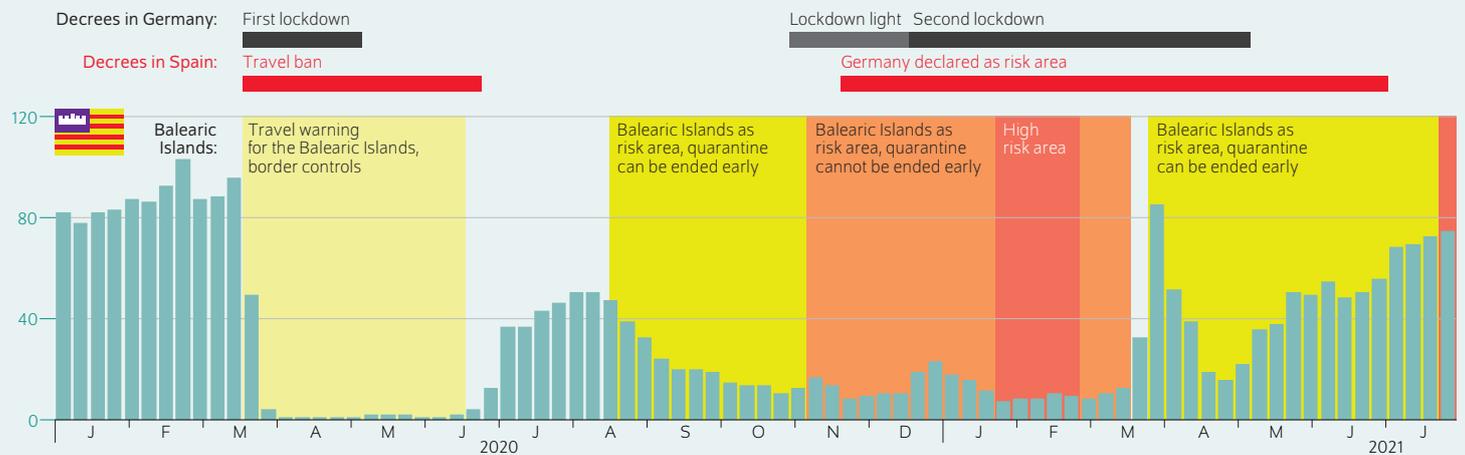
<sup>17</sup> Website of the Robert Koch Institute (RKI).

<sup>18</sup> Between November 2 and December 15, Germany combated the high incidence rate with a partial lockdown known as a “lockdown light:” contact restrictions and closures of restaurants and tourist facilities such as hotels. However, unlike the two full lockdowns (March 22—May 4, 2020; December 16, 2020—May 10, 2021), most stores and schools and day care centers remained open. Compare information on website of NDR.

Figure 3

**Seat availability for flights to Mallorca and rules for entry between the Balearic Islands and Germany**

Share of seats of the same week in 2019 in percent



Notes: If the coronavirus restrictions change within a week (for example from travel ban to basic risk area), this week is classified according to the most restrictive measure taken on any given day of this week.

Sources: Authors' own calculations; Robert Koch Institute; German Federal Foreign Office; the German Federal Ministry of Health; the German Federal Ministry of the Interior; the Spanish Ministry of Health.

© DIW Berlin 2021

Especially reciprocal entry bans as well as German entry regulations from the Balearic Islands have impacted air travel.

The end of the classification of the Balearic Islands as a basic risk area and thus the abolition of quarantine regulations caused the availability of seats to increase abruptly at Easter 2021. Travelers only had to show negative coronavirus tests before the outbound flight to the Balearic Islands as well as before the return flight to Germany. This is somewhat surprising, especially since Germany continued to be in lockdown during this time. However, the lockdown may actually have been the reason for German tourists' travel enthusiasm.

Travel declined again after Easter but recovered thereafter and throughout the summer when negative test results and later vaccination or recovery records released travelers from quarantine.<sup>19</sup> Although the data ends in July 2021, it can be said for the time being that air traffic has not changed even with the reclassification of the Balearic Islands as a high-incidence area as of July 27, 2021 (week 30). However, it has been declining since the end of the summer vacations.

Overall, travel patterns appear to be aligned with reciprocal entry bans, German entry regulations from the Balearic Islands—where stricter regulations led to fewer flights—and vacation periods, with more flights during the vacations. Lockdowns in Germany have a negative impact on travel, with the major exception of Easter 2021.

<sup>19</sup> It should be noted that as of March 30, 2021 (week 13), inbound travelers had to present a negative coronavirus test before departure for Germany. On July 11, 2021 (week 24), the Balearic Islands were again considered a basic risk area. However, the general obligation to provide proof of testing in air travel exempted from the ten-day quarantine in the event of a negative test from day one.

### Local restrictions on Mallorca have little effect on air traffic

The local restrictions on the Balearic Islands, including the most important ones for holidaymakers, such as the closure of restaurants and bars or curfews, did not significantly affect air traffic from Germany to Mallorca. During the partial confinement<sup>20</sup> in Mallorca (March to June 2020), air traffic was non-existent, but mainly because of the above-mentioned travel bans. However, the outdoor mask requirement from mid-July 2020 had no impact on the increasing seat availability in summer 2020, nor did the curfew and contact restrictions at the end of October 2020. The lifting of these restrictions in May 2021 and the requirement to wear a mask in public places in July 2021 coincide with small jumps in the number of available seats. However, air travel has most likely increased during this period due to increased vaccination rates.

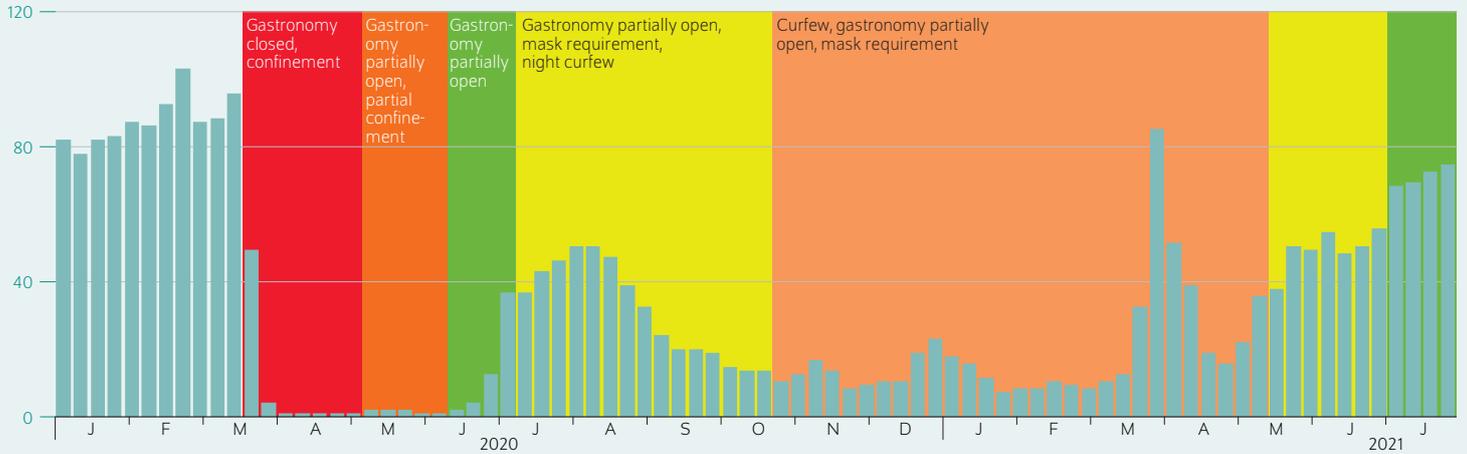
### Incidence in Germany and the Balearic Islands have no effect on air traffic

Infection rates do not appear to have been the main driver of the number of available seats in either Germany or the Balearic Islands. When travel to Mallorca partially recovered

<sup>20</sup> During the partial confinement, people could go outside for a few hours per day to exercise, while during the curfew they could only go outside in exceptional circumstances (e.g., doctor's appointment, grocery shopping). During the partial confinement, bars and restaurants were partially open, but at very limited times (e.g., only for lunch). After the first confinement, there were five levels of de-escalation. These are summarized here as "partial confinement," as long as it was not fully permitted to go outside without reason. During the curfew, life was more or less normal except for the fact that one was not allowed to be outside at night.

Figure 4

**Seat availability for flights to Mallorca and local restrictions in the Balearic Islands**  
Share of seats of the same week in 2019 in percent



Notes: If the coronavirus restrictions change within a week (for example from travel ban to basic risk area), this week is classified according to the most restrictive measure taken on any given day of this week. Some of the most important behavior restrictions for Balearic Islands were added, but the list is not extensive.

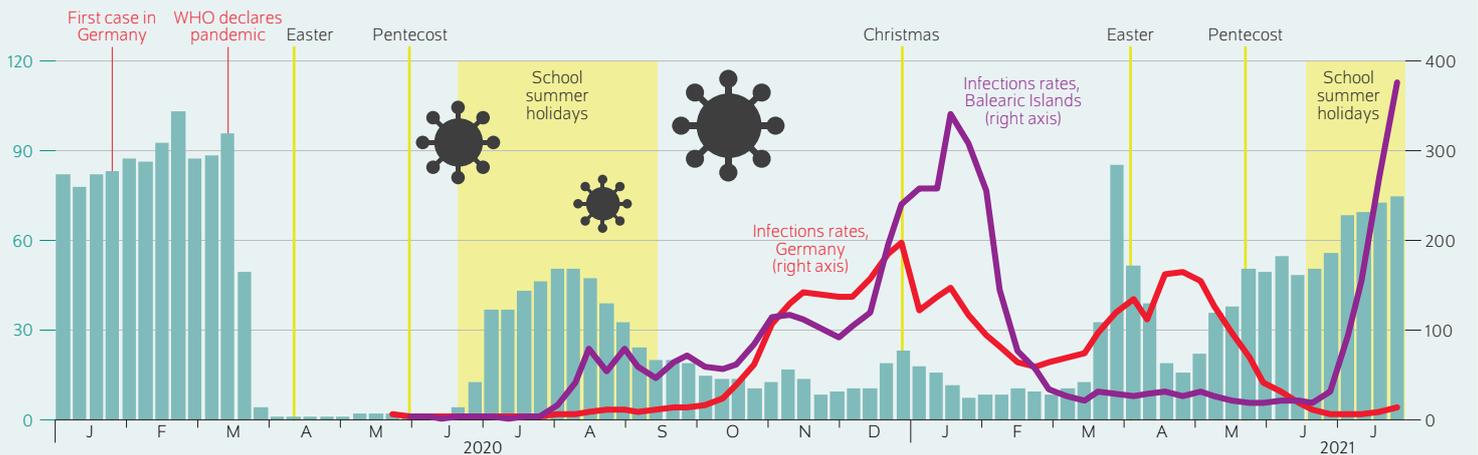
Sources: Authors' own calculations; German Federal Foreign Office.

© DIW Berlin 2021

Local restrictions on Mallorca have little effect on air traffic to the island.

Figure 5

**Seat availability for flights to Mallorca and infections rates in the Balearic Islands and in Germany**  
Share of seats of the same week in 2019 in percent (left axis) and infections rates (right axis)



Notes: The infection rate is the seven-day incidence per 100,000 inhabitants for Germany and the Balearic Islands, respectively, whereby the weekly data takes the values of Friday (and if not available, Thursday).

Sources: Authors' own calculations; Robert Koch Institute; Spanish Ministry of Health.

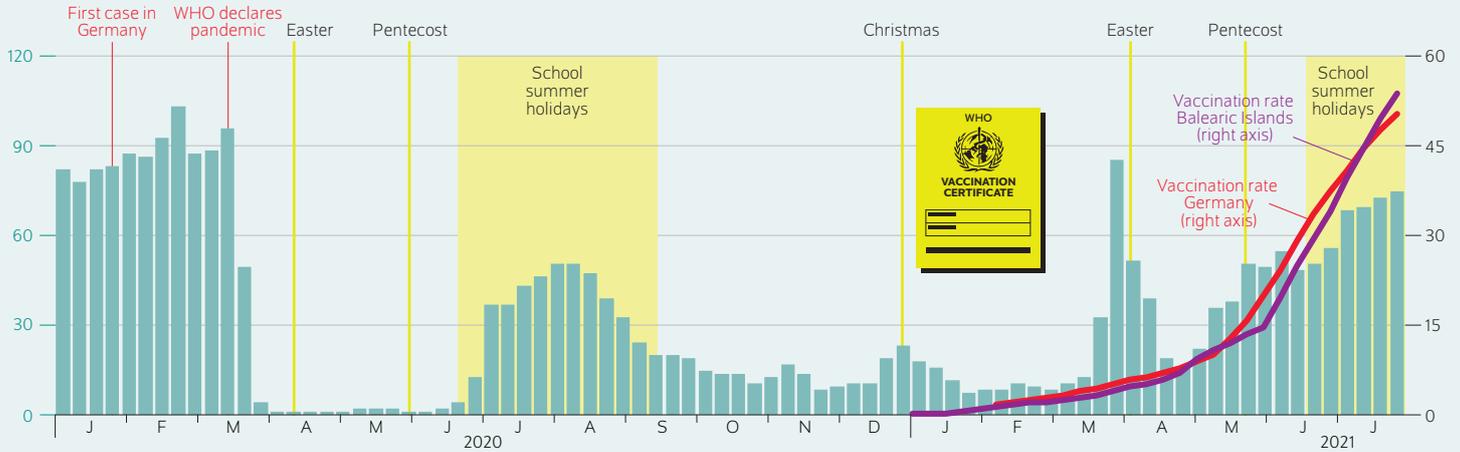
© DIW Berlin 2021

Infection rates neither in Germany nor in the Balearic Islands affected air travel.

Figure 6

**Seat availability for flights to Mallorca and vaccination rates in the Balearic Islands and in Germany**

Share of seats of the same week in 2019 in percent (left axis) and percentage of the population that was fully vaccinated



Notes: The number of people fully vaccinated as a percentage of the total population of Germany and the Balearic Islands are shown, respectively, whereby the weekly data are taken on the last day of the week.

Sources: Authors' own calculations; COVID-19 Impfdashboard (German vaccination data); Spanish Ministry of Health.

© DIW Berlin 2021

As vaccination rates increase, so does air traffic between the Balearic Islands and Germany.

in summer 2020, infection rates in Germany were low. However, travel increased during the Christmas and especially the Easter vacations at a time when German infection rates peaked. During the Easter 2021 holidays, infection rates in Germany were well above 100 new infections per 100,000 population while, at the same time, travel activity approached pre-pandemic levels. However, infection rates in the Balearic Islands did not subsequently increase.<sup>21</sup> In Germany, on the other hand, they continued to rise for three more weeks after Easter.

Infection rates in the Balearic Islands do not appear to have affected air travel either. In fact, some of the peaks in air travel, such as in summer 2020, Christmas 2020, and summer 2021, coincided with peaks in infection rates on the islands. Some weeks of summer 2021 saw the highest incidence rates on the islands (more than 300 cases per 100,000 population) while travel to Mallorca reached nearly 80 percent of pre-pandemic levels. This high level of travel despite the high infection rates in Mallorca could also be due to increasing vaccination rates.

### Air travel in summer increases with vaccination rates in Germany and the Balearic Islands

The increasing vaccination rate may have enabled an increase in travel during the summer weeks of 2021. Vaccinations began in early 2021 and followed a similar pattern in Germany

and the Balearic Islands, with about half of the total population vaccinated by the end of July 2021. During these weeks, available seats reached nearly 80 percent of the 2019 levels, significantly higher than in the previous summer, which had similar or less restrictive travel and local restrictions (Figures 3 and 4) and similar infection rates in Germany and the Balearic Islands (Figure 5). Thus, vaccination may have had a major impact on air travel beyond the legal effect on travel and local restrictions.

### Conclusion: while strict travel restrictions are effective in reducing air travel, indirect mechanisms are not

Strict travel restrictions have a significant impact on air travel supply. For example, exemption from the quarantine requirement on presentation of a negative test result or proof of vaccination/recovery has had a significant, positive impact on air travel. On the other hand, local restrictions in Mallorca, such as curfews, did not have a significant impact on air traffic. For example, the outdoor masking requirement introduced in July 2020 did not have a negative impact on seat availability.

During peak holiday periods, the decline in air travel compared to pre-pandemic levels was smaller than during other periods, which can be interpreted as people being less willing to forgo travel during these times, regardless of infection rates. Travel increased during the Easter vacations at a time when German infection rates peaked. Thus, while strict travel restrictions are effective in reducing air travel, indirect mechanisms aimed to influence travel behavior, such as publicizing infection rates or publicly advising against flying, as

<sup>21</sup> The data in this report thus confirm what the German press reports; see, for example, Hans-Christian Rössler, "Corona-Zahlen auf Mallorca weiter stabil," *Frankfurter Allgemeine Zeitung*, April 18, 2021 (in German; available online).

## PASSENGER AIR TRAFFIC

---

Vice Chancellor Olaf Scholz did before Easter, do not have much of an effect. Therefore, if policymakers want to prevent people from traveling abroad during a pandemic, they need to introduce rather strict measures.

Vaccination has led to a gradual increase in travel during the 2021 summer weeks by mitigating the impact of travel restrictions. The reclassification of the Balearic Islands as a

high-risk area did not significantly impact air travel, most likely because the minimum five-day quarantine with proof of vaccination was no longer required. Travel in the summer of 2021 is actually much greater than in the summer of 2020 despite equivalent restrictions on vaccinated vacationers. Thus, vaccination appears to have had an effect beyond the legal effect in travel regulations, increasing people's appetite for air travel.

**Albert Banal Estañol** is an associate professor at the Pompeu Fabra University | [albert.banalestanol@upf.edu](mailto:albert.banalestanol@upf.edu)

**Wolfgang Grimme** is a project manager at the German aerospace center DLR | [wolfgang.grimme@dlr.de](mailto:wolfgang.grimme@dlr.de)

**Sven Maertens** is a research associate at the German aerospace center DLR | [Sven.Maertens@dlr.de](mailto:Sven.Maertens@dlr.de)

**Jo Seldeslachts** is a research associate in the Firms and Markets Department at DIW Berlin and a professor at KU Leuven | [jseldeslachts@diw.de](mailto:jseldeslachts@diw.de)

**Christina Stadler** is a Ph.D. student in the Firms and Markets Department at DIW Berlin | [cstadler@diw.de](mailto:cstadler@diw.de)

**JEL:** L93, H10

**Keywords:** Airline, COVID-19

## LEGAL AND EDITORIAL DETAILS

---



DIW Berlin — Deutsches Institut für Wirtschaftsforschung e.V.

Mohrenstraße 58, 10117 Berlin

[www.diw.de](http://www.diw.de)

Phone: +49 30 897 89-0 Fax: -200

Volume 11 September 29, 2021

### Publishers

Prof. Dr. Tomaso Duso; Prof. Marcel Fratzscher, Ph.D.; Prof. Dr. Peter Haan;  
Prof. Dr. Claudia Kemfert; Prof. Dr. Alexander S. Kritikos; Prof. Dr. Alexander  
Kriwoluzky; Prof. Dr. Stefan Liebig; Prof. Dr. Lukas Menkhoff; Prof. Karsten  
Neuhoff, Ph.D.; Prof. Dr. Carsten Schröder; Prof. Dr. C. Katharina Spiess;  
Prof. Dr. Katharina Wrohlich

### Editors-in-chief

Sabine Fiedler; Dr. Anna Hammerschmid (Acting editor-in-chief)

### Reviewer

Daniel Graeber

### Editorial staff

Prof. Dr. Pio Baake; Marten Brehmer; Rebecca Buhner; Claudia Cohnen-Beck;  
Dr. Hella Engerer; Petra Jasper; Sebastian Kollmann; Sandra Tubik;  
Kristina van Deuverden

### Sale and distribution

DIW Berlin Leserservice, Postfach 74, 77649 Offenburg

[leserservice@diw.de](mailto:leserservice@diw.de)

Phone: +49 1806 14 00 50 25 (20 cents per phone call)

### Layout

Roman Wilhelm, Stefanie Reeg, DIW Berlin

### Cover design

© imageBROKER / Steffen Diemer

### Composition

Satz-Rechen-Zentrum Hartmann + Heenemann GmbH & Co. KG, Berlin

ISSN 2568-7697

Reprint and further distribution—including excerpts—with complete  
reference and consignment of a specimen copy to DIW Berlin's  
Customer Service ([kundenservice@diw.de](mailto:kundenservice@diw.de)) only.

Subscribe to our DIW and/or Weekly Report Newsletter at

[www.diw.de/newsletter\\_en](http://www.diw.de/newsletter_en)